

**ICPAC 2022**  
KOTA KINABALU

22nd - 27th  
November  
2022

**International Congress on Pure & Applied Chemistry**  
**Kota Kinabalu, Sabah, Malaysia**

**“Chemistry & Chemical Innovations for Sustainable Development  
in Rapidly-Emerging Economies”**

**Incorporating**  
**International Symposium on**  
**Advanced Polymeric Materials 2022 (ISAPM 2022)**

**Souvenir Programme**

Organised by



Institut Kimia Malaysia

**FIST**

Foundation for Interaction  
between Science and Technology



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UNIVERSITI MALAYSIA SABAH

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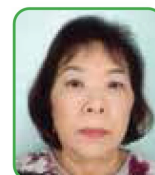
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## MESSAGE FROM PRESIDENT, INSTITUT KIMIA MALAYSIA & CHAIRPERSON, ICPAC KK / ISAPM 2022



On behalf of Institut Kimia Malaysia (IKM) and the other Joint Organizers of the **International Congress on Pure & Applied Chemistry Kota Kinabalu (ICPAC KK) 2022** & the **International Symposium on Advanced Polymeric Materials (ISAPM) 2022**, I would like to welcome all of you to **ICPAC KK & ISAPM 2022** which is being held from 22 - 27th November 2022 in the Magellan Sutera Resorts, Kota Kinabalu, Sabah, Malaysia.

**ICPAC KK 2022** is a major international scientific meeting covering all major areas of pure and applied chemistry. It was first held in 2016 in Kuching, Sarawak, Malaysia and ever since, it is being held annually in countries like Vietnam, Cambodia and Malaysia.

The participants of **ICPAC KK / ISAPM 2022** come from all over the world, but majority are from Asia. For **ICPAC KK / ISAPM 2022**, we have a total of 454 delegates coming from 7 countries. The Scientific programmes include 8 Plenary Lectures, 18 Keynotes, 359 Invited/Oral Lectures and 10 poster presentations, making a total of 395 presentations.

As President of **Institut Kimia Malaysia (IKM)**, I would like to record our sincere appreciation to our Joint Organizers, namely **Universiti Malaysia Sabah** and the **Foundation for Interaction between Science and Technology, Japan**, for collaborating with us in jointly organizing **ICPAC KK / ISAPM 2022**. It is through our joint effort that we are able to make **ICPAC KK / ISAPM 2022** a reality.

I would also like to record our special thanks to the sponsors, namely Malaysia Convention & Exhibition Bureau (MyCEB) and Sabah Tourism Board (STB) for their generous sponsorship.

As Chairperson of **ICPAC KK / ISAPM 2022**, I would like to record my sincere gratitude to all plenary and keynote speakers, all oral lecturers and posters presenters. Their presentations have definitely contributed to the success of **ICPAC KK / ISAPM 2022**. I would like to thank all members of **ICPAC KK / ISAPM 2022 Organizing Committee** and IKM Secretariat staff for working very hard to put **ICPAC KK / ISAPM 2022** together and making it a huge success.

For the delegates of **ICPAC KK / ISAPM 2022**, I hope that you benefited from the deliberations and proceedings of the scientific programmes, and enjoyed the Congress Banquet and the special social programmes for you to enjoy the places of interest, culture and foods of Sabah. I hope that you also have the time to experience the beautiful and scenic Kota Kinabalu and the rest of Sabah.

We look forward to seeing you again in **ICPAC 2023**.

With best regards.

**Datuk ChM Dr Soon Ting-Kueh**


President, Institut Kimia Malaysia & Chairperson, ICPAC KK / ISAPM 2022

Date: 31st October 2022

## OPENING CEREMONY Tuesday, 22nd November 2022

<b>0730</b>	<b>REGISTRATION (Ballroom 2, Level 1)</b>
	<b>OPENING CEREMONY (Ballroom 2, Level 1)</b>
<b>0800</b>	Welcome Address by Datuk ChM Dr Soon Ting Kueh <i>President, Institut Kimia Malaysia &amp; Chairperson, ICPAC KK / ISAPM 2022</i>
<b>0805</b>	Address by Professor Dr Tamotsu Takahashi <i>Director, Foundation for Interaction between Science and Technology, Japan</i>
<b>0810</b>	Opening Address by <b>YB Datuk Jafry Bin Ariffin</b> <i>Minister of Tourism, Culture and Environment, Sabah</i>

# ICPAC KK / ISAPM 2022 – Full Programme

Tuesday, 22 November 2022		
0730 – 0800	Registration	Venue: Ballroom 2, Level 1
0800 – 0830	Opening Ceremony	Venue: Ballroom 2, Level 1
0830 – 1000	PLENARY SESSION	Venue: Ballroom 2, Level 1
	Chairperson: Datin ChM Dr Zuriati Zakaria Institut Kimia Malaysia, Malaysia	
	<u>Plenary Lecture 1</u> <b>From Reduction to Alkylation: A Journey with Iron Complexes</b> Jean Luc Renaud University of Caen Normandie, France	
	<u>Plenary Lecture 2</u> <b>Moon-shot Design on BioNylon with Photo-switched Marine-Degradability</b> Tatsuo Kaneko Japan Advanced Institute of Science and Technology, Japan	
1000 – 1030	Refreshment	
1030 – 1300	Parallel Sessions	
	Ia	: Organic and Biomolecular Chemistry (OBC)
	II	: Organic and Biomolecular Chemistry (OBC)
	IIIa	: Polymer and Materials Chemistry (PMC)
	IVa	: Physical Chemistry and Catalysis (PCC)
	Va	: Inorganic and Coordination Chemistry (ICC)
	VIa	: ICPAC General Session (IGS)
1300 – 1400	Lunch	
1400 – 1630	Parallel Sessions	
	Ib	: Organic and Biomolecular Chemistry (OBC)
	Im	: Organic and Biomolecular Chemistry (OBC)
	IIIb	: Polymer and Materials Chemistry (PMC)
	IVb	: Physical Chemistry and Catalysis (PCC)
	Vb	: Inorganic and Coordination Chemistry (ICC)
	VIb	: ICPAC General Session (IGS)
1600 – 1700	Refreshments	
1700	WELCOME RECEPTION (SUTERA MARINA JETTY)	

# ICPAC KK / ISAPM 2022 – Full Programme

**Wednesday, 23 November 2022**

**0830 – 1000**

**PLENARY SESSION**

*Venue: Ballroom 2, Level 1*



Chairperson: Prof ChM Dr Yang Farina Abdul Aziz  
Institut Kimia Malaysia, Malaysia

Plenary Lecture 3

**Temperature-Response Chemistry of Thermo-Electrochemical Cell toward Waste Heat Harvesting**

Teppey Yamada  
The University of Tokyo, Japan

Plenary Lecture 4

**Enantioselective Decarboxylative Chlorination of  $\beta$ -Oxocarboxylic Acids and Stereospecific Derivatization of the Resulting  $\alpha$ -Chloroketones**

Kazutaka Shibatomi  
Toyohashi University of Technology, Japan

**1000 – 1030**

Refreshment

**1030 – 1300**

**Parallel Sessions**

Ic : Organic and Biomolecular Chemistry (OBC)

In : Organic and Biomolecular Chemistry (OBC)

IIIc : Polymer and Materials Chemistry (PMC)

IVc : Physical Chemistry and Catalysis (PCC)

Vc : Inorganic and Coordination Chemistry (ICC)

VIc : ICPAC General Session (IGS)

**1300 – 1400**

Lunch

**1400 – 1600**

**Parallel Sessions**

Id : Organic and Biomolecular Chemistry (OBC)

Io : Organic and Biomolecular Chemistry (OBC)

IIId : Polymer and Materials Chemistry (PMC)

Ivd : Physical Chemistry and Catalysis (PCC)

Vd : Inorganic and Coordination Chemistry (ICC)

VIId : ICPAC General Session (IGS)

**1600 – 1630**

Refreshments

**1630 – 1830**

**Parallel Sessions**

Ie : Organic and Biomolecular Chemistry (OBC)

Ip : Organic and Biomolecular Chemistry (OBC)

IIIE : Polymer and Materials Chemistry (PMC)

Ive : Physical Chemistry and Catalysis (PCC)

Ve : Inorganic and Coordination Chemistry (ICC)

VIe : ICPAC General Session (IGS)

# ICPAC KK / ISAPM 2022 – Full Programme

## Thursday, 24 November 2022

<b>0830 – 1000</b>	<b>PLENARY SESSION</b>		<b>Venue: Ballroom 2, Level 1</b>
	Chairperson:	Academician ChM Dr Ho Chee Cheong Institut Kimia Malaysia, Malaysia	
	<u>Plenary Lecture 5</u>		
	<b>Axis-to-center Chirality Transfer Reaction of Organophosphorus Compounds with a Binaphthyl Group as a Key Process Leading to the Formation of P-Chirogenic Derivatives</b>		
	Toshiaki Murai Gifu University, Japan		
	<u>Plenary Lecture 6</u>		
	<b>Ligand-Protected Metal Nanoclusters: Recent Development in Synthesis and Application in Energy and Environmental Field</b>		
	Yuichi Negishi Tokyo University of Science, Japan		
<b>1000 – 1030</b>	Refreshments and Posters Viewing		
<b>1030 – 1300</b>	<b>Parallel Sessions</b>		
	If	:	Organic and Biomolecular Chemistry (OBC)
	Ila	:	Analytical and Environmental Chemistry & Engineering (AEC)
	IIIf	:	Polymer and Materials Chemistry (PMC)
	IVf	:	Physical Chemistry and Catalysis (PCC)
	Vf	:	Inorganic and Coordination Chemistry (ICC)
	VI f	:	ICPAC General Session (IGS)
<b>1300 – 1400</b>	Lunch		
<b>1400 – 1600</b>	<b>Parallel Sessions</b>		
	Ig	:	Organic and Biomolecular Chemistry (OBC)
	IIb	:	Analytical and Environmental Chemistry & Engineering (AEC)
	IIIg	:	Polymer and Materials Chemistry (PMC)
	IVg	:	Physical Chemistry and Catalysis (PCC)
	Vg	:	Inorganic and Coordination Chemistry (ICC)
	VIg	:	ICPAC General Session (IGS)
<b>1600 – 1700</b>	Refreshments and Posters Viewing		
<b>1900 – 2230</b>	ICPAC KK 2022 Congress Banquet		<b>Venue: Ballroom 2, Level 1</b>

# ICPAC KK / ISAPM 2022 – Full Programme

**Friday, 25 November 2022**

<b>0830 – 1000</b>	<b>PLENARY SESSION</b>	<i>Venue: Ballroom 2, Level 1</i>
	Chairperson: Prof ChM Dr Mansor Ahmad Institut Kimia Malaysia, Malaysia	
	<u>Plenary Lecture 7</u> <b>Game-changing innovation in peptide synthesis</b> Hisashi Yamamoto Chubu University, Japan	
	<u>Plenary Lecture 8</u> <b>Glass transition in polymers</b> Jean Marc Saiter University of Rouen Normandy, France	
<b>1000 – 1030</b>	Refreshments and Posters Viewing	
<b>1030 – 1300</b>	<b>Parallel Sessions</b>	
	Ih	: Organic and Biomolecular Chemistry (OBC)
	VIk	: ICPAC General Session (IGS)
	IIIh	: Polymer and Materials Chemistry (PMC)
	IIc	: Analytical and Environmental Chemistry & Engineering (AEC)
	Vh	: Inorganic and Coordination Chemistry (ICC)
	VIh	: ICPAC General Session (IGS)
	VIIa	: International Symposium on Advanced Polymeric Materials (ISAPM)
<b>1300 – 1400</b>	Lunch	
<b>1400 – 1600</b>	<b>Parallel Sessions</b>	
	II	: Organic and Biomolecular Chemistry (OBC)
	VII	: ICPAC General Session (IGS)
	IIIi	: Polymer and Materials Chemistry (PMC)
	IVh	: Physical Chemistry and Catalysis (PCC)
	VI	: Inorganic and Coordination Chemistry (ICC)
	VII	: ICPAC General Session (IGS)
	VIIb	: International Symposium on Advanced Polymeric Materials (ISAPM)
<b>1600 – 1630</b>	Refreshments and Posters Viewing	
<b>1630 – 1830</b>	<b>Parallel Sessions</b>	
	Ij	: Organic and Biomolecular Chemistry (OBC)
	VIh	: ICPAC General Session (IGS)
	IIIj	: Polymer and Materials Chemistry (PMC)
	IVi	: Physical Chemistry and Catalysis (PCC)
	Iq	: Organic and Biomolecular Chemistry (OBC)
	VIj	: ICPAC General Session (IGS)
	VIIc	: International Symposium on Advanced Polymeric Materials (ISAPM)



# ICPAC KK / ISAPM 2022 – Full Programme

## Saturday, 26 November 2022

0830 - 1400	Tour
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## Sunday, 27 November 2022

0830 - 1000	<b>Session</b>
	Ik : Organic and Biomolecular Chemistry (OBC)

1000 – 1030	<b>Refreshment</b>
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1030 – 1250	<b>Session</b>
	Ir : Organic and Biomolecular Chemistry (OBC)
	IIIk : Polymer and Materials Chemistry (PMC)

1250 - 1300	Closing Ceremony
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1300 – 1400	Lunch
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Code	:	Thematic Session Name (Abbreviation)
I.	:	Symposium on Organic and Biomolecular Chemistry (OBC)
II.	:	Symposium on Analytical and Environmental Chemistry & Engineering (AEC)
III.	:	Symposium on Polymer and Materials Chemistry (PMC)
IV.	:	Symposium on Physical Chemistry and Catalysis (PCC)
V.	:	Symposium on Inorganic and Coordination Chemistry (ICC)
VI.	:	ICPAC General Session (IGS)
VII.	:	International Symposium on Advanced Polymeric Materials (ISAPM)

# ICPAC KK / ISAPM 2022 – Programme at a Glance

## Tuesday, 22 November 2022

Venue	Ballroom 2, Level 1	Meeting Room 6, Level 1	Meeting Room 2, Level 1	Meeting Room 3, Level 1	Meeting Room 4, Level 1	Meeting Room 5, Level 1
0730 – 1600	Registration					
0800 – 0830	Opening Ceremony					
0830 – 1000	Plenary Lecture 1 & 2					Venue: Ballroom 2, Level 1
1000 – 1030	Refreshments					
1030 – 1300	OBC	OBC	PMC	PCC	ICC	IGS
1300 – 1400	Lunch					
1400 – 1600	OBC	OBC	PMC	PCC	ICC	IGS
1600 – 1700	Refreshments / End of Sessions					
1700	Welcome Reception					

## Wednesday, 23 November 2022

Venue	Ballroom 2, Level 1	Meeting Room 6, Level 1	Meeting Room 2, Level 1	Meeting Room 3, Level 1	Meeting Room 4, Level 1	Meeting Room 5, Level 1
0730 – 1630	Registration					
0830 – 1000	Plenary Lecture 3 & 4					Venue: Ballroom 2, Level 1
1000 – 1030	Refreshments					
1030 – 1300	OBC	OBC	PMC	PCC	ICC	IGS
1300 – 1400	Lunch					
1400 – 1600	OBC	OBC	PMC	PCC	ICC	IGS
1600 – 1630	Refreshments					
1630 – 1810	OBC	OBC	PMC	PCC	ICC	IGS
1810	End of Sessions					

# ICPAC KK / ISAPM 2022 – Programme at a Glance

## Thursday, 24 November 2022

Venue	Ballroom 2, Level 1	Meeting Room 6, Level 1	Meeting Room 2, Level 1	Meeting Room 3, Level 1	Meeting Room 4, Level 1	Meeting Room 5, Level 1
0800 – 1600	Registration					
0830 – 1000	Plenary Lecture 5 & 6					Venue: Ballroom 2, Level 1
1000 – 1030	Refreshments and Posters Viewing					
1030 – 1300	OBC	AEC	PMC	PCC	ICC	IGS
1300 – 1400	Lunch					
1400 – 1620	OBC	AEC	PMC	PCC	ICC	IGS
1620 – 1700	Refreshments and Posters Viewing					
1900	ICPAC KK 2022 Congress Banquet					

## Friday, 25 November 2022

Venue	Ballroom 2, Level 1	Meeting Room 6, Level 1	Meeting Room 2, Level 1	Meeting Room 3, Level 1	Meeting Room 4, Level 1	Meeting Room 5, Level 1	Meeting Room 1, Level 1
0800 – 1630	Registration						
0830 – 1000	Plenary Lecture 7 & 8					Venue: Ballroom 2, Level 1	
1000 – 1030	Refreshments and Posters Viewing						
1030 – 1300	OBC	IGS	PMC	AEC	ICC	IGS	ISAPM
1300 – 1400	Lunch						
1400 – 1600	OBC	IGS	PMC	PCC	ICC	IGS	ISAPM
1600 – 1630	Refreshments and Posters Viewing						
1630 – 1810	OBC	IGS	PMC	PCC	OBC	IGS	ISAPM
1810	End of Sessions						

## ICPAC KK / ISAPM 2022 – Programme at a Glance

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**Sunday, 27 November 2022**

Venue	Ballroom 2, Level 1
0800 – 0830	Registration
0830 – 1000	OBC
1000 – 1030	Refreshments
1030 – 1210	OBC
1210 – 1250	PMC
1250 – 1300	Closing Ceremony
1300 – 1400	Lunch/ End of Congress

## PLENARY LECTURE 1



### JEAN LUC RENAUD

Prof. Jean-Luc Renaud obtained his Ph.D. degree in 1998 under the supervision of Dr. Aubert and Prof. Malacria. He was a Lavoisier Postdoctoral fellow in 1999 with Prof. Lautens at the University of Toronto then moved to the University of Louvain-La-Neuve in the team of Prof. Riant. In 2000, he was appointed as Maître de Conférences at the University of Rennes and accepted a full Professor position at University of Caen Normandy in 2008. The research interests focus on organometallic catalysis, organocatalysis, photoredox catalysis and their application towards the synthesis of biologically interesting molecules and processes relevant to fine chemical synthesis.

### Awards

Lavoisier Fellowship from the «Ministère des Affaires Etrangères» (Post-doc Fellowship).  
MERS Fellowship from the «Ministère de la Recherche et de l'Enseignement Supérieur» (Graduate Fellowship).  
Grant from « Agence Nationale de la Recherche » (ANR-06-JCJC-137457, ANR-12-SECU-0002-02, ANR-15-CE39-0006, ANR-19-CE18-0011-02, ANR-22-CE07)

### Research Interests

Regio- and Enantioselective Allylic Substitution Catalyzed by Ruthenium Complexes  
Enantioselective Hydrogenation (Fe, Rh, Ir, Ru)  
Borrowing Hydrogen Alkylations (Fe)  
Enantioselective Ring Opening Reactions (Pd, Rh, Ni)  
Organometallic and Organic Chemistry, Organocatalysis  
Cascade Reactions, Cycloaddition (Fe) and Cycloisomerisation Reactions (Co)

### Impact factor

h-index = 43 (Web of Science and Scopus), >4700 citations

### Publications

111 Publications (5 Angewandte, 2 JACS, 1 Adv. Funct. Mater., 2 ACS Catal, 1 ACS Applied Materials and Interfaces, 1 Adv. Funct. Mater., 2 Adv. Opt. Mater., 5 Chem Commun., 9 Org. Lett., 6 Chem. Eur. J., 2 Coord. Chem. Rev., 2 Chem. Soc. Rev., 10 Adv. Synth. Catal., 3 J. Org. Chem., 2 ChemCatChem, Inorg. Chem., J. Mater. Chem. C, etc...)  
4 Patents  
10 Book chapters.

## PLENARY LECTURE 1

## From Reduction to Alkylation: A Journey with Iron Complexes

Renaud Jean-Luc\*

Normandie University, Université de Caen Normandie, Laboratoire de Chimie Moléculaire et Thioorganique UMR 6507, 14050 Caen, France.

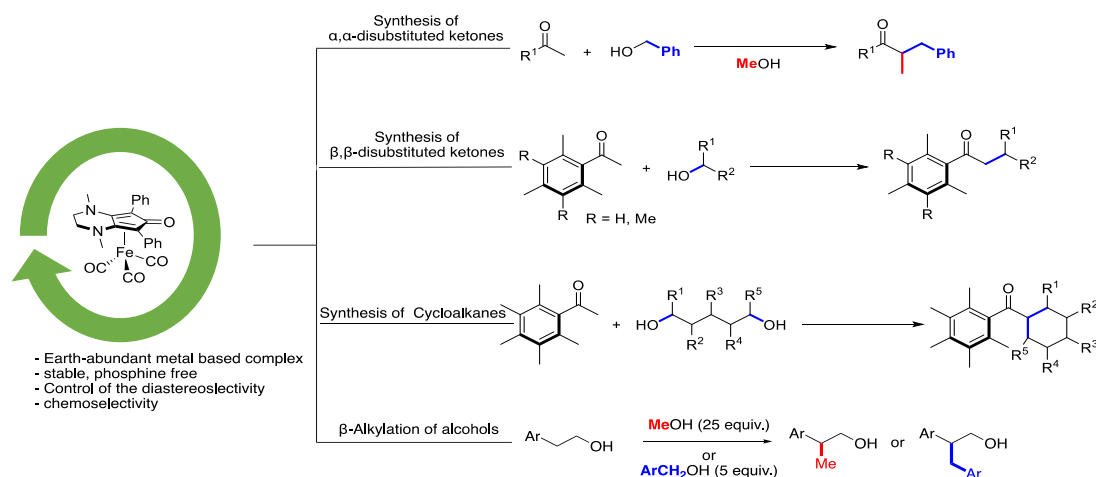
\*Corresponding author: jean-luc.renaud@unicaen.fr

## Abstract

Economic constraints and environmental concerns in chemistry have led to increased demand for the replacement of noble metals used in chemical processes by Earth-abundant ones. Iron-catalyzed reduction has received intensive attention and some iron complexes have shown activities and selectivities that are competitive with those of noble metals.<sup>[1]</sup> However, exchanging noble metals for cheap, abundant, and biocompatible iron complexes to perform reduction is not the sole criterion to render such complexes attractive for industrial applications, the catalytic activities and the price of the ligand must also be taken into account.<sup>[2]</sup> In our ongoing research on iron-catalyzed reduction,<sup>[3]</sup> some new cyclopentadienone iron tricarbonyl complexes have been designed based on a "transition metal frustrated Lewis pair" approach.<sup>[4]</sup> Their application in chemoselective thermal or photoactivated alkylation, as well as a detailed mechanistic study will be presented (Scheme 1).<sup>[5]</sup>

**Keywords:** Iron complex, catalysis, alkylation, alcohols

## Graphical abstract



## References

1. a) D. Wei, C. Darcel, *Chem. Rev.* **2019**, *119*, 2550-2610. b) L. Alig, M. Fritz, S. Schneider, *Chem. Rev.* **2019**, *119*, 2681-2751.
2. P. Dupau, M.-L. Tran Do, S. Gaillard, J.-L. Renaud, *Angew. Chem. Int. Ed.* **2014**, *53*, 13004-13006.
3. A. Pagnoux-Ozherelyeva, N. Pannetier, M. D. Mbaye, S. Gaillard, J.-L. Renaud, *Angew. Chem. Int. Ed.* **2012**, *51*, 4976-4980. b) A. Lator, S. Gaillard, A. Poater, J.-L. Renaud, *Chem. Eur. J.* **2018**, *24*, 5770-5774
4. a) T.-T. Thai, D. S. Mérel, A. Poater, S. Gaillard, J.-L. Renaud, *Chem. Eur. J.* **2015**, *21*, 7066-7070. b) A. Lator, Q. Gaignard Gaillard, D. S. Mérel, J.-F. Lohier, S. Gaillard, A. Poater, J.-L. Renaud, *J. Org. Chem.* **2019**, *84*, 6813-6829.
5. a) M.S. Abdallah, N. Joly, S. Gaillard, A. Poater, J.-L. Renaud, *Org. Lett.* **2022**, *24*, 5584-5589. b) L. Bettoni, S. Gaillard, J.-L. Renaud, *Chem. Commun.* **2020**, *56*, 12909-12912. c) L. Bettoni, S. Gaillard, J.-L. Renaud, *Org. Lett.* **2020**, *22*, 2064-2069. d) L. Bettoni, C. Seck, M. D. Mbaye, S. Gaillard, J.-L. Renaud, *Org. Lett.* **2019**, *21*, 3057-3061. e) A. Lator, S. Gaillard, A. Poater, J.-L. Renaud, *Org. Lett.* **2018**, *20*, 5985-5990.

## PLENARY LECTURE 2



### TATSUO KANEKO

Professor of Sustainable Innovation Research Area,  
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e-mail: [kaneko@jaist.ac.jp](mailto:kaneko@jaist.ac.jp)

### Biography

Tatsuo Kaneko received a B.S. in Tokyo Tech in 1993, and a Ph.D. in Polymer Chemistry from the same university in 1998. One year before received Ph.D., he joined the faculty as an Assis Prof in the Department of Biology at Hokkaido Univ (1998-2001), and moved to Kagoshima Univ (2001-2004) and Osaka Univ (2004-2006). After that, he joined the School of Materials Science at JAIST where he was promoted to Assoc Prof in 2006 and to Full Prof in 2016. He also joined the Bioengineering Department at UCLA as a Visiting Associate Prof in 2012. Current research interests include gels, soft matters, polyelectrolytes, and biodegradable plastics, for which he has received awards from Chemical Society of Japan and from several foundations. International prizes such as “Best presentation” at the 251st ACS National Meeting, “Distinguished Award” at the 12th IUPAC NMS-XII, and “Gottfried Wagener prize” The 9<sup>th</sup> German Innovation Award have also been given.

### Honors and Awards

1. Young scientist award for outstanding lecture at the 81<sup>st</sup> spring meeting of Chemical Society of Japan (2002)
2. Young scientist award, Sekisui Integrated Research (2 times: 2002, 2005)
3. Young scientist award, The Association for the Progress of New Chemistry (2004)
4. Achievement Award for Research and Education, from JAIST President (2008)
5. The Young Scientists' Prize, The Commendation for Science and Technology by MEXT (2010).
6. Distinguished Research Award from JAIST President (2010)
7. Prize by Director of Kyushu Bureau of Economy, Trade and Industry The 4<sup>th</sup> Monodzukuri Nippon Grand Award (2012)
8. Reviewer award for Kakenhi Grant, MEXT (2015)
9. Kakenhi Reviewer award, from JAIST President (2015)
10. Achievement Award for Student Invitation Activity, from JAIST President (2015)
11. Best presentation at the 251st ACS National Meeting (2016)
12. Distinguished Research Award 2016 in IUPAC NMS-XII (2016)
13. “Gottfried Wagener prize” German Innovation Award (2017)
14. Wakayama prefecture culture awards (2018)
15. “APSMR award” at the APSMR 2019 Annual Meeting
16. Culture award for Wakayama city (2021)

## PLENARY LECTURE 2

## Moon-shot Design on BioNylon with Photo-switched Marine-Degradability

Tatsuo Kaneko\*, Md. Asif Ali, Hongrong Yin, Maninder Singh,

Kenji Takada, Maiko K. Okajima

Graduate School of Advanced Science and Technology, Japan Advanced Science and Technology,

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## Abstract

Plastic waste issues on our planet have been getting worse in marine environment year by year. Ocean-cleaning by innovative strategy are going but additional wastes are more accumulating. The total amount of wastes is increasing to cause tragedy of accidental digestion and ghost fishing of sea animals. In order to stop such a serious destruction of planetary ecology, degradable plastics have been strongly required. Conventional biodegradable polymers have been developed but the switch of degradation is indispensable for actual application in sustainable society. Biomonomers having multifunctional structure such as caffeic acids (CA) and itaconic acid (IA) have been here used. CA and their derivatives were successfully polymerized to develop degradable aromatic polyesters having photo-controlled hydrolysis of ester linkage by photo-cleaved conjugation.<sup>1</sup> The research was extended to the more popular plastics of Nylon which was developed by a polymerization of IA having two carboxyls and double bond and IA bio-productibility was very high. IA polymerization, however, was very difficult and the polycondensation of IA to prepare Nylon structure was not reported as scientific paper before 2013,<sup>2</sup> due to side reaction of multiple IA reaction with amines. We have overcome the side reaction problem to prepare IA-derived Nylon via salt-type monomers composed of diacidic IA and dibasic diamines. IA-Nylon have a pyrrolidone ring in the main-chain backbone, to show thermally softening temperature and mechanical strength higher than conventional Nylons'. In addition, the ring-opening reaction was induced by photo-irradiation in sea water and landfill in environmental soil (pH 7-8). The ring-opened structure in Nylon showed biodegradation confirmed by Biochemical Oxygen Demand test in mixture of sea water and sediment although original Nylon having pyrrolidone structure never did (Dr. S. Wakai, JAMSTEC). In addition, these Nylon showed a hydrophilization during degradation to be gel-like matters in microplastic size and a pepsin degradation in artificial stomach liquid.<sup>3</sup> ISO standard tests of water-solubilized oligomers revealed non acute toxicity for marine microorganism (Prof. H. Okamura, Kobe U). Such a clear photo-switch for biodegradation in IA-Nylon can be applied next generation biodegradable plastics possibly to overcome abovementioned waste issues. We really hope this moon-shot (disruptive innovation) technology to lead saving sea animals encountering extinction. The researches were financially supported by Moon-shot project (JPNP18016) and ERCA (1-2005).

**Keywords:** biodegradable plastics, photo-reaction, polypyrrolidone, nylon, itaconic acid

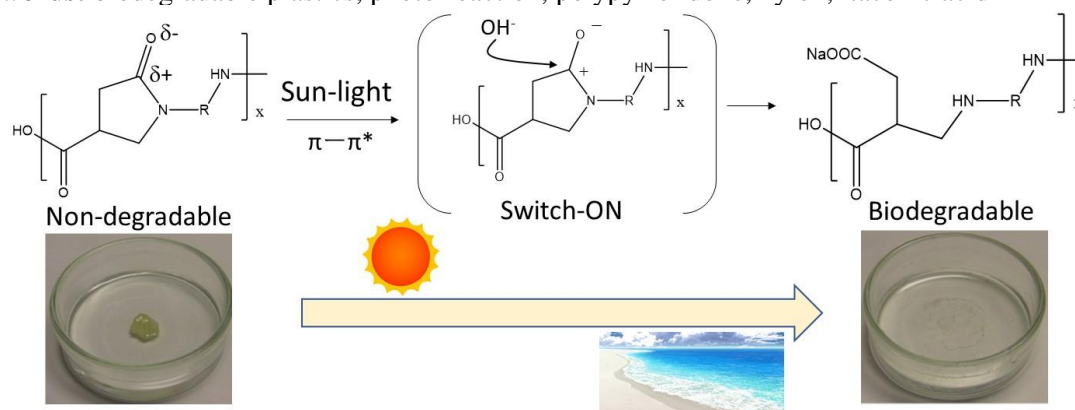


Fig. Photo-switched biodegradation of itaconic-acid derived nylons in marine-environment

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## PLENARY LECTURE 3



### TEPPEI YAMADA

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### Diplomas

March 2001: B.S. The University of Tokyo

March 2003: M.S. The University of Tokyo

February 2010: Ph.D. Kyushu University

### Research Activities

2003-2004: Mitsubishi Chemical Co. Ltd.

2005-2006: Research Associate, Department of Chemistry, Kyushu University

2006-2010: Assistant Professor, Kyushu University

2010-2012: Assistant Professor, Division of Chemistry, Kyoto University

2012-2020: Associate Professor, Division of Chemistry and Biochemistry, Kyushu University

2020-: Professor, Division of Chemistry, The University of Tokyo

### Awards:

2008 1st International Conference on Metal-Organic Frameworks and Open Framework Compounds (MOF08), Poster Award

2012 1st JACI Research Encouragement Award for New Chemical Technology

2012 JSCC Research Encouragement Award

2013 The Chemical Society of Japan Award for Young Chemists for 2013

2014 The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, The Young Scientists' Prize

2017 3rd JACI Research Encouragement Award for Step-up Scientist

2021 JSPS Prize

## PLENARY LECTURE 3

## Temperature-Response Chemistry of Thermo-Electrochemical Cell toward Waste Heat Harvesting

Teppei Yamada\*, Hongyao Zhou

Department of Chemistry, Faculty of Science, The University of Tokyo

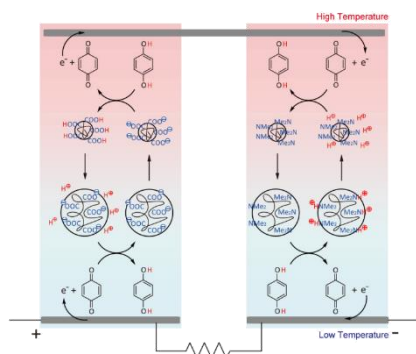
\*teppei@chem.s.u-tokyo.ac.jp

**Abstract**

Most of the primary energy is discarded as waste heat and its recovery becomes an issue. Thermo-electrochemical cells (TECs), or thermocells are an emerging class of thermoelectric devices. A redox equilibrium exists between iodide ( $I^-$ ) and triiodide ( $I_3^-$ ) ions, and this equilibrium is shifted to the entropically- and entropically-favorable reduction and oxidation sides on the high- and low-temperature side, respectively. By using such a system, TECs can generate electric power by temperature difference. TECs attract much interest due to the high voltage per unit temperature difference (Seebeck coefficient). We have introduced various temperature-dependent phenomena to the TECs and improved their Seebeck coefficient.<sup>[1-7]</sup> First,  $\alpha$ -cyclodextrin ( $\alpha$ -CD) was introduced into the TECs<sup>[1,2]</sup>. On the lower-temperature side,  $\alpha$ -CD encapsulates  $I_3^-$  and inhibits the reduction reaction. On the hot side,  $I_3^-$  is released from  $\alpha$ -CD as the temperature increases, and the reduction reaction is not inhibited on the hot side. As a result, the reaction in the TEC is promoted. Similarly, the combination of ferrocenecarboxylic acid with  $\beta$ -CD<sup>[3]</sup> and iodine with PVP or starch<sup>[4]</sup> enhanced the Seebeck coefficient. DTAB micelles can selectively interact with  $[Fe(CN)_6]^{3-}$ , resulting in changing the sign of the Seebeck coefficient of a TEC consisting of  $[Fe(CN)_6]^{3-/4-}$ .<sup>[5]</sup> Various phenomena that change their redox activity in response to temperature can be applied to TECs to increase the voltage and improve thermoelectric conversion efficiency. Ruthenium tris(biimidazole) complexes exhibit the proton-coupled electron transfer (PCET) reaction, in which a proton is released through the redox reaction, and the solvation entropy of the released proton can be used for thermoelectric conversion<sup>[6]</sup>. Copolymers of PNIPAM and acrylic acid can change the pH of the solution by LCST transition, and a high Seebeck coefficient was realized by combining this polymer with a PCET reagent that changes their potential with pH<sup>[7]</sup>.

**Keywords:** Insert maximum of 5 keywords

Thermo-electrochemical cell, thermoelectric, host-guest chemistry, PNIPAM, PCET

**Graphical abstract****References**

1. H. Zhou, T. Yamada, N. Kimizuka, *Bull. Chem. Soc. Jpn.* 2021, 94, 1525-1546
2. H. Zhou, T. Yamada, N. Kimizuka, *J. Am. Chem. Soc.* 2016, 138, 10502-10507
3. T. Yamada, X. Zou, Y. Liang, N. Kimizuka, *Polym. J.* 2018, 50, 761-769
4. H. Zhou, T. Yamada, N. Kimizuka, *Sustain. Energy Fuels* 2018, 2, 472-478
5. R. Iwami, T. Yamada, N. Kimizuka, *Chem. Lett.* 2020, 49, 1197-1200
6. T. Kobayashi, T. Yamada, N. Kimizuka, *Chem. Eur. J.* 2020, 27, 4287-4290
7. B. Guo, Y. Hoshino, F. Gao, K. Hayashi, Y. Miura, N. Kimizuka, T. Yamada, *J. Am. Chem. Soc.* 2020, 142, 17318-17322

## PLENARY LECTURE 4



### KAZUTAKA SHIBATOMI

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### Education

- Ph. D in Graduate School of Pharmaceutical Sciences, Nagoya City University, Japan, 2001  
Supervisor: Prof. Yasuhiro Uozumi
- Master's Degree in Graduate School of Pharmaceutical Sciences, Nagoya City University, 1998
- Bachelor's Degree in Faculty of Pharmaceutical Sciences, Nagoya City University, 1996

### Professional Experience

- 2021–present: Professor, Toyohashi University of Technology, Japan
- 2013–2021: Associate Professor, Toyohashi University of Technology, Japan
- 2004–2013: Assistant Professor, Toyohashi University of Technology
- 2002–2003: Research Associate, University of Chicago, USA (Prof. Hisashi Yamamoto)
- 2001–2002: Postdoctoral Fellow, Institute for Molecular Science (Prof. Yasuhiro Uozumi)

### Research Fields

- Synthetic Organic Chemistry
- Asymmetric Synthesis
- Halogen Chemistry

### Awards

- Nagase Foundation Award (2022)
- The NAGAI Foundation for Science & Technology Academic Award (2020)
- Daiichi-Sankyo Award in Synthetic Organic Chemistry (2014)
- Incentive Award in Synthetic Organic Chemistry (2012)
- Central Glass Award in Synthetic Organic Chemistry (2011)
- Thieme Chemistry Journal Award (2009)

### Selected Publications

- “Enantioselective decarboxylative protonation and deuteration of  $\beta$ -ketocarboxylic acids”  
*Chemical Communications*, **2021**, 57, 6676–6679.
- “Enantioselective decarboxylative chlorination of  $\beta$ -ketocarboxylic acids”  
*Nature Communications*, **2017**, 8, 15600.
- “Enantioselective fluorination of  $\alpha$ -branched aldehydes and subsequent conversion to  $\alpha$ -hydroxyacetals via stereospecific C–F bond cleavage”  
*Chemical Science*, **2016**, 7, 1388–1392.
- “Highly enantioselective chlorination of  $\beta$ -ketoesters and subsequent  $S_N2$  displacement of tertiary chlorides: a flexible method for the construction of quaternary stereogenic centers”  
*Journal of the American Chemical Society*, **2012**, 134, 9836–9839.

## PLENARY LECTURE 4

Enantioselective Decarboxylative Chlorination of  $\beta$ -Oxocarboxylic Acids and Stereospecific Derivatization of the Resulting  $\alpha$ -Chloroketones

Kazutaka Shibatomi\*

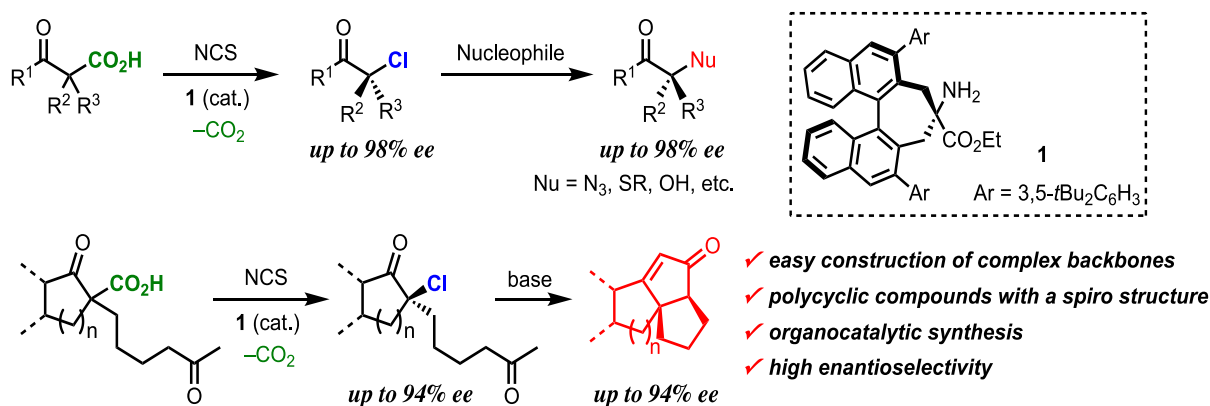
*Electronics-Inspired Interdisciplinary Research Institute, Toyohashi University of Technology, Japan.**\*Corresponding author: shiba@chem.tut.ac.jp***Abstract**

Decarboxylative functionalization of aliphatic carboxylic acids is a useful synthetic method because carboxylic acid is a fundamental and easily available functional group.  $\beta$ -Oxocarboxylic acids are known to easily undergo decarboxylation. The application of this property to decarboxylative functionalizations has been intensively studied in recent years. However, scope of the application is still limited. Decarboxylative functionalization of tertiary  $\beta$ -oxocarboxylic acids has rarely been achieved. Also, application of the method to enantioselective synthesis is limited to aldol-type reactions.<sup>1,2</sup>

In the context of above-mentioned background, we recently achieved enantioselective decarboxylative chlorination of  $\beta$ -oxocarboxylic acids at the first time with a chiral primary amine catalyst which we previously developed.<sup>3–5</sup> The reaction could be applied to tertiary carboxylic acids. Furthermore,  $S_N2$  reaction of the resulting  $\alpha$ -chloroketones yielded various  $\alpha$ -heteroatom-substituted ketones without loss of enantiopurity.<sup>3,4,6</sup>

Next, we applied the method to cyclic  $\beta$ -oxocarboxylic acids with a nucleophilic functional group at the terminal of a side chain. The reaction yielded the corresponding  $\alpha$ -chloroketones with high enantioselectivity which were converted into chiral spiro compounds by intramolecular  $S_N2$  reaction.<sup>7</sup> Interestingly, chiral polycyclic compounds with a spiro structure were obtained with high enantiopurity when  $\alpha$ -chloroketones with an acetyl group were treated under basic conditions. The resulting compounds would be useful for the preparation of biologically-relevant molecules.

**Keywords:** decarboxylation, organocatalysis, asymmetric catalysis, halogenation, spiro compounds

**Graphical abstract****References**

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3. Shibatomi, K.; Kitahara, K.; Sasaki, N.; Fujisawa, I.; Iwasa, S. *Nat. Commun.* 2017, 8, 15600.
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6. Kam, M. K.; Sugiyama, A.; Kawanishi, R.; Shibatomi, K. *Molecules* 2020, 25, 3902.
7. *Manuscript in preparation.*

**PLENARY LECTURE 5**



**TOSHIAKI MURAI**

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Present address: Department of Chemistry and Biomolecular  
Science, Faculty of Engineering  
Gifu University, Yanagido, Gifu 501-1193, Japan

E-mail: mtoshi@gifu-u.ac.jp

**Education:**

1976-1980 Department of Petroleum Chemistry, Faculty of Engineering,  
Osaka University Awarded the degree of B.Sc. in Chemistry  
1980-1982 Department of Petroleum Chemistry, Faculty of Engineering,  
Osaka University, Awarded the degree of M.Sc in Chemistry  
1986 Awarded the degree of Ph.D. in Chemistry. Work supervised by  
Professor Noboru Sonoda and Shinji Murai

**Research and professional experience:**

1983-1990 Research Associate at the Department of Chemistry, Gifu University  
1986-1988 The postdoctoral fellow at Professor Jonathan L. Sessler group at the  
Department of Chemistry, University of Texas, Austin  
1990-2001 Associate Professor at the Department of Chemistry, Gifu University  
2001- Professor at the Department of Chemistry, Gifu University  
2014- Section editor of the Chemistry Letters  
2016- Vice dean of Faculty of Engineering, Gifu University  
2018- Dean of Faculty of Engineering, Gifu University

**Awards:**

Progress Award in Society of the Synthetic Organic Chemistry,  
Japan (1997, 2)  
Gifu Shimbun Grand Prize (2017, 2)  
Award in Society of the Synthetic Organic Chemistry, Japan (2022, 2)

**Research Interest**

Synthetic Organic Chemistry, Main Group Chemistry

## PLENARY LECTURE 5

## Axis-to-center Chirality Transfer Reaction of Organophosphorus Compounds with a Binaphthyl Group as a Key Process Leading to the Formation of *P*-Chirogenic Derivatives

Toshiaki Murai\*, Kazuma Kuwabara, Shunya Ono, Akari Kawajiri,  
Chikako Endo, Yurika Inoue, Nao Sakamoto

Department of Chemistry and Biomolecular Science, Faculty of Engineering, Gifu University, Japan

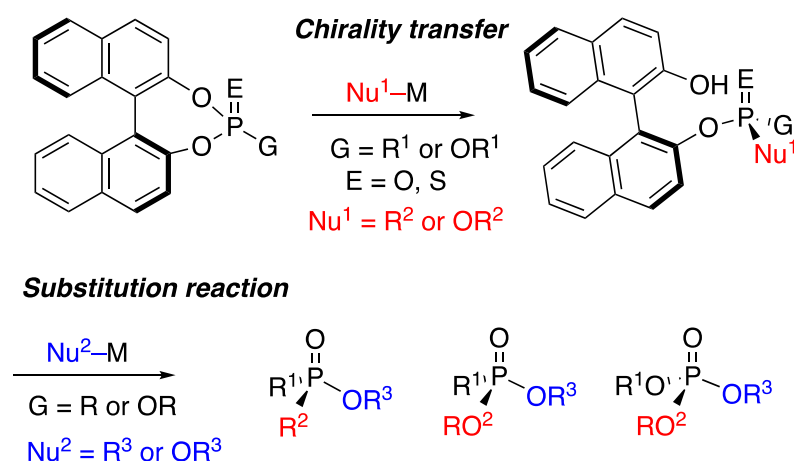
\*Corresponding author: mtoshi@gifu-u.ac.jp

### Abstract

Four-coordinate pentavalent *P*-chirogenic organophosphorus compounds are of important classes of compounds because of their wide applicability as drug candidates, optically active ligands, and organocatalysts. A range of their synthetic methods involving the use of chiral auxiliaries, asymmetric desymmetrization of prochiral organophosphorus compounds, and catalytic kinetic resolutions of racemic precursors have been developed. Recent studies have mainly focused on the synthetic methods for *P*-chirogenic organophosphorus compounds with at least one heteroatom-containing substituents on the phosphorus atom. In this context, we found the substitution reaction of phosphonates with a binaphthyl group proceeded with the transfer of the axial chirality of the binaphthyl group to the central chirality of the phosphorus atom in the products.<sup>1</sup> One of the P-O bonds in the starting phosphonates was selectively cleaved during the reaction, and binaphthyl group remained in the products. Further substitution reaction of the resulting organophosphorus compounds with a binaphthyl group with carbon and oxygen nucleophiles also proceeded at the phosphorus atom with high stereoselectivity with the elimination of the binaphthyloxy group to lead to the formation of *P*-chirogenic phosphine oxides, phosphinates,<sup>2</sup> phosphonates, and phosphates. Some of their sulfur isologues participated in a similar transformation.<sup>3</sup> In this lecture, the scope and limitation of the chirality transfer reaction and substitution reaction at the phosphorus atom will be presented.

**Keywords:** axis-to-center chirality transfer, binaphthyl group, *P*-chirogenic, organophosphorus compounds

### Graphical abstract (Optional)



### References

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2. Kawajiri, A.; Udagawa, T.; Minoura, M.; Murai, T. *ChemistryOpen* **2022** e202100294.
3. Kuwabara, K.; Maekawa, Y.; Minoura, M.; Maruyama, T.; Murai, T. *J. Org. Chem.* **2020**, 86, 14446-14455.

## PLENARY LECTURE 6



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Tokyo University of Science

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Education

1996: B. S. Keio University, Japan

2001: Ph. D. Keio University, Japan

### Professional Career

1998-2000: Assistant Professor, Department of Chemistry, Keio University, Japan

2000-2008: Assistant Professor, Institute for Molecular Science, Okazaki, Japan

2008-2013: Junior Associate Professor, Tokyo University of Science, Japan

2013-2017: Associate Professor, Tokyo University of Science, Japan

2017- : Professor, Tokyo University of Science, Japan

### Prize

2007 PCCP Prize for Outstanding Achievement of Young Chemists in Physical Chemistry and Chemical Physics (Royal Society of Chemistry)

2008 The Chemical Society of Japan Award for Young Chemists (Japan Chemical Society)

2012 Japan Society for Molecular Science Award for Young Scientists (Japan Society for Molecular Science)

2017 Yagami Prize (Keio University)

2018 Distinguished Award 2018 for Novel Materials and Their Synthesis (IUPAC etc.)

2020 International Investigator Awards of the Japan Society for Molecular Science (Japan Society for Molecular Science)

### Selected recent publications

- “Creation of High-Performance Heterogeneous Photocatalysts by Controlling Ligand Desorption and Particle Size of Gold Nanocluster”, T. Kawawaki, Y. Kataoka, M. Hirata, Y. Akinaga, Y. Negishi\*, et al., *Angew. Chem. Int. Ed.* 60, 21340–21350, 2021.
- “Thiolate-Protected Metal Nanoclusters: Recent Development in Synthesis, Understanding of Reaction, and Application in Energy and Environmental Field”, T. Kawawaki, A. Ebina, Y. Hosokawa, S. Ozaki, D. Suzuki, S. Hossain, Y. Negishi\*, *Small* (a review article), 17, 202005328, 2021.
- “Toward the Creation of High-performance Heterogeneous Catalysts by Controlled Ligand Desorption from Atomically Precise Metal Nanoclusters”, T. Kawawaki, Y. Kataoka, M. Hirata, Y. Iwamatsu, S. Hossain, Y. Negishi\*, *Nanoscale Horiz.* (a review article), 6, 409, 2021.
- “Controlled Colloidal Metal Nanoparticles and Nanoclusters: Recent Applications as Cocatalysts for Improving Photocatalytic Water-splitting Activity”, T. Kawawaki, Y. Mori, K. Wakamatsu, S. Ozaki, M. Kawachi, S. Hossain, Y. Negishi\*, *J. Mater. Chem. A* (a review article), 8, 16081, 2020.
- “Activation of Water-Splitting Photocatalysts by Loading with Ultrafine Rh-Cr Mixed-Oxide Cocatalyst Nanoparticles”, W. Kurashige, Y. Mori, S. Ozaki, M. Kawachi, S. Hossain, T. Kawawaki, C. J. Shearer, A. Iwase, G. F. Metha, S. Yamazoe, A. Kudo, Y. Negishi\*, *Angew. Chem., Int. Ed.* 59, 7076, 2020.

## PLENARY LECTURE 6

## Ligand-Protected Metal Nanoclusters: Recent Development in Synthesis and Application in Energy and Environmental Field

Yuichi Negishi

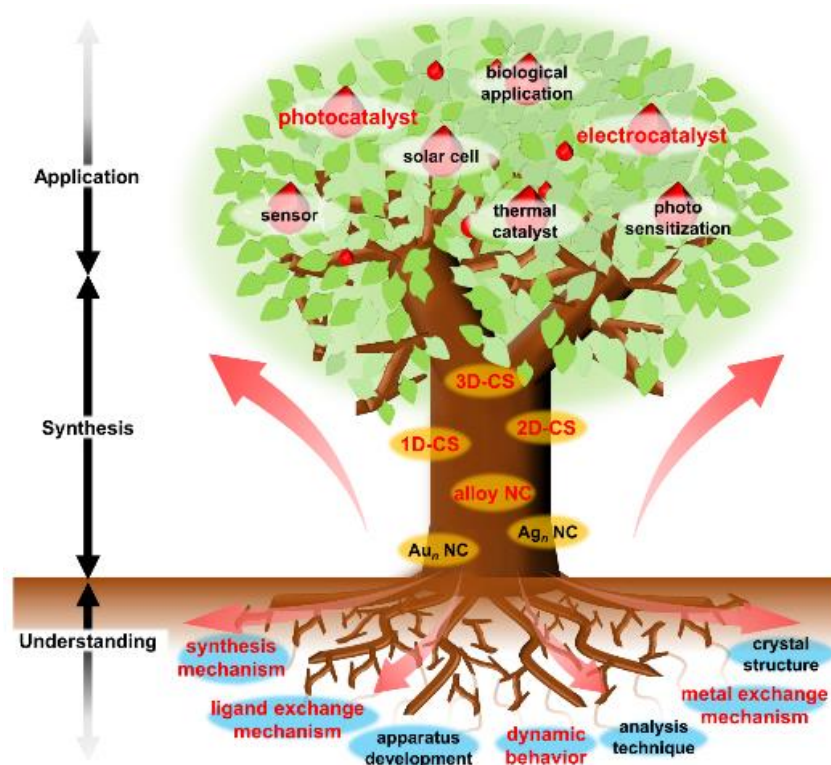
Tokyo University of Science, Japan

E-mail: negishi@rs.tus.ac.jp

**Abstract**

Nanoscale materials have the following interesting and important features: (1) they possess great potential and value that cannot be found in bulk materials and (2) the nanoscale is the level of emergence of material functions, and thus if materials can be controlled at the nanoscale, we can control the properties of the larger materials. Metal nanoclusters (NCs), which are composed of about 250 or fewer metal atoms, are among the leading targets in research of nanoscale materials. Fundamental research on metal NCs gradually started in the 1960s, and since 2000, thiolate (SR)-protected metal NCs have been the main metal NCs actively studied. The precise and systematic isolation of SR-protected metal NCs has been achieved in 2005. Since then, research on SR-protected metal NCs for both basic science and practical application has rapidly expanded. This presentation demonstrates our recent study on alloy NCs, connected structures composed of NCs, the applications of NCs in the energy and environmental field. This presentation provides insight on the current state of research on SR-protected metal NCs and discusses the challenges to be overcome for further development in this field as well as the possibilities that these materials can contribute to solving the problems facing modern society<sup>1</sup>.

**Keywords:** metal nanoclusters, alloy nanoclusters, photocatalyst, electrocatalyst, fuel cell

**References**

1. Kawawaki, T.; Ebina, A.; Hosokawa, S.; Ozaki, S.; Suzuki, D.; Hossain, S.; Negishi, Y. *Small* 2021, 17, 2005328.



## PLENARY LECTURE 7



### HISASHI YAMAMOTO

Chubu University, Peptide Research Center, Professor

山本 尚 中部大学ペプチド研究センター長 教授

#### Personal Data

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#### Education

B. S. Kyoto University, 1967 (Prof. H. Nozaki, Thesis Director)

Ph. D. Harvard University, 1971 (Prof. E. J. Corey, Thesis Director)

#### Professional:

1971-1972 Researcher, Toray Industries, Inc. (Prof. J. Tsuji, Adviser)

1972-1976 Instructor, Kyoto University (Prof. H. Nozaki, Adviser)

1976-1977 Lecturer, Kyoto University

1977-1980 Associate Professor, University of Hawaii

1980-1983 Associate Professor, Nagoya University

1983-2002 Professor, Nagoya University

2003- Professor Emeritus, Nagoya University (2019, University Professor)

2002-2012 Professor, The University of Chicago

2012- Professor Emeritus, The University of Chicago

2012- Professor and Director of Molecular Catalyst Research Center, Chubu University

2012-2020 Research Supervisor, JST Crest Project of Molecular Technology

2016-2018 President of Chemical Society of Japan

#### Publication

>570 original papers and >145 reviews

h-index: 101 (Web of Science, only for journal and accounts), 121 (Google for journal, book and review), citation: >66000 (Google); >33000 (web of science)

#### Recent award

ACS Roger Adams Prize, 2017; Orders of the Sacred Treasure, 2018; The Person of Cultural Merit, 2018; University Professor, Nagoya University, 2019

**PLENARY LECTURE 7**

**Game-Changing Innovation in Peptide Synthesis**

Hisashi Yamamoto\*, Tomohiro Hattori

*Chubu University*

*Peptide Research Center*

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*Yamamoto.hisashi@gmail.com*

**Abstract**

We have discovered new peptide synthesis based on our Lewis acid chemistry, solving long-standing problems such as racemization, protection/deprotection, and exceedingly high cost, low purity of the product, purifications of the final product due to the linear synthesis. The basic principle of our convergent synthesis will be reported.

**Keywords:**

Peptide synthesis,

Convergent synthesis

Supersilyl

Aluminium and Silicon

**References**

Synthesis of Silacyclic Dipeptides; Peptide Elongation at both *N*- and *C*-Termini of Dipeptide, Hattori, T.; Yamamoto, H. *J. Am. Chem. Soc.*, **144** in press (2022)

## PLENARY LECTURE 8



### JEAN-MARC SAITER

Born: 15 October 1954, France

2017– 2022	Professor Emeritus Lab SMS University of Rouen Director of the Scientific Pédagogie for Onyx Groupe Nutriset, Malaunay, France President of POLY-Char World Forum
2011– 2017	Professor Exceptionnal Class
2009 – 2016	Director of the Institut of Material sciences FED 4114.
2009 – 2012	Director and cofounder of the master mundus EMME, France-USA
2009 – 2017	Vice-Président of Polychar World Forum (52 countries),
2004 – 2014	Director et Cofondateur of AMME-LECAP International lab (France-USA)
2005 – 2010	Professor first Classe
1999	Professor
1993	Assistant Professor First Class
1990	Assistant Professor Titulaire
1988–1990	Assistant
1986–1988	Ingénieur Contractuel UR

More than 200 publications and conferences, more than 30 PhD students, h index greater than 25, Specialist: physicist, disorder, molecular dynamic at the glass transition, glassy state, chalcogenide, polymers and biopolymers, ageing

Referee for many journals (JNCS, polymer etc.)

International expert for Canadian, South-Africa, Indian, Spanish scientific programs and PhD defences.

Editor Journal of material education, Journal of polymer sciences, macromolecular symposia etc.)

Received Paul J. Flory Polymer research prize in 2007 from the World Forum on Advanced Materials.

## **PLENARY LECTURE 8** **Glass Transition in Polymers**

Jean Marc Saiter

*Nutriset développement Groupe Nutriset, Hameau du Bois Ricard, 76770 Malaunay, France*

*Et*

*SMS Sciences et Méthodes Séparatives, Université de Normandie, 76821 Mont Saint Aignan Cedex, France*

Glass transition is defined as the moment when during the cooling of a liquid its viscosity will be frozen in. For temperature below the glass transition, the material exhibits quasi all the behaviours expected for a solid in term of mechanical point view, but all its properties will change with time. Time dependence properties for macromolecular structures means that something must move at the scale of the molecules. That opens the door to many questions, why something can move? How that moves? Is it a reversible phenomenon? how is possible to estimate the ability to move? In term of molecular structure that means that some structural disorder exists, is it possible to find a relationship between a level of disorder and a kinetic of a time dependent property? All these questions will be analysed in this work.

## Base-Promoted Dehydrogenative Coupling of Formate Anions to Oxalates: Effect of Alkali Metal Cations

**Atsushi Tahara<sup>a,\*</sup>, Aska Mori<sup>b</sup>, Jun-ichiro Hayashi<sup>b</sup>, Shinji Kudo<sup>b</sup>,**

<sup>a</sup>Frontier Research Institute for Interdisciplinary Sciences (FRIS), Tohoku University, Japan

<sup>b</sup>Institute for Materials Chemistry and Engineering (IMCE), Kyushu University, Japan

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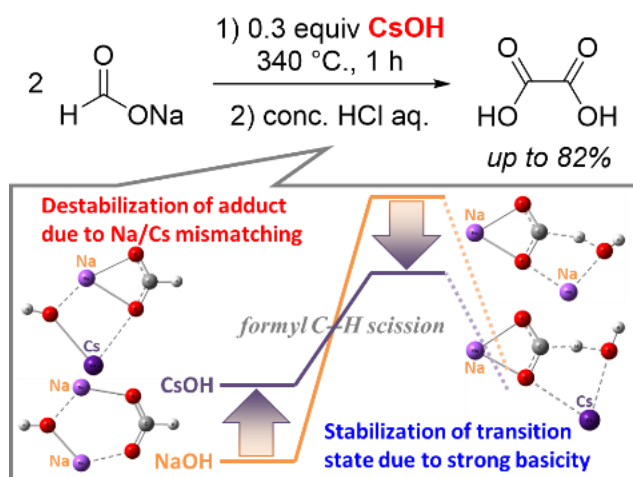


### Abstract

In iron and steel industries, high CO<sub>2</sub> emission is one of the most pressing problems against sustainability. Our team has proposed a novel ironmaking process with oxalic acid as the reductant.<sup>1</sup> The reaction of iron oxide with oxalic acid resulted in the formation of iron (III) oxalate, which was photochemically and thermally reduced to iron (0) powder concomitantly with the degradation of oxalate dianion to CO<sub>2</sub>. When oxalic acid is regenerated from CO<sub>2</sub>,<sup>2</sup> a sustainable carbon-neutral ironmaking system could be realized. Lakkaraju et al. reported the dehydrogenative coupling of sodium formate to obtain the oxalate salt in the presence of a catalytic amount of sodium hydride (NaH).<sup>3</sup> In the same paper, the difference of NaOH and KOH were also discussed. We herein report the influence of group 1 and 2 metal cations on the base-catalyzed dehydrogenative coupling of formate to form oxalate.<sup>4</sup>

Experimentally, it was revealed that metal hydroxides were effective bases for the coupling reaction, compared to carbonate salts, and CsOH showed the best activity. Theoretically, DFT calculations suggest that heavier metal hydroxides such as CsOH caused not only stabilization of the transition state (due to stronger basicity) but also destabilization of the initial structure (due to different cations) in the rate-determining step (*i.e.* the deprotonation of formyl H atom for the formation of carbonite species), leading to the decrease of activation energy barriers.

**Keywords:** carbon dioxide, DFT calculation, groups 1-2 metal cation, metal formate, oxalic acid



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## Design of metal-containing host molecules with capping functions

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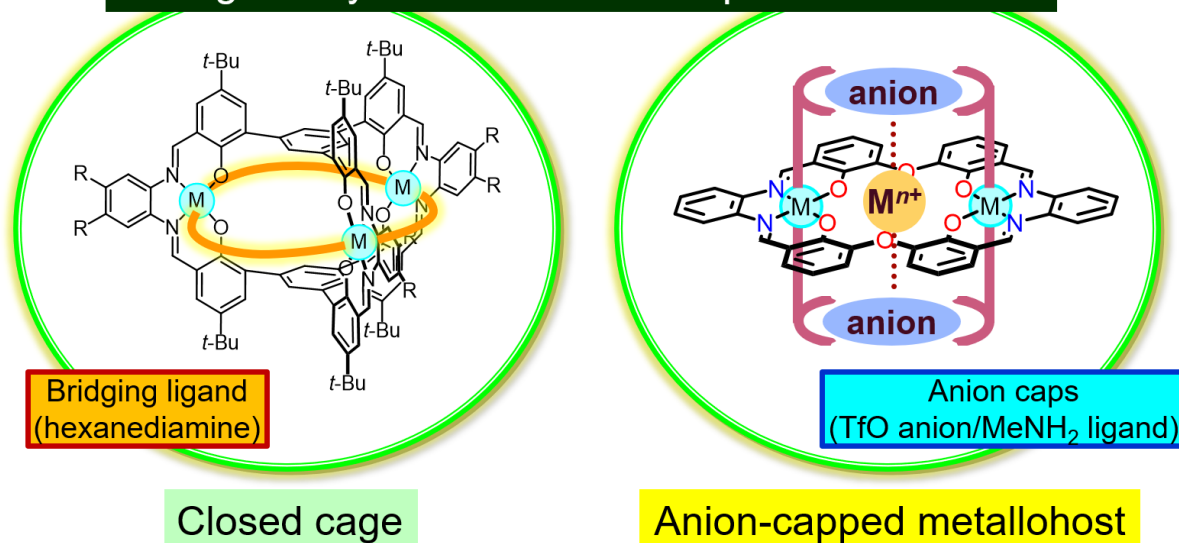
### Abstract

Macrocyclic compounds and molecular cages are known to act as a good host molecule. Usual host molecules easily and quickly take up a guest species in the cavity, but some molecular cages can permanently confine the guest species in the cavity. This confinement effect depends on the guest size compared with the cage structures, because only the guest species that are smaller than the cage portal can enter and exit the cavity. If we introduce a cap function into the host compounds, we can switch the guest confinement effect; the guest is confined in the cavity when the cap is closed, while the guest freely enters and exits when the cap is open. In order to achieve this open/close function, we designed two new molecular scaffolds based on oligo(salen)–metal structures.<sup>[1]</sup> In this lecture, guest recognition control behavior of the macrocyclic<sup>[2]</sup> and cage-like oligo(salen) structures by taking advantage of the capping function will be presented.

**Keywords:** Macrocycle, Molecular cage, Ion recognition, Cobalt complex, Molecular container

### Graphical abstract

#### Host-guest systems that enable open/close feature



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## Organometallic molecular devices

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## Abstract

Molecular devices have attracted increasing attention as an effective technique for miniaturization of electronic circuits. We have been studying development of *organometallic* molecular electronic devices, which are expected to show excellent performance by virtue of the contribution of the *d* electrons of higher energies included in the organometallic moieties. We have aimed at development of efficient molecular wires based on the *metallapolyyne* motifs ( $M + (C\equiv C)_n$ ), which are able to undergo long-range conduction, and the performance has been evaluated by single molecule conductance determined by the STM-BJ measurement.

Herein discussion will be focused on the following points with the goal of synthesis of long and highly conductive molecular wires.

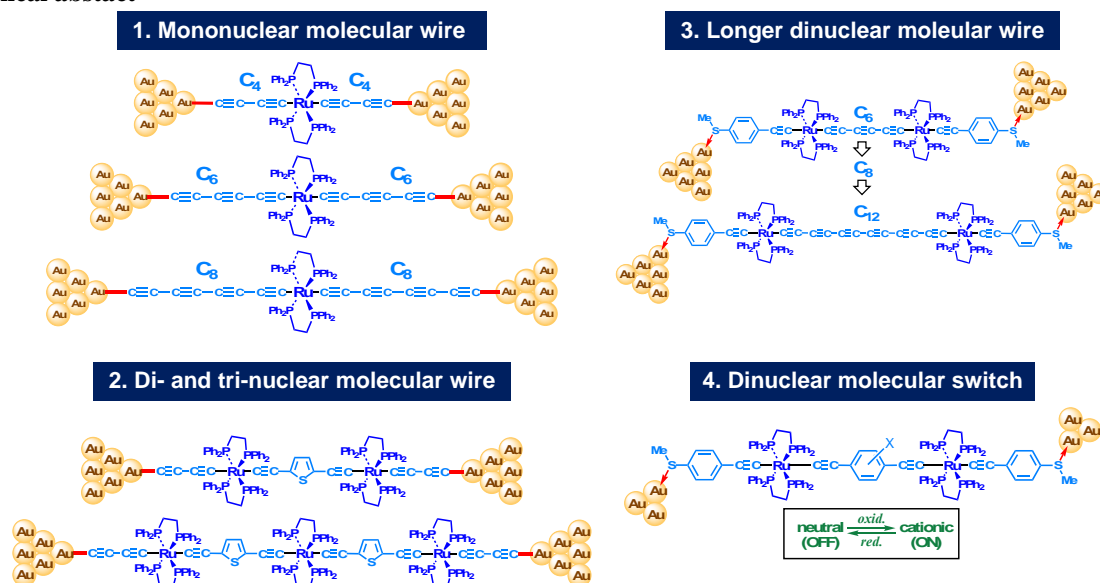
1. Mononuclear molecular wire ( $\leq 2.2$  nm)<sup>1</sup>
2. Di- and tri-nuclear molecular wire ( $\leq 3.5$  nm)<sup>2</sup>
3. Longer dinuclear molecular wire ( $\leq 3.7$  nm)<sup>3</sup>

As a result, we have achieved organometallic molecular wires with the conductance of  $10^{-3} G_0$  level as well as the molecular dimension close to 4 nm.

Molecular switch characterized by nanogap technique will be also discussed.<sup>4</sup>

**Keywords:** organometallic molecular device, molecular wire, molecular switch, single molecule conductance, STM-BJ(break junction) measurement

## Graphical abstract



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## Structures and Properties of Stimuli-responsive Molecular Crystalline Materials Composed of Unique Shaped Molecules

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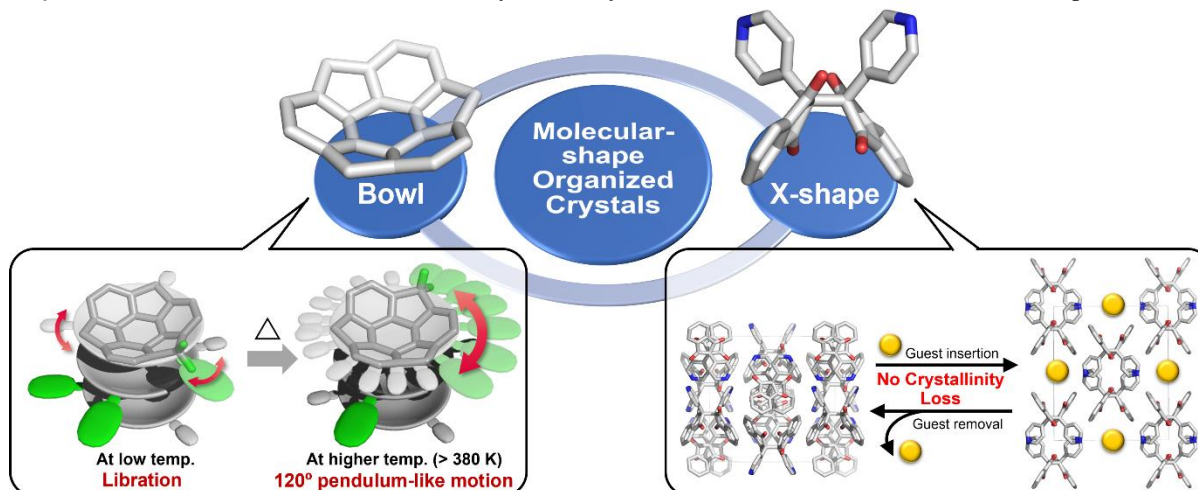


### Abstract

Stimuli-responsive materials which can change their physical and structural properties by light irradiation, addition of heat and/or stress, vapor exposition etc. are not only the attractive research targets but also one of the potential sources of future innovations. Especially, the molecular crystalline materials which maintain high crystallinity before and after the response to the stimulus are important in terms of obtaining the structure-property relationship because still the many key aspects for their selective preparation are remained unclear. Indeed, the proper choice of the main building block, whether itself possesses the stimuli responsibility or not, is definitely one of the critical issues, and the precise understanding of the resulting packing structure holds the key to the success for the further application of the system. In this context, we focused on bowl and X-shape molecules which possess clear structural features, showing 1D-column formation and 1D-channel construction, respectively.

Here we show our recent works which focus on the preparation of stimuli-responsive molecular crystalline materials using bowl shaped sumanene derivative<sup>1,2</sup> and X-shaped indanedione dimers<sup>3,4</sup> as well as their physical properties.

**Keywords:** Sumanene, indanedione dimer, crystal-to-crystal structure transformation, dielectric response



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### **Retaining early career chemists: Crafting career paths in chemistry**

**Prof Datin Dr. Quek Ai-Hwa**  
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Retaining early career chemists is increasingly recognised as career conversations for crafting career paths in chemical careers. Early career chemist refers to the first 10 years of a professional in a career in chemistry (American Psychological, 2022). For this paper, the early career chemists fall within the age range of 25 - 34 years old. In Malaysia, like other countries professionals including early career chemists face challenges in various forms; for instance, the occurrence of Covid-19 pandemic is reported to thwart professionals' career goals and life aims as well causing stress due to unexpected work demands such as digitalising work tasks as required in the lockdown in March 2020 and increasing uncertainties of the domestic as well as global economies (Hays, 2020; Quek, 2021). One other impact of the Covid-19 pandemic is seen in early career professionals' preferences for attractive salary and benefits employees; as shown by 70% of employees (25 - 34 years old); this age group also prefers work-life balance (67%) and Covid-19 safe work environment (65%) as found in the survey of Randstad global survey (2021) including Malaysia. The same survey also reported that 22% of these early career professionals' intended to leave their employers in 2021 as opposed to 8% who left their employers in 2020. The reasons cited for early career professionals wanting to leave their employers are reported as lack of wellness including issues associated with salary, career advancement, work life balance as well as healthcare (Deloitte, 2020). In this context, when early career professionals including chemists leave their employers then a host of negative outcomes can present challenges to those who leave and their former employers as well (Noe, 2017; Quek, 2021). This paper responded by using the work-life balance approach to address issues as well as to recommend some measures to retain early career chemists by crafting career paths in chemistry.

**Keywords:** Retaining early career chemists, crafting career paths

## Proliferating Coacervate Droplet Revealing “Droplet World” in Origins of Life

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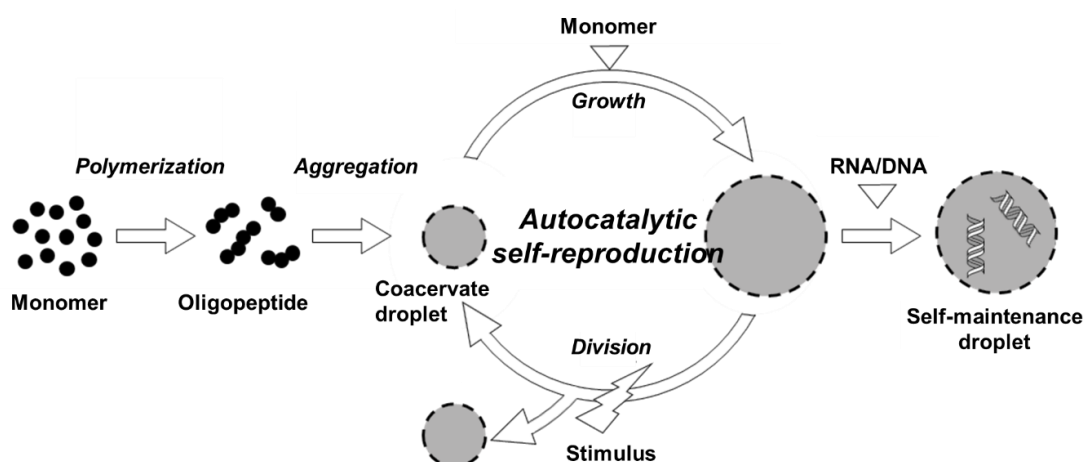
### Abstract

The chemical evolution scenario of a protocell, a proliferating coacervate droplet (CD), emerging from prebiotic molecules via polymerization was first proposed by Oparin and Haldane about a hundred years ago. Although the most essential function of organisms is proliferation, i.e., growth and division through self-reproduction; no proliferating prebiotic CDs have yet been reported. This is because according to previous reports several varying conditions are required for polymer generation and their self-assembly.

In this study, we demonstrated how a proliferating peptide-based droplet could emerge by using synthetic amino acid thioesters as model prebiotic monomers<sup>1</sup>. The precursor was decomposed into two monomers, generating oligopeptides and benzyl mercaptan. Simultaneously, micrometer-sized CD, which was composed of generated oligopeptides and benzyl mercaptan, were formed. Monitoring of experimental reaction curves of peptide production showed a sigmoidal shape, strongly suggesting that a CD is formed via autocatalytic self-reproduction. A repeated supply of a precursor solution and a physical stimulus enabled the CD to maintain its average size till almost the end of every cycle, meaning a CD undergoes a repeat growth–division through self-reproduction, that is proliferation, against continuous perturbations.

Physical autocatalysis, a kind of autocatalytic reaction which depends on the molecular phase behaviour<sup>2</sup>, is a crucial cause of the sigmoidal curve in the reaction because it is hardly possible that autocatalysis occurs with specific molecular recognition in the current primitive system. Polymerization and self-assembly, which are widely observed in nature, are properties of ‘chemistry’. On the other hand, no proliferation is observed even in viruses that are sophisticated supramolecular systems; therefore, proliferation is regarded as a nature of ‘biology’. This study suggests a novel hypothesis—the ‘droplet world hypothesis’—in which a gap between aspect of chemistry and biology regarding origins of life is bridged with a proliferating coacervate droplet.

**Keywords:** proliferating coacervate droplet, droplet world, peptide, origins of life, physical autocatalysis



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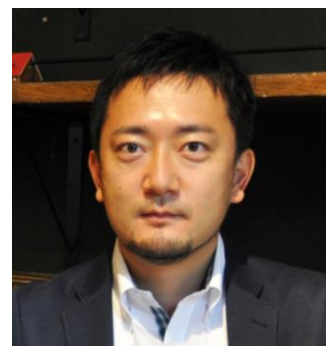
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## $\pi$ -Electronic Molecules with Distorted C-C Covalent Bonds: Reversible Switching of Structure and Physical Properties

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### Abstract

The carbon–carbon covalent bond is one of the most basic concept in organic chemistry. Bond length and bond angle among carbon atoms are nearly constant on the basis of the bond order and hybrid orbitals. On the other hand, highly strained molecules such as sterically congested and/or curved aromatic compounds have attracted much attention with regard to their characteristic features.

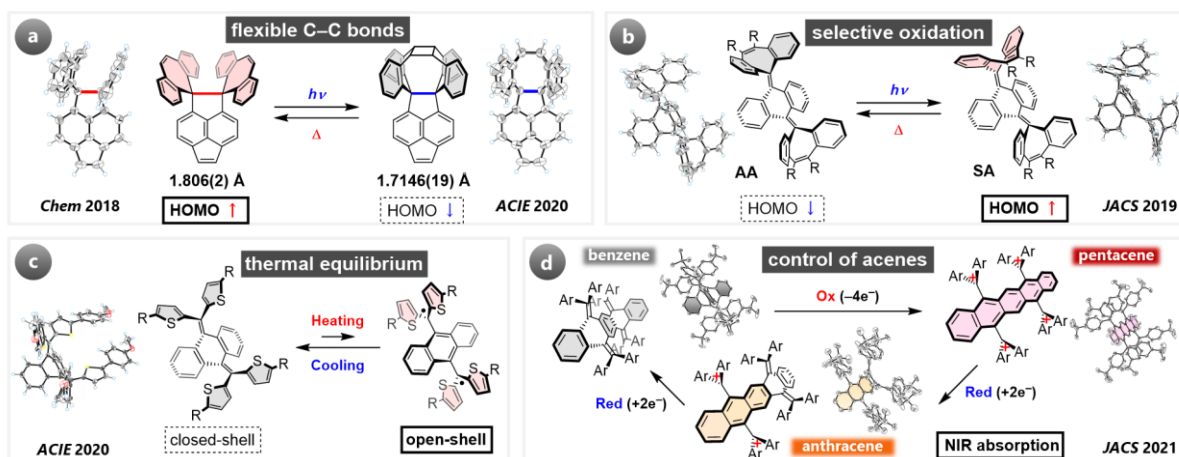
Regarding the C–C single bond, whose standard length is 1.54 Å, several attempts have been made to elongate the C–C single bond to gain new insight into the chemical bond and understand what happens at the limits of a bond. In fact, focusing on redox-active  $\pi$ -electronic compounds with extremely elongated C–C single bonds,<sup>[1]</sup> we discovered unprecedented flexibility of C–C covalent bonds, enabling the switching of HOMO level (Scheme 1a).<sup>[2]</sup>

In terms of C=C double bond, the normal alkene prefers a planar geometry. However, the overcrowded ethylenes (OCEs) with bulky substituents can adopt *syn*-folded, *anti*-folded and/or twisted forms due to the steric hindrance around the central C=C double bond, and thus many OCEs exhibit photo- and thermochromic behavior upon exposure to external stimuli. By combining such OCEs with redox activity, we demonstrated novel functions such as completely selective oxidation,<sup>[3]</sup> thermal equilibrium in closed-shell/open-shell species,<sup>[4]</sup> and reversible control of acene structures triggered by light, heat, and/or electrochemical input (Scheme 1b-d).<sup>[5]</sup>

In this presentation, I will focus on such  $\pi$ -electronic molecules with unique stimuli-responsive behavior, which could be promising candidates for making functional materials.

**Keywords:** long bond, strained bond, isomerization, redox systems, hydrocarbon

### Scheme 1.



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## Quantum Chemical Study on Reactivity and Stereoselectivity in Propargylic Substitution Reactions Using Transition Metal Catalysts

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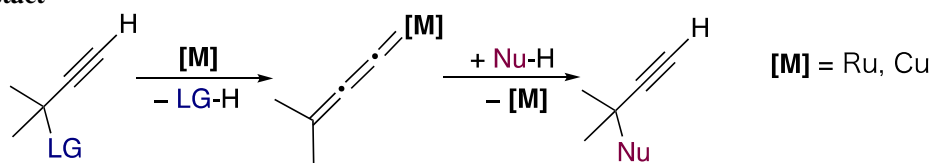
### Abstract

A variety of catalytic allylic substitution reactions of allylic alcohols and their derivatives have been developed since the 1960s, and at present, the allylic substitution reaction is one of the most important tools for both the carbon–carbon and carbon–heteroatom bond formations in organic synthesis. In contrast, less attention has been paid to the corresponding catalytic propargylic substitution reaction until diruthenium-catalyzed propargylic substitution reactions with a variety of nucleophiles were reported by Nishibayashi *et al.*<sup>1</sup> Since their report, transition metal- and organo-catalyzed propargylic substitution reactions have been gradually developed as novel transformation reactions.

We have examined some propargylic substitution reactions catalyzed by diruthenium and copper complexes, where metal-allenylidene complex plays an important role as the key intermediate, by using quantum chemical calculations.<sup>2</sup> In this presentation, recent DFT studies on reactivity and stereoselectivity in propargylic substitution reactions catalyzed by diruthenium and copper complexes are reported. First, examinations of reaction pathways for ruthenium- and copper-catalyzed propargylic substitution reactions of propargylic alcohol derivatives with hydrazones are shown. These two reaction systems show different nucleophilic behaviours of hydrazones.<sup>3</sup> Next, the origin of the enantioselectivity in the propargylic substitution reactions of propargylic alcohols with acetone catalyzed by optically active thiolate-bridged diruthenium complexes is discussed in terms of computational examinations.<sup>4</sup>

**Keywords:** propargylic substitution reactions, DFT calculations

### Graphical abstract



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## Divergent Total Synthesis of Mushroom Ingredients and Their Neuroprotective Effect

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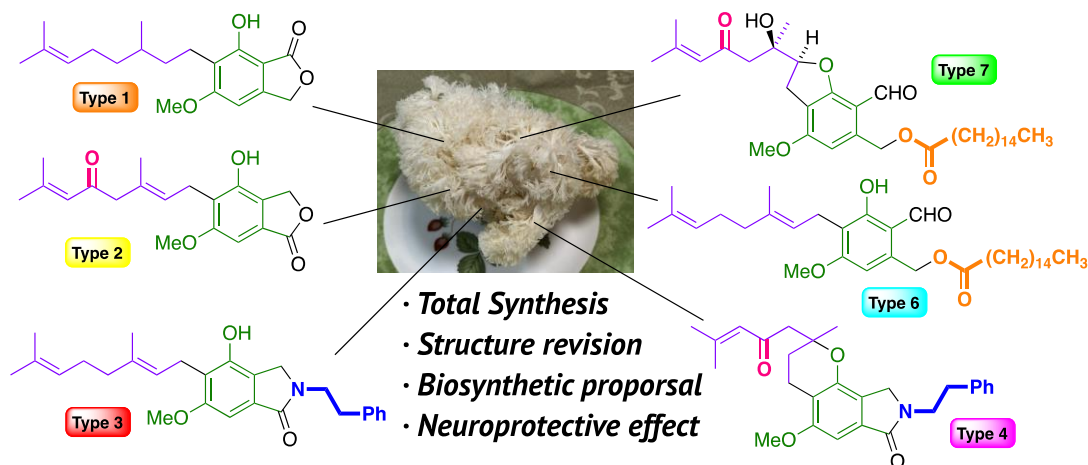


### Abstract

Fungi produce thousands of structurally unique small molecules of biological interest. These small molecules are considered to give characteristic properties to the fungi, especially the function of mushrooms. *Hericium erinaceus* is an edible mushroom showing a range of health-promoting effects when used as a nutritional supplement. This presentation will focus on the divergent total syntheses, structure revisions, biosynthetic proposals, and neuroprotective effect of tetraketide-meroterpenoids, namely geranyl-resorcinols, isolated from the fruiting bodies of *H. erinaceus*.

Given the assumed biosynthetic pathways and chemical structures, natural geranyl-resorcinols were classified into seven types, from Type 1 to Type 7. To efficiently synthesize all types of natural products, two divergent routes setting the common intermediates were developed. Eventually, more than thirty geranyl-resorcinols and synthetic derivatives for Structure-Activity Relationship study were provided and their neuroprotective activities against endoplasmic reticulum-stress dependent cell death were evaluated. Among tested compounds, the Type 6-like synthetic derivative having the linoleate chain at the ortho-position of phenol exhibited most potent neuroprotection.

**Keywords:** mushroom, ingredients, total synthesis, biosynthetic pathway, neuroprotective effect



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## Dissecting the hydration of glycans on proteins by using total chemical synthesis of glycoproteins

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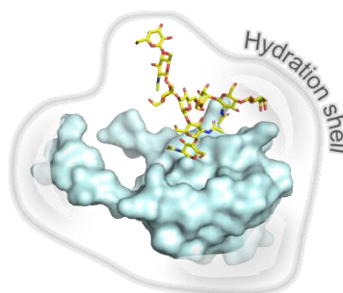
### Abstract

Many proteins *in vivo* express their functions as glycoproteins by incorporating of glycans. The unique hydration property of glycans facilitating the interaction between glycoproteins with surrounding water molecules. Because of this feature, it has been thought that one of the functions of glycans on glycoproteins is merely to improve the hydrophilicity of the protein moiety. Consequently, less has been known about the relationship of the hydration of glycans with the biological function of glycoproteins.

In this context, we carried out the total chemical synthesis of structurally defined-forms of antifreeze glycoprotein (AFGP) having both natural and unnatural forms of *O*-glycosylation. AFGP is a highly *O*-glycosylated protein that inhibits the growth of ice at the interface of water solution and ice. We have established a concise convergent synthetic method for the preparation of a variety of glycoforms of AFGP<sup>1</sup>. To shed light on the functional role of the *O*-glycans on AFGP, we performed hydrogen-deuterium exchanging (HDX) experiment. This experiment uncovered that the carbohydrate moiety of AFGP affected the dynamic behaviour of water molecules around the AFGP molecules. Taken together with other functional studies, it was suggested that the antifreeze activity of AFGP is highly tuned by the hydration property of the carbohydrate moiety.

We have further conducted the total chemical synthesis of series of *N*-glycoproteins of which glycans are larger than those of AFGPs. The HDX analysis of these synthetic *N*-glycoproteins indicated their unique hydration property of glycans on proteins. The functional analysis of these molecules suggested that the unique hydration of *N*-glycans underlying the biological function of proteins.

**Keywords:** Glycoproteins, Oligosaccharides, Glycans, Total chemical synthesis,



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## Protein Oligomerization through 3D Domain Swapping: Mechanism and Supramolecular Design

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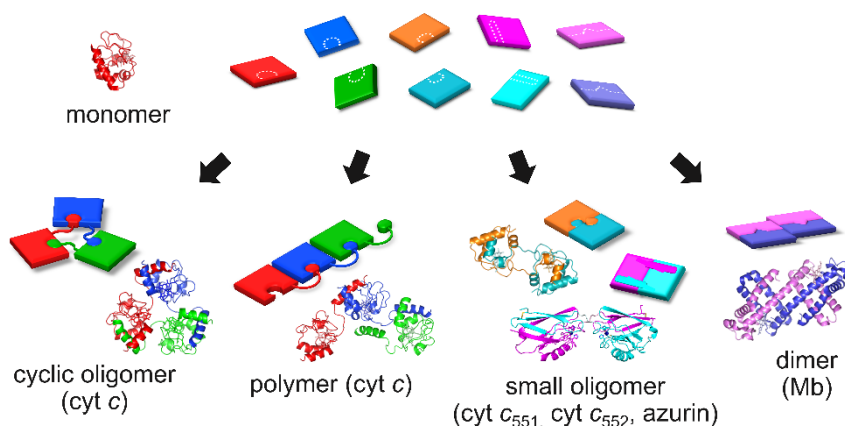


### Abstract

Metalloproteins are responsible for many biological reactions; thus, construction of protein assemblies will increase the use of metalloproteins. Three-dimensional (3D) domain swapping is a protein oligomerization phenomenon that exchanges the same domain or secondary structural element between molecules. Domain swapping was first reported in 1994 for diphtheria toxin. Since then, domain swapping has been observed in a variety of proteins, but there has been only a limited number of reports on domain-swapped metalloproteins.

Our research group has shown that various metalloproteins, including heme proteins and a copper protein, can domain swap.<sup>1</sup> For example, it has been known for half a century that cytochrome (cyt) *c* forms polymers, but the polymerization mechanism remained unknown. We found by X-ray crystallographic and spectroscopic analyses that cyt *c* forms polymers by successive domain swapping, where the C-terminal helix is displaced from its original position in the monomer and cyt *c* loses its electron transfer function.<sup>2</sup> We have also utilized domain swapping to construct various heme protein assemblies, including nanoring, nanocage, tetrahedron, heterodimer with different active sites, and amyloid fibril.<sup>3</sup> Recently, we have succeeded in converting a monomeric myoglobin into a dimeric protein by designing domain swapping.<sup>5</sup> In this lecture, the mechanism of domain swapping and its utilization of oligomer formation will be introduced, together with future prospects.

**Keywords:** domain swapping, heme protein, oligomer design, protein folding, supramolecule



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## Catalytic Nucleophilic Isocyanation: Selective *N*-Terminus Substitution of Ambident Cyanide

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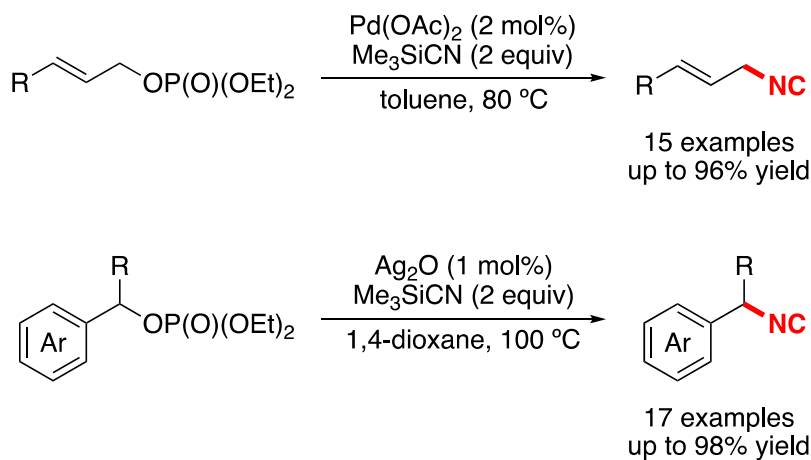


### Abstract

Isonitrile (R–NC) is a regioisomer of the corresponding nitrile (R–CN). Isonitriles are well-known surrogates of carbon monoxide in organometallic chemistry, whose *C*-termini show carbene-like property. These compounds are also regarded as important building blocks in organic transformations because they can react with both nucleophiles and electrophiles at their *C*-sites. In contrast to the wide applicability of isonitriles, the preparation of isonitriles is still limited in traditional dehydration of the corresponding *N*-formamides. The conditions are harsh, and thus highly functionalized isonitriles are hardly achieved by these preparation methods. Nucleophilic isocyanation is an alternative protocol for the synthesis of isonitriles, using cyanide (CN<sup>-</sup>) as *N*-nucleophiles.<sup>1</sup> Cyanide is one of the most typical ambident nucleophiles, whose *C*- and *N*-terminus are both reactive. Generally, its *C*-terminus is kinetically and thermodynamically more reactive than its *N*-terminus. So that, some tricks are necessary for achieving nucleophilic isocyanation.

Herein we report a transition metal-catalyzed nucleophilic isocyanation. Allylic phosphates were converted into the corresponding allylic isonitriles in the presence of catalytic amount of palladium salt.<sup>2</sup> In this reaction, no  $\pi$ -allyl-Pd(II) intermediate was included in the catalytic cycle, even though it is the allylic substitution using palladium catalyst. Silyl cyanopalladate complex (Me<sub>3</sub>Si)[Pd(CN)<sub>3</sub>] generated *in situ* from Pd(OAc)<sub>2</sub> and the excess amount of trimethylsilyl cyanide (Me<sub>3</sub>SiCN) was a possible catalytic active species in this transformation. We also successfully achieved benzylic isocyanation with use of Ag<sub>2</sub>O as a catalyst precursor.<sup>3</sup> Both primary and secondary benzylic phosphates were smoothly consumed to afford the benzylic isonitriles in high yield. In this case, silyl cyanoargentate complex (Me<sub>3</sub>Si)[Ag(CN)<sub>2</sub>] generated in equilibrium promoted the catalytic reaction.

**Keywords:** nucleophilic isocyanation, isonitrile, transition metal catalyst, silyl cyanometallate, ambident nucleophile



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## The role of oxygen vacancies for the enhancement of photocatalytic activity

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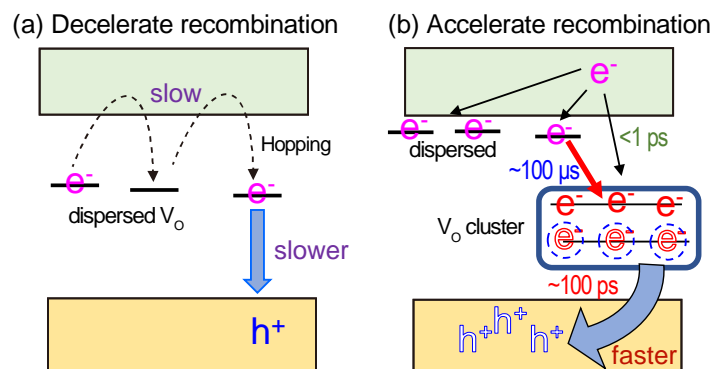


### Abstract

Powder defects play central roles in determining the activity of photocatalysts. It is reported that introducing oxygen vacancies into TiO<sub>2</sub> and SrTiO<sub>3</sub> enhance the photocatalytic activity, but it decreases the activity of WO<sub>3</sub>; the addition of defects sometimes enhances the activity, but sometimes decreases it. However, the factors determining the difference between these enhancement and decrease have not been fully elucidated yet. Herein, we investigated the effects of oxygen vacancies on the electron-hole recombination kinetics in WO<sub>3</sub> powder using broadband transient absorption spectroscopy from fs to ms region. It was found that the decay of deeply trapped electrons was accelerated when the number of oxygen vacancies were increased by H<sub>2</sub> reduction [1]. This result suggests that oxygen vacancies in WO<sub>3</sub> mainly act as recombination centers. This is in contrast to many other photocatalysts such as TiO<sub>2</sub> [2] and SrTiO<sub>3</sub> [3], where the carrier lifetime increases with increasing the concentration of oxygen vacancy. The difference between these two effects is determined by the distance between the defects. When defects are dispersed, trapped electrons must travel long distances by repeated hopping and tunneling to meet with holes, and hence recombination becomes slower. However, if the defects are connected or located close to each other, the trapped electrons can readily migrate without hopping or tunneling. In this case these defects act as recombination centers. In the case of WO<sub>3</sub>, oxygen-vacancy clusters are readily formed; hence, H<sub>2</sub> reduction creates “recombination centers” and decreases the photocatalytic activity. The present study indicates that the distance between defects is a key factor for photocatalytic activity, and its appropriate control is important for developing photocatalysts with better performance.

**Keywords:** photocatalysis, charge carrier dynamics, defects, recombination centers, charge trapping, time-resolved spectroscopy

### Graphical abstract



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## Metal-free Photocatalyst Based on Boron Doped Photoreduced Graphene Oxide for Removal of VOCs

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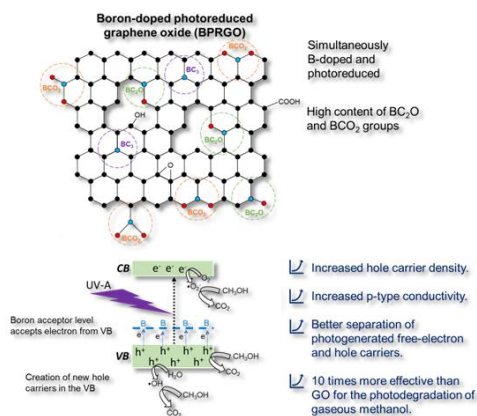
### Abstract

The harmful effects of indoor air pollutants such as volatile organic compounds (VOCs) have attracted considerable awareness. Among the techniques to remove VOCs, photocatalytic oxidation (PCO) is a promising technique to degrade and mineralize VOCs under ambient conditions. A metal-free photocatalyst, namely boron-doped photoreduced graphene oxide (BPRGO) was synthesized via a facile, scalable, and cost-effective light irradiation method. The BPRGO photocatalyst managed to remove 80% of the VOCs (100 mg/m<sup>3</sup> of methanol) within 6 h (0.283 h<sup>-1</sup>) under UV-A irradiation. Moreover, up to 91% of the VOCs were successfully mineralized into harmless H<sub>2</sub>O and CO<sub>2</sub>. The high photoactivity of BPRGO-1.0 is due to the high amount of oxygenated boron groups (OBGs) namely BC<sub>2</sub>O and BCO<sub>2</sub> groups. The suitable amount of B dopants led to a higher hole carrier density and p-type conductivity. This had retarded the charge carrier recombination which improved the photocatalytic removal of VOCs. This is a new insight of metal-free BPRGO photocatalyst for VOCs removal.

Keywords: Photocatalysis; B doping; Graphene oxide; Photoreduce; Air remediation

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E-mail address: jcjuan@um.edu.my (Juan JC).



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### Acknowledgement

We acknowledge Ministry of Education, Malaysia (FRGS/1/2021/STG05/UM/02/3)

## Carbazole Dendronized Luminescent Radicals

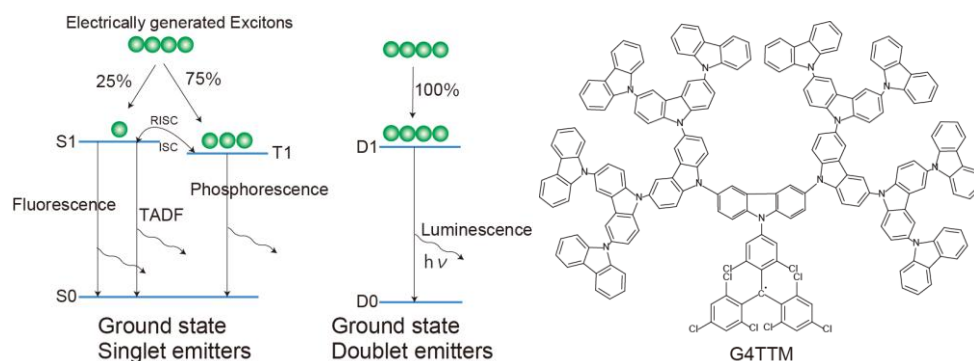
Ken Albrecht<sup>a,\*</sup><sup>a</sup> Institute for Materials Chemistry and Engineering, Kyushu University, Japan.\*Corresponding author: [albrecht@cm.kyushu-u.ac.jp](mailto:albrecht@cm.kyushu-u.ac.jp)

## Abstract

The development of emitting materials for OLEDs has started with fluorescence, moved to phosphorescence, and reached TADF. These materials have singlet ground state, but recently some ground state doublet (radical) emitting materials have been reported.<sup>1,2</sup> The excited state of doublet emitters also has a doublet character, and theoretically, can achieve 100% exciton utilization efficiency in an OLED device. Triphenylmethyl radicals such as PTM radical was recognized as emitter from the 1980s.<sup>3</sup> The photostability of these radicals are extremely low, but in 2006 the introduction of a donor (carbazole) unit was reported to improve the photostability and opened the door to utilize them as a luminescent materials.<sup>4</sup>

Carbazole dendrimers<sup>5</sup> are widely used as solution-processable OLED material including TADF emitters.<sup>6</sup> The dendron has a highly polarized unique electronic structure due to the summation of the inductive electron-withdrawing effect of carbazole units.<sup>5</sup> The attachment of carbazole dendrons to luminescent radical is expected to increase the stability through the steric and electronic effects. Moreover, the large dipole moment may increase the transition dipole moment and result in higher PLQY. Recently, we have succeeded in synthesizing series of carbazole dendronized TTM radicals and measuring the photochemical properties. The detail will be reported in the lecture.

**Keywords:** Carbazole, Dendrimer, Luminescent radical, OLEDs



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## One-Pot Catalysis: A Privileged Approach for Sustainable Polymers

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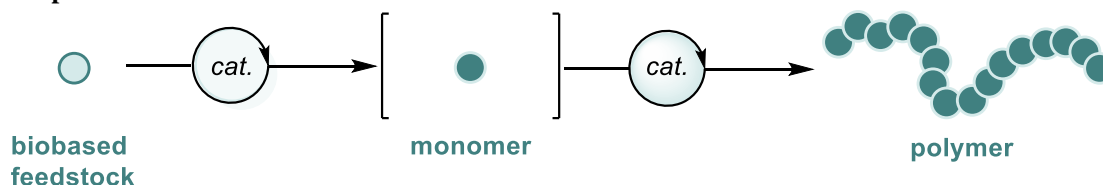
### Abstract

Polymer production is essentially based on finite feedstocks. These limitations force us to rethink the strategies for the synthesis of these materials.<sup>1</sup> The development of new methods for transforming biomass into resources suitable for polymer production remains a crucial hurdle on the way to a more sustainable chemical economy.<sup>2</sup> In this regard, the creation of renewable polymers through one-pot catalysis represents an important tool to support more sustainable plastics production.<sup>3</sup>

We have used these synthetic schemes to investigate the formation of polyesters, polypeptides and poly(meth)acrylates.<sup>4</sup> We will discuss their efficiency by highlighting their ability to perform multiple synthetic transformations, while bypassing several purification procedures at the same time. We will show that these one-pot procedures can enable the development of new polymers, and also contribute to reducing the environmental footprint.

**Keywords:** biobased polymers; one-pot catalysis; reaction mechanisms; renewable monomers

### Graphical abstract



### References

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### Development of Environmental Friendly Palm Oil-Based Resins for Coating Applications

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**Abstract:** Increasing environmental concerns have stimulated the efforts to utilize renewable natural resources. Many previous researchers have reported the synthesis of alkyds from plant oils for paints and coatings, that are relatively inexpensive and have good properties such as high gloss, good color retention, and stability. In particular, soybean, castor, linseed and tall oils were very successfully used because they have very high level of unsaturation enabling their alkyds to air-dry. The conventional method of alkyd synthesis is carried out at high temperature via the condensation of the oil with glycerol and dicarboxylic acid in xylene, and the use of organic solvent has made the process environmentally unfriendly. Palm oil is a major crop in Malaysia and consequently it is attractive to look into its use as raw material for industrial applications. However, it is a non-drying oil because of its low iodine value, and its alkyds are not capable of forming coherent film by air oxidation, consequently, palm oil alone cannot be used for coating resin. This paper would present a number of selected polymeric materials made from palm oil derivatives. The first approach is to produce a water-reducible alkyd without involving any organic solvent during synthesis. The resin is cross-linked by using a water-based melamine resin. The second approach is to increase the unsaturation of the alkyd through incorporating sufficient unsaturated monomers. This process does not involve organic solvent as well. The final alkyd has low molecular weight distribution and yet it could air-dry and even become UV-curable. In the third approach, to further improve the coating performance and achieve faster cure time, better adhesion, harder and more durable film, an initial alkyd with high hydroxyl value is made and converted into urethane acrylic resins through reacting with toluene diisocyanate and 2-hydroxyl ethyl acrylate to produce a UV curable urethane acrylate resin. Mechanical and physical properties of the films that have been characterized include curing rate, film hardness, adhesion, and solvent resistance tests.

**Keywords:** Palm oil; Coating; Cure rate; Characterizations; Film performance

### Low Frequency Dielectric Relaxation of Solid Polymer Electrolytes of Miscible and Immiscible PEO/Polyacrylates/Salt for Lithium Rechargeable Battery



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#### Abstract







Unmanned autonomous vehicles (UAVs) are expected to project a 18.06% of compound annual growth rate (CAGR) during the forecast period of 2020 – 2025. Hence, fuel cells used in UAVs must have high chemical and thermal stability, excellent mechanical properties of electrolyte, environmentally safe materials and cost-effective materials, where these properties are still inadequate in the conventional polymer electrolyte. Hence, exploration of polymer blend consists of poly(ethylene oxide) (PEO) and polyacrylates is expected to address the mentioned limitations in conventional polymer electrolyte.

Solid polymer electrolytes are mixtures of polymer(s) and inorganic salt. There are quite a number of studies dealing with relationship between electric conductivity and structural relaxation in solid polymer electrolytes. In this study, we present a phenomenological approach based on fluctuation-dissipation processes for assessment of the dielectric behavior of blends with preferential location of salt in the multi-phase systems. This may ensure sufficiently high conductivity of the systems with minimal addition of salt concentration.





Phase heterogeneity appears in poly(ethylene oxide) (PEO) of high molecular mass and its blends due to crystallization and accompanying phase segregation. Addition of salt hampers crystallization. It causes dynamic heterogeneity of the salt mixtures. Conductivity is bound to amorphous phase; conductivity mechanism does not depend on content of added salt. One observes only at low frequency dispersion of conductivity relaxation. This is also true for blends with poly(methacrylate) (PMA) and poly(methyl methacrylate) (PMMA). In blends, dynamics of relaxation depends on glass transition of the system. Glassy PMMA hampers relaxation at room temperature. On the other hand, rubbery PMA facilitates relaxation at room temperature. Relaxation can only be observed when salt content is sufficiently high.



As long as blends (with PMA or PMMA) are in rubbery state at room temperature, they behave PEO-like. Blends turn into glassy state when PMMA is in excess. Decoupling of long-ranging and dielectric short-ranging relaxation can be observed. Conductivity mechanism in PEO as well as in blends with PMA or PMMA were analyzed in terms of complex impedance  $Z^*$ , complex permittivity, tangent loss spectra and complex conductivity

# ICPAC KK 2022 – Ballroom 2, Level 1

Tuesday, 22 November 2022	
Venue: Ballroom 2, Level 1	
<b>0800 – 0830</b>	Opening Ceremony <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
<b>Plenary 1&amp;2</b>	<b>Chairperson: Datin ChM Dr Zuriati Zakaria</b> Institut Kimia Malaysia, Malaysia
<b>0830 – 1000</b>	<b>Plenary Lectures</b> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
	<u>Plenary Lecture 1</u> <b>From Reduction to Alkylation: A Journey with Iron Complexes</b> Jean Luc Renaud University of Caen Normandie, France <span style="float: right;"></span>
	<u>Plenary Lecture 2</u> <b>Moon-shot Design on BioNylon with Photo-switched Marine-Degradability</b> Tatsuo Kaneko Japan Advanced Institute of Science and Technology, Japan
<b>1000 – 1030</b>	Refreshments
Thematic Session: Organic and Biomolecular Chemistry (OBC)	
Venue: Ballroom 2, Level 1	
<b>Session Ia</b>	<b>Chairperson: Datin ChM Dr Zuriati Zakaria</b> Institut Kimia Malaysia, Malaysia
<b>1030 – 1100</b> <b>OBC 01</b>	Keynote Lecture <b><math>\pi</math>-Electronic Molecules with Distorted C-C Covalent Bonds: Reversible Switching of Structure and Physical Properties</b> Yusuke Ishigaki Hokkaido University, Japan
<b>1100 – 1120</b> <b>OBC 02</b>	Invited Lecture <b>Investigation on Vitamin E Vehicles Used for Biological Research</b> <span style="float: right;"></span> Shigesaburo Ogawa Tokyo University of Agriculture, Japan
<b>1120 – 1140</b> <b>OBC 03</b>	Invited Lecture <b>Triptycenyyl Sulfide: A Practical and Active Catalyst for Electrophilic Aromatic Halogenation</b> <span style="float: right;"></span> Yuuji Nishii Osaka University, Japan
<b>1140 – 1200</b> <b>OBC 04</b>	Invited Lecture <b>Transition-Metal-Catalyzed C-F Bond Activation via <math>\beta</math>-Fluorine Elimination</b> <span style="float: right;"></span> Takeshi Fujita University of Tsukuba, Japan
<b>1200 – 1220</b> <b>OBC 05</b>	Oral Presentation <b>Total Synthesis of Lobatamides</b> <span style="float: right;"></span> Shona Banjo Keio University, Japan
<b>1220 – 1240</b> <b>OBC 06</b>	Oral Presentation <b>The effect of electron donating substitution of disubstituted chalcone derivatives featuring diformyltriphenylamine on the non-linear optical (NLO) characteristic: Experimental and theoretical approach</b> Adibah Izzati Daud Universiti Malaysia Perlis, Malaysia
<b>1240 – 1300</b> <b>OBC 07</b>	Invited Lecture <b>Iterative Mitsunobu Reaction en Route to Polyisoprenoid Natural Products</b> <span style="float: right;"></span> Kei Kitamura Tokushima Bunri University, Japan
<b>1300 – 1400</b>	Lunch


# ICPAC KK 2022 – Ballroom 2, Level 1

Tuesday, 22 November 2022	
Session Ib	Chairperson: <b>Dr Adibah Izzati Daud,</b> <b>Universiti Malaysia Perlis, Malaysia</b>
1400 – 1420 OBC 08	Invited Lecture <b>Synthetic Study on Mytilipin C</b> Taiki Umezawa Hokkaido University, Japan 
1420 – 1450 OBC 09	Keynote Lecture <b>Quantum Chemical Study on Reactivity and Stereoselectivity in Propargylic Substitution Reactions Using Transition Metal Catalysts</b> Ken Sakata Toho University, Japan
1450 – 1510 OBC 10	Invited Lecture <b>Synthesis, Properties, and Reactions of Indenofluorenes: From Solution to On-Surface Chemistry</b> Kotora Martin Charles University, Czechia 
1510 – 1530 OBC 11	Invited Lecture <b>Synthesis of Quaternary Centres through Single Electron Reduction of Alkylsulfones</b> Masakazu Nambo Nagoya University, Japan 
1530 – 1550 OBC 12	Invited Lecture <b>Modular Approach to Indene and Indacene Derivatives Revisited</b> Hayato Tsuji Kanagawa University, Japan 
1600 – 1700	Refreshments
WELCOME RECEPTION (SUTERA MARINA JETTY)	





Wednesday, 23 November 2022	
Venue: Ballroom 2, Level 1	
Plenary 3&4	Chairperson: <b>Prof ChM Dr Yang Farina Abdul Aziz</b> <b>Institut Kimia Malaysia, Malaysia</b>
0830 – 1000	Plenary Lectures <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span> <u>Plenary Lecture 3</u> <b>Temperature-Response Chemistry of Thermo-Electrochemical Cell toward Waste Heat Harvesting</b> Teppei Yamada The University of Tokyo, Japan 
	<u>Plenary Lecture 4</u> <b>Enantioselective Decarboxylative Chlorination of <math>\beta</math>-Oxocarboxylic Acids and Stereospecific Derivatization of the Resulting <math>\alpha</math>-Chloroketones</b> Kazutaka Shibatomi Toyohashi University of Technology, Japan
1000 – 1030	Refreshments
<b>Thematic Session:</b> <b>Organic and Biomolecular Chemistry (OBC)</b>	
Venue: Ballroom 2, Level 1	
Session Ic	Chairperson: <b>Snr Assoc Prof Dr Kathiresan a/I Sathasivam</b> <b>Institut Kimia Malaysia, Malaysia</b>
1030 – 1100 OBC 13	Keynote Lecture <b>Divergent Total Synthesis of Mushroom Ingredients and Their Neuroprotective Effect</b> Shoji Kobayashi Osaka Institute of Technology, Japan 




# ICPAC KK 2022 – Ballroom 2, Level 1






Wednesday, 23 November 2022		
1100 – 1120 OBC 14	Invited Lecture <b>Synthesis and chemical biology studies of N-glycans</b> Yoshiyuki Manabe Osaka University, Japan	 zoom
1120 – 1140 OBC 15	Invited Lecture <b>Synergistic Catalysis of Transition Metals and Acids for Regioselective Functionalization of Alkenes and Alkynes</b> Zhang Sheng Dalian University of Technology, China	 zoom
1140 – 1200 OBC 16	Invited Lecture <b>Simple Amino Alcohol and Amino Amide Organocatalysts for Asymmetric Synthesis</b> Hiroto Nakano Muroran Institute of Technology, Japan	
1200 – 1220 OBC 17	Invited Lecture <b>Reductive Transformations by Organic Electron Donors</b> Kanao Kumada Tohoku University, Japan	 zoom
1220 – 1240 OBC 18	Invited Lecture <b>Synthesis of fluorogenic glycan probes for detecting ENGases activity</b> Nozomi Ishii Gunma University, Japan	
1300 – 1400	Lunch	
Session Id	<b>Chairperson: Dr. Mohd Hafiz Abd Majid</b> <b>Universiti Malaysia Sabah, Malaysia</b>	
1400 – 1420 OBC 19	Invited Lecture <b>Robust and Versatile Oxidizing System: Ruthenium Porphyrin-Heteroaromatic N-Oxide System</b> Tsunehiko Higuchi Nagoya City University, Japan	
1420 – 1440 OBC 20	Oral Presentation <b>Synthesis and antimicrobial study of new quinoline compounds</b> Ang Chee Wei Monash University Malaysia, Malaysia	
1440 – 1500 OBC 21	Invited Lecture <b>Recent Progress in Application of Fluoroalkyl Isobenzofurans</b> Hideki Amii Gunma University, Japan	 zoom
1500 – 1520 OBC 22	Invited Lecture <b>Design of amphiphilic porous coordination networks for structure determination of bioactive medium-sized molecules</b> Masaki Kawano Tokyo Institute of Technology, Japan	
1520 – 1540 OBC 23	Invited Lecture <b>Selective control of liquid-liquid phase separation of G-quadruplex nucleic acids derived from neurodegenerative diseases</b> Daisuke Miyoshi Konan University, Japan	 zoom
1540 - 1600 OBC 24	Oral Presentation <b>Palladium-catalyzed Oxidative Coupling of Amines and 1,3-dienes</b> Kazuki Tabaru Kansai University, Japan	
1600 – 1630	Refreshments	

# ICPAC KK 2022 – Ballroom 2, Level 1






Wednesday, 23 November 2022	
Session Ie	Chairperson: ChM Dr Moh Pak Yan Institut Kimia Malaysia, Malaysia
1630 – 1650 OBC 25	Invited Lecture <b>Rapid and Mild Generation and Nucleophilic Substitution of Highly Active Electrophiles in a Micro-flow reactor</b> Hisashi Masui Nagoya University, Japan 
1650 – 1710 OBC 26	Invited Lecture <b>Proteolysis targeting chimeras (PROTACs) targeting epigenetic enzymes</b> Yukihiro Itoh Osaka University, Japan 
1710 – 1730 OBC 27	Invited Lecture <b>Practical functionalization of oligonucleotides through rapid ligand-free copper-catalyzed azide-alkyne click chemistry</b> Yoshiaki Kitamura Gifu University, Japan 
1730 – 1750 OBC 28	Invited Lecture <b>Porphyrin Organization by Coordination Interactions</b> Joe Otsuki Nihon University, Japan 
1750	End

Thursday, 24 November 2022	
Venue: Ballroom 2, Level 1	
Plenary 5&6	Chairperson: Academician ChM Dr Ho Chee Cheong Institut Kimia Malaysia, Malaysia
0830 – 1000	Plenary Lectures <i>Venue: Ballroom 2, Level 1</i> <u>Plenary Lecture 5</u> <b>Axis-to-center Chirality Transfer Reaction of Organophosphorus Compounds with a Binaphthyl Group as a Key Process Leading to the Formation of P-Chirogenic Derivatives</b> Toshiaki Murai Gifu University, Japan <u>Plenary Lecture 6</u> <b>Ligand-Protected Metal Nanoclusters: Recent Development in Synthesis and Application in Energy and Environmental Field</b> Yuichi Negishi Tokyo University of Science, Japan
1000 – 1030	Refreshments and Posters Viewing
Thematic Session: Organic and Biomolecular Chemistry (OBC)	
Session If	Chairperson: ChM Khairul Hadi bin Haji Abd Raof Institut Kimia Malaysia, Malaysia
1030 – 1100 OBC 29	Invited Lecture <b>Ring-rearrangement Strategy for Selective Synthesis of Pseudo Aromatic Polyketides</b> Hikaru Yanai Tokyo University of Pharmacy and Life Sciences, Japan
1100 – 1120 OBC 30	Invited Lecture <b>Synthesis of <math>\pi</math>-Conjugated Molecules by Double (Sila-)Friedel-Crafts Reaction</b>  Yoichiro Kuninobu Kyushu University, Japan









# ICPAC KK 2022 – Ballroom 2, Level 1

Thursday, 24 November 2022		
1120 – 1140 OBC 31	Invited Lecture <b>Development of Chemically Modified Peptide Nucleic Acids (PNAs) to Efficiently Recognize Double-Stranded DNA</b> Yuichiro Aiba Nagoya University, Japan	
1140 – 1200 OBC 32	Invited Lecture <b>Photoreaction of N-(1H-indol-2-ylmethylidene)aniline derivatives</b> Masatsugu Taneda Osaka Kyoiku University, Japan	 zoom
1200 – 1220 OBC 33	Invited Lecture <b>Photocatalytic Chemical Labeling of Tyrosine/Histidine Residues and Application to Proximity Labeling</b> Shinichi Sato Tohoku University, Japan	 zoom
1220 – 1240 OBC 104 (NEW SLOT)	Invited Lecture <b>Comparative Study of Drying Methods on Physical Properties of Seaweeds (<i>Kappaphycus Sp.</i>, <i>Sargassum Sp.</i>, <i>Padina Sp.</i> And <i>Caulerpa Lentillifera</i>) in Semporna, Sabah</b> Mohd Sani Sarjadi Universiti Malaysia Sabah, Malaysia	
1240 – 1300 OBC 105 (NEW SLOT)	Oral Presentation <b>The effect of spray drying conditions on the antioxidant potential of carrageenan encapsulated <i>Morinda Citrifolia</i> L.</b> Mohd Hafiz Abd Majid Universiti Malaysia Sabah, Malaysia	
1300 – 1400	Lunch	
Session Ig	<b>Chairperson: Dr Ang Chee Wei</b> <b>Monash University, Malaysia</b>	
1400 – 1420 OBC 34	Invited Lecture <b>Palladium-Catalyzed Difunctionalization of Alkynes: A Mechanistic Insight</b> Vincent Gandon Université Paris-Saclay, France	 zoom
1440 – 1500 OBC 35	Invited Lecture <b>Organocatalytic Interrupted Passerini Reaction of 3-(2-isocyanoethyl)-indole</b> Takeshi Yamada Kanagawa University, Japan	 zoom
1500 – 1520 OBC 36	Invited Lecture <b>Modulation of Microtubules by Peptide-Based Molecular Encapsulation</b> Hiroshi Inaba Tottori University, Japan	 zoom
1520 – 1540 OBC 37	Invited Lecture <b>Nanographenes and Two-Dimensional Materials</b> Ryo Sekiya Hiroshima University, Japan	
1540 – 1600 OBC 38	Invited Lecture <b><math>\mu</math>-Oxo Hypervalent Iodine Catalysis in Oxidative Aromatic C-N Coupling and Dearomatization</b> Toshifumi Dohi Ritsumeikan University, Japan	
1600 – 1700	Refreshments and Posters Viewing	
1900 – 2200	Congress Banquet	

# ICPAC KK 2022 – Ballroom 2, Level 1

Friday, 25 November 2022	
Venue: Ballroom 2, Level 1	
Plenary 7&8	Chairperson: Prof ChM Dr Mansor Ahmad Institut Kimia Malaysia, Malaysia
0830 – 1000	Plenary Lectures <span style="float: right;">Venue: Ballroom 2, Level 1</span> <u>Plenary Lecture 7</u> <b>Game-changing innovation in peptide synthesis</b> Hisashi Yamamoto Chubu University, Japan <u>Plenary Lecture 8</u> <b>Glass Transition in Polymers</b> Jean Marc Saiter University of Rouen Normandy, France
1000 – 1030	Refreshments and Posters Viewing
Thematic Session: Organic and Biomolecular Chemistry (OBC)	
Session 1h	Chairperson: Assoc. Prof ChM Dr Collin G. Joseph Universiti Sabah Malaysia, Malaysia
1030 – 1100 OBC 39	Keynote Lecture <b>Dissecting the hydration of glycans on proteins by using total chemical synthesis of glycoproteins</b> Ryo Okamoto Osaka University, Japan
1100 – 1120 OBC 40	Invited Lecture <b>Next-generation bisphenols disrupt the coactivator's binding</b> Ayami Matsushima Kyushu University, Japan
1120 – 1140 OBC 41	Invited Lecture <b>Interaction Analysis between Membrane Proteins and Lipids</b> Nobuaki Matsumori Kyushu University, Japan 
1140 – 1200 OBC 42	Invited Lecture <b>A Large Conformational Change of the Quinone Cofactor in Bacterial Copper Amine Oxidase</b> Mitsuo Shoji University of Tsukuba, Japan 
1200 – 1220 OBC 43	Invited Lecture <b>Incorporation of DNA into bacterial membrane vesicles: the mechanism for a novel type of horizontal gene transfer</b> Yosuke Tashiro Shizuoka University, Japan 
1220 – 1240 OBC 44	Invited Lecture <b>Hydrogen Production from Cellulose Catalyzed by an Iridium Complex under Mild Conditions</b> Ken-ichi Fujita Kyoto University, Japan 
1240 – 1300 OBC 45	Invited Lecture <b>Depolymerization of Phenylene-based Super Engineering Plastics to Regenerate Monomer Units</b> Yasunori Minami National Institute of Advanced Industrial Science and Technology, Japan 
1300 – 1400	Lunch


# ICPAC KK 2022 – Ballroom 2, Level 1

Friday, 25 November 2022	
Session ii	Chairperson: ChM Dr Moh Pak Yan Institut Kimia Malaysia, Malaysia
1400 – 1420 OBC 46	Invited Lecture <b>Hybrid Binding Probes for Calreticulin Contribute to Cancer Diagnosis</b> Kiichiro Totani Seikei University, Japan
1420 – 1440 OBC 47	Invited Lecture <b>Functionalized lipid membranes for creating well-defined artificial cell models</b> Koki Kamiya Gunma University, Japan 
1440 – 1500 OBC 48	Invited Lecture <b>Formation and Properties of DNA Liquid Crystalline Phase in Crowded Environment</b> Makiko Tanaka The University of Electro-Communications, Japan 
1500 – 1520 OBC 49	Invited Lecture <b>Fluoro(aryl)iodanes-Catalyzed Synthesis of Functionalized Oxazoles</b> Akio Saito Tokyo University of Agriculture and Technology, Japan 
1520 – 1540 OBC 50	Invited Lecture <b>Efficient syntheses of [5]rotaxane-type fluorophores containing various polycyclic aromatic hydrocarbons and their photophysical properties</b> Yuki Ohishi University of Toyama, Japan 
1540 – 1600 OBC 51	Invited Lecture <b>MALDI Glycotyping of Glycoproteins, Biofluids, and Bacterial O-antigens</b> Hiroshi Hinou Hokkaido University, Japan 
1600 – 1630	Refreshments and Posters Viewing
Session Ij	Chairperson: ChM Dr Yvonne Choo Shuen Lann Institut Kimia Malaysia, Malaysia
1630 – 1650 OBC 52	Invited Lecture <b>Local Manipulation of Cellular Functions using Nanoheater and Nanothermometer</b> Satoshi Arai Kanazawa University, Japan 
1650 – 1710 OBC 53	Invited Lecture <b>Lipophosphonoxins – Novel Membrane Targeting Antimicrobials</b> Dominik Rejman Institute of Organic Chemistry and Biochemistry, Czech Academy of Sciences, Czechia
1710 – 1730 OBC 54	Invited Lecture <b>Iridium-Catalyzed Hydroalkylation of Simple Alkenes with Malonic Amides and Malonic Esters</b> Takahiro Sawano Aoyama Gakuin University, Japan 
1730 – 1750 OBC 55	Invited Lecture <b>Molecular Dynamics Simulation for Biological and Material polymers</b> Takefumi Yamashita The University of Tokyo, Japan 
1750	End








# ICPAC KK 2022– Ballroom 2, Level 1

Sunday, 27 November 2022	
Thematic Session: Organic and Biomolecular Chemistry (OBC)	
Venue: Ballroom 2, Level 1	
Session Ir	Chairperson: Dr Ngai Koh Sing Universiti Malaya, Malaysia
0830 – 0850  OBC 56	Invited Lecture <b>Liquid biopsy using oxide nanowire microfluidics to address previously-unattainable analytical methods for biomolecules</b> Takao Yasui Nagoya University, Japan 
0850 – 0920  OBC 57	Keynote Lecture <b>Protein Oligomerization through 3D Domain Swapping: Mechanism and Supramolecular Design</b> Shun Hirota Nara Institute of Science and Technology, Japan
0920 – 0940  OBC 58	Invited Lecture <b>Theoretical investigation on the ATPase mechanism of F-actin</b> Yusuke Kanematsu Hiroshima University, Japan 
0940 – 1000  OBC 59	Invited Lecture <b>Depolarizing effects in hydrogen bond energy in 3<sub>10</sub>-helices revealed by quantum chemical analysis</b> Yu Takano Hiroshima City University, Japan 
1000 – 1030	Refreshments
Session Is	Chairperson: Prof Shun Hirota Nara Institute of Science and Technology, Japan
1030 – 1050  OBC 60	Invited Lecture <b>Synthetic Studies toward Natural Xanthone Blennolides via Spirochromanones</b> Takuya Kumamoto Hiroshima University, Japan
1050 – 1110  OBC 61	Invited Lecture <b>Synthesis of Optically Active Molecules Based on Planar Chiral [2.2]Paracyclophanes: Control of Other Chiralities by the Planar Chirality</b> Yasuhiro Morisaki Kwansei Gakuin University, Japan
1110 – 1130  OBC 62	Oral Presentation <b>Convergent Synthesis of the WXYZA'B'C'D'E'F' Ring Segment of Maitotoxin</b> Keitaro Umeno Kyushu University, Japan
1130 – 1150  OBC 63	Invited Lecture <b>Development of synthetic methodologies by utilizing isomerization of acyl metalloids to oxycarbene species</b> Kento Ishida Tokyo University of Science, Japan 
1150 – 1210  OBC 64	Invited Lecture <b>A Synthetic Reagent for Multiply Functionalized Compounds –Dianionic Cyano-aci-nitroacetate–</b> Nagatoshi Nishiwaki Kochi University of Technology, Japan 

# ICPAC KK 2022– Ballroom 2, Level 1

Sunday, 27 November 2022	
Thematic Session: Polymer and Materials Chemistry (PMC)	
<b>1210 – 1230</b>  <b>PMC 60</b>	Oral Presentation <b>Molecular Assembly Structures and Physical Properties of <math>\pi</math>-expanded Tetrathienylene Derivatives</b> Genki Saito Tohoku University, Japan
<b>1230 – 1250</b>  <b>PMC 61</b>	Invited Lecture <b>A comparative study of amine-impregnated mesoporous silica for capturing dry and humid 400 ppm carbon dioxide</b> Nao Tsunoji Hiroshima University, Japan  zoom
<b>1250 – 1300</b>	Closing Ceremony
<b>1300 – 1400</b>	Lunch/ End of Congress

# ICPAC KK 2022 – Meeting Room 2, Level 1

Tuesday, 22 November 2022	
0800 – 0830	<b>Opening Ceremony</b> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
0830 – 1000	<b>Plenary Lectures 1 &amp; 2</b> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
1000 – 1030	Refreshments
<b>Thematic Session: Polymer and Materials Chemistry (PMC)</b>	
<b>Venue: Meeting Room 2, Level 1</b>	
<b>Session IIIa</b>	<b>Chairperson: ChM Dr Lee Siang Yin, Malaysian Rubber Board, Malaysia</b>
<b>1030 – 1100</b>	Keynote Lecture <b>Carbazole Dendronized Luminescent Radicals</b> Ken Albrecht Kyushu University, Japan 
<b>PMC 01</b>	
<b>1100 – 1120</b>	Invited Lecture <b>Thermoelectric property of molecular conductor based on 4,5-ethylenedioxy-4'-iodotetrathiafulvalene (EDO-TTF-I) showing electronic and structural phase transition</b> Manabu Ishikawa Kyoto University, Japan 
<b>PMC 02</b>	
<b>1120 – 1140</b>	Invited Lecture <b>Electric Conductivity of Iodinated Thiazolo[2,3-a]isoquinolinium Salts: Relationship Between Their Properties and Halogen-halogen Interactions</b> Shoji Matsumoto Chiba University, Japan 
<b>PMC 03</b>	
<b>1140 – 1200</b>	Oral Presentation <b>Poly(N-isopropylacrylamide) (PNIPAM) Grafted Polysaccharide and Its Thermal Behavior Study</b> Khairil Juhanni Abd Karim Universiti Teknologi Malaysia, Malaysia
<b>PMC 04</b>	
<b>1200 – 1220</b>	Invited Lecture <b>Syntheses and Evaluation of Biobased Polyamides and Polyimides using 4-Aminocinnamoyl Photodimers as Building Blocks</b> Takumi Noda Shinshu University, Japan 
<b>PMC 05</b>	
<b>1220 – 1240</b>	Invited Lecture <b>Rational design of metal-dependent allosteric DNAszymes based on artificial metal-mediated base pairing systems</b> Yusuke Takezawa The University of Tokyo, Japan 
<b>PMC 06</b>	
<b>1240 – 1300</b>	Invited Lecture <b>Photocontrol of Polymers by Molecular Switches Offering Large Motions and High Thermal Stability</b> Keiichi Imato Hiroshima University, Japan 
<b>PMC 07</b>	
<b>1300 – 1400</b>	Lunch
<b>Session IIIb</b>	<b>Chairperson: Dr. Rubia Binti Idris Universiti Malaysia Sabah, Malaysia</b>
<b>1400 – 1420</b>	Invited Lecture <b>Rational Control of Mechanochromic Luminescence by Two-Component Donor-Acceptor Dyes</b> Suguru Ito Yokohama National University, Japan 
<b>PMC 08</b>	










# ICPAC KK 2022 – Meeting Room 2, Level 1

Tuesday, 22 November 2022	
1420 – 1440 PMC 09	Invited Lecture <b>Preparation of Polysilsesquioxane-based Revers Osmosis Membranes for Water Desalination</b> Joji Ohshita Hiroshima University, Japan
1440 – 1500 PMC 10	<i>Change slot to Wednesday, 23 November 2022 (Time: 1240 – 1300)</i>
1500 – 1520 PMC 11	Invited Lecture <b>Synthesis of BioNylons derived from Itaconic acid and amino acid with Pepsin Degradability</b> Mohammad Asif Ali Japan Advanced Institute of Science and Technology, Japan
1520 – 1540 PMC 12	Invited Lecture <b>Properties of base neutralized chitosan-hydroxyapatite biocomposite membrane</b> Zuratul Ain Abdul Hamid Universiti Sains Malaysia, Malaysia
1540 – 1600 PMC 13	Invited Lecture <b>Polymeric Organization for Biomimetic Materials Working with Water</b> Kosuke Okeyoshi Japan Advanced Institute of Science and Technology, Japan
1600 – 1700	Refreshments and Posters Viewing
WELCOME RECEPTION (SUTERA MARINA JETTY)	

Wednesday, 23 November 2022	
0830 – 1000	<b>Plenary Lectures 3 &amp; 4</b> <i>Venue: Ballroom 2, Level 1</i>
1000 – 1030	Refreshments
<b>Thematic Session: Polymer and Materials Chemistry (PMC)</b>	
<b>Venue: Meeting Room 2, Level 1</b>	
Session IIIc	<b>Chairperson: ChM Teo Chook Kiong</b> Institut Kimia Malaysia, Malaysia
1030 – 1100 PMC 14	Keynote Lecture <b>One-Pot Catalysis: A Privileged Approach for Sustainable Polymers</b> Christophe Thomas Paris Sciences and Letters (PSL) University, France
1100 – 1120 PMC 15	Invited Lecture <b>Photoexpansion: Mechanistic Analysis for Photodeformation of Polycinnamates by Time-Resolved Measurements</b> Kenji Takada Japan Advanced Institute of Science and Technology, Japan
1120 – 1140 PMC 16	Invited Lecture <b>Molecular Alignment Control by Scanning Wave Photopolymerization</b> Atsushi Shishido Tokyo Institute of Technology, Japan
1140 – 1200 PMC 17	Oral Presentation <b>Intrinsically Stretchable N-type Semiconducting Polymers with Thioether-based Conjugation Break Spacers for Field-Effect Transistors</b> Megumi Matsuda Yamagata University, Japan
1200 – 1220 PMC 18	Invited Lecture <b>Superatomic gallium cluster in dendrimer</b> Tetsuya Kambe Tokyo Institute of Technology, Japan

# ICPAC KK 2022 – Meeting Room 2, Level 1






Wednesday, 23 November 2022		
1220 – 1240 PMC 19	Invited Lecture <b>Precision Gel Science for Biomedical Applications</b> Takamasa Sakai The University of Tokyo, Japan	 zoom
1240 - 1300 PMC 10 (New Slot)	Oral Presentation <b>Physical and mechanical properties of WBP matrix composite</b> Nik Alnur Auli Nik Yusuf Universiti Malaysia Kelantan, Malaysia	
1300 – 1400	Lunch	
Session III d	<b>Chairperson: ChM Dr Malarvili Ramalingam</b> <b>Jabatan Kimia Malaysia, Malaysia</b>	
1400 – 1420 PMC 20	Invited Lecture <b><i>In situ</i> Formation of Double-Stage-Structured Bacterial Cellulose Composite Pellicles</b> Yukari Numata Otaru University of Commerce, Japan	 zoom
1420 – 1440 PMC 21	Invited Lecture <b>Highly Ordered Adlayer Formation of Water-Insoluble Nanographenes at Solid-Liquid Interface using "Molecular Containers"</b> Soichiro Yoshimoto Kumamoto University, Japan	 zoom
1440 – 1500 PMC 22	Invited Lecture <b>Green Synthesis of Polyeutectic-based Electrolytes</b> Hideharu Mori Yamagata University, Japan	 zoom
1500 – 1520 PMC 23	Invited Lecture <b>Green and controlled synthesis of functional semiconducting polymers for organic electronics</b> Tomoya Higashihara Yamagata University, Japan	
1520 – 1540 PMC 24	Invited Lecture <b>Fiber formation of colloidal CdS QDs prepared by electrospinning of their wet gel</b> Kazushi Enomoto Yamagata University, Japan	 zoom
1540 – 1600 PMC 25	Invited Lecture <b>Development of nanomedicine based on <math>\beta</math>-sheet peptide nanofibers</b> Tomonori Waku Kyoto Institute of Technology, Japan	 zoom
1600 – 1630	Refreshments	
Session III e	<b>Chairperson: ChM Robinetta Joyce Malangig</b> <b>Institut Kimia Malaysia, Malaysia</b>	
1630 – 1650 PMC 26	Invited Lecture <b>Easily Peelable Pressure Sensitive Adhesives by Heat</b> Hiroto Murakami Nagasaki University, Japan	
1650 – 1710 PMC 27	Invited Lecture <b>Dynamic Shear Treatment: New Approach for Development of Plastic Mechanical Recycling Technique</b> Patchiya Phanthong Fukuoka University, Japan	 zoom

# ICPAC KK 2022 – Meeting Room 2, Level 1





Wednesday, 23 November 2022	
1710 – 1730 PMC 28	Invited Lecture <b>Direct Observation of Active Species in Radical Polymerizations using Electron Spin Resonance (ESR/EPR) Spectroscopy with Novel Flow System</b> Atsushi Kajiwara Nara University of Education, Japan
1730 – 1750 PMC 29	Invited Lecture <b>Difference in environmental degradability of biodegradable plastics</b> Miwa Suzuki Gunma University, Japan
1750	End

Thursday, 24 November 2022	
0830 – 1000	<b>Plenary Lectures 5 &amp; 6</b> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
1000 – 1030	Refreshments and Posters Viewing
<b>Thematic Session: Polymer and Materials Chemistry (PMC)</b>	
<b>Venue: Meeting Room 2, Level 1</b>	
Session IIIf	<b>Chairperson: Datin ChM Maimonah Sulaiman</b> Institut Kimia Malaysia, Malaysia
1030 – 1050 PMC 30	Invited Lecture <b>Modification of Polymer Materials by Salt Addition</b> Masayuki Yamaguchi Japan Advanced Institute of Science and Technology, Japan
1050 – 1110 PMC 31	Oral Presentation <b>Cation Exchange Effect for Molecular Dynamics and Proton Conductivity of Chiral Camphorsulfonate Salts</b> Chisato Sato Tohoku University, Japan
1110 – 1130 PMC 32	Invited Lecture <b>Development of <math>\pi</math>-Conjugated Polymers Based on Dithienonaphthobisthiadiazole for High-Efficiency Organic Photovoltaics</b> Tsubasa Mikie Hiroshima University, Japan
1130 – 1150 PMC 33	Invited Lecture <b>Emergent elastic fields induced by topological phase transitions in a chiral soft crystal</b> Kyohei Takae The University of Tokyo, Japan
1150 – 1210 PMC 34	Invited Lecture <b>Development of metal-like lustrous materials using oligo(3-alkoxythiophene)</b> Satoru Tsukada Chiba University, Japan
1210 – 1230 PMC 35	Oral Presentation <b>Synthesis of an ABC Triblock Copolymer by a Bilateral Click Reaction Using <math>\alpha</math>, <math>\omega</math>-Bifunctionalized Poly(3-hexylthiophene) as an Inner Segment</b> Shin Inagaki Yamagata University, Japan

# ICPAC KK 2022 – Meeting Room 2, Level 1

Thursday, 24 November 2022	
1230 – 1250 PMC 36	Invited Lecture <b>Development of Functional <math>\pi</math>-Conjugated Molecules Containing Cyclopentene-annulated Thiophene for Electronic Applications</b> Yutaka Ie Osaka University, Japan
1300 – 1400	Lunch
Session IIIg	<b>Chairperson: Assoc Prof Dr Zuratul Ain Abdul Hamid</b> <b>Universiti Sains Malaysia, Malaysia</b>
1400 – 1420 PMC 37	Invited Lecture <b>Silicon-Based Cross Coupling Reaction</b> Tamejiro Hiyama Chuo University, Japan 
1440 – 1500 PMC 38	Invited Lecture <b>Cyanobacterial Exopolysaccharide, Sacran, for Biomedical Applications</b> Maiko Okajima Japan Advanced Institute of Science and Technology, Japan
1500 – 1520 PMC 39	Invited Lecture <b>Crystalline Hydrogen-bonded Networks for the Adsorption of Polar Volatile Organic Compounds</b> Shun Ohta Hirosaki University, Japan 
1520 – 1540 PMC 40	Invited Lecture <b>Computational Modelling of Nanoparticles with Applications to Catalysis and Sustainable Energy</b> David Rivera Hiroshima University, Japan 
1540 – 1600 PMC 41	Invited Lecture <b>Carotenoid-based nanoparticles change their optical properties utilizing molecular distortion</b> Ryuju Suzuki Tohoku University, Japan 
1600 – 1620 PMC 42	Invited Lecture <b>A Quantitative Calculation Method of Electronic Transition Rate Constants for Comprehensive Understanding of Emission Mechanism</b> Katsuyuki Shizu Kyoto University, Japan 
1620 – 1700	Refreshments and Posters Viewing
1900 – 2200	Congress Banquet
2200	End

# ICPAC KK 2022 – Meeting Room 2, Level 1



Friday, 25 November 2022	
0830 – 1000	<b>Plenary Lectures 7 &amp; 8</b> <span style="float: right;"><b>Venue: Ballroom 2, Level 1</b></span>
1000 – 1030	Refreshments and Posters Viewing
<b>Thematic Session: Polymer and Materials Chemistry (PMC)</b>	
<b>Venue: Meeting Room 2, Level 1</b>	
<b>Session IIIh</b>	<b>Chairperson: Prof ChM Dr Mansor Ahmad Universiti Putra Malaysia, Malaysia</b>
1030 – 1050  PMC 43	Invited Lecture <b>A polymer synthesis based on polymer analogous reactions</b> Ryohei Kakuchi Gunma University, Japan 
1050 – 1110  PMC 44	Invited Lecture <b>Synthesis of Polyolefins with Cycloalkane Groups Utilizing Pd-Catalyzed Chain Walking Reaction</b> Daisuke Takeuchi Hirosaki University, Japan 
1110 – 1130  PMC 45	Invited Lecture <b>Synthesis of ethylene-propylene rubber crosslinked by dynamic covalent bonds</b> Ryo Tanaka Hiroshima University, Japan 
1130 – 1150  PMC 46	Invited Lecture <b>Synthesis of poly(dimethylsiloxane)-containing n-type semiconducting polymers and their application to OFET</b> Kei-ichiro Sato Yamagata University, Japan
1150 – 1210  PMC 47	Invited Lecture <b>Development of marine biodegradable bioplastics using polysaccharides</b> Yu-I Hsu Osaka University, Japan
1210 – 1230  PMC 48	Invited Lecture <b>Slide-Ring Materials with Polyrotaxane</b> Kohzo Ito The University of Tokyo, Japan
1230 – 1250  PMC 49	Invited Lecture <b>Electrochromic Devices with Metallo-Supramolecular Polymers</b> Masayoshi Higuchi National Institute for Materials Science, Japan
1250 – 1310  PMC 63 (NEW SLOT)	Invited Lecture <b>Filamentous Virus-Based Hierarchical Assemblies Toward Thermally Conductive Biopolymeric Materials</b> Toshiki Sawada Tokyo Institute of Technology, Japan 
1310 – 1400	Lunch
<b>Session IIIi</b>	<b>Chairperson: Prof Yu-I Hsu (TBC) Osaka University, Japan</b>
1400 – 1420  PMC 50	Invited Lecture <b>Emulsion-templated Synthesis of Smart Nanocapsules and Core-shell Microgels</b> Akifumi Kawamura Kansai University, Japan

# ICPAC KK 2022 – Meeting Room 2, Level 1

Friday, 25 November 2022	
1440 – 1500 PMC 51	Invited Lecture <b>Dynamic Molecular Assemblies toward Ferroelectricity</b> Tomoyuki Akutagawa Tohoku University, Japan
1500 – 1520 PMC 52	Invited Lecture <b>Separation of Semiconducting Carbon Nanotubes Using Isomaltodextrin and Thin-Film Transistor Applications</b> Haruka Omachi Nagoya University, Japan
1520 – 1540 PMC 53	Oral Presentation <b>Odor Threshold Prediction Using Machine Learning</b> Mitsuki Ikeda Meiji University, Japan
1540 – 1600 PMC 54	Oral Presentation <b>Optimization of Experimental Conditions with Machine Learning for Organic Synthetic Reactions Using Transition-Metal Catalyst</b> Kohei Motojima Meiji University, Japan
1600 – 1630	Refreshments and Posters Viewing
Session IIIj	<b>Chairperson: ChM Dr Chin Teen Teen</b> <b>ALS Laboratory, Malaysia</b>
1630 – 1650 PMC 55	Oral Presentation <b>Efficient Design of Experiments for LaFeO<sub>3</sub> Crystallites Via Bayesian Optimization</b> Daigo Kaneko Meiji University, Japan
1650 – 1710 PMC 56	Oral Presentation <b>Fault Detection and Diagnosis for Thermometers with Machine Learning in Metal Production Process</b> Jumpei Yoshizuka Meiji University, Japan
1710 – 1730 PMC 57	Oral Presentation <b>Prediction of Herbicide Activity with Descriptors on Local Properties of 3D Chemical Structures</b> Yuki Nakayama Meiji University, Japan
1730 – 1750 PMC 58	Oral Presentation <b>Machine Learning and Process Design Optimization Approaches for Exploration of Gas Membrane Separation Materials</b> Shunsuke Yuyama Meiji University, Japan
1750 – 1810 PMC 59	Invited Lecture <b>Self-growing Gels Inspired by Metabolism</b> Tasuku Nakajima Hokkaido University, Japan
1810	End



# ICPAC KK 2022–Meeting Room 3, Level 1

Tuesday, 22 November 2022	
Venue: Meeting Room 3, Level 1	
0800 – 0830	<b>Opening Ceremony</b> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
0830 – 1000	<b>Plenary Lectures 1 &amp; 2</b> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
1000 – 1030	Refreshments
Thematic Session: Physical Chemistry and Catalysis (PCC)	
Venue: Meeting Room 3, Level 1	
Session IVa	<b>Chairperson: Assoc Prof ChM Dr Juan Joon Ching</b> <b>Universiti Malaya, Malaysia</b>
1030 – 1100  PCC 01	Keynote Lecture <b>The role of oxygen vacancies for the enhancement of photocatalytic activity</b> Akira Yamakata Okayama University, Japan
1100 – 1120  PCC 02	Invited Lecture <b>Standardized test method for antibacterial/antiviral activity by photocatalyst</b> Hitoshi Ishiguro Kanagawa Institute of Industrial Science and Technology, Japan
1120 – 1140  PCC 03	Invited Lecture <b>Novel Gold nanocluster-based Photosensitizers for Antimicrobial Photodynamic Therapy</b> Hideya Kawasaki Kansai University, Japan 
1140 – 1200  PCC 04	Invited Lecture <b>Photochemical Processes in Higher Excited States Attained via Multiphoton Absorption and Multiple Excitation in the Condensed Phase</b> Hiroshi Miyasaka Osaka University, Japan 
1200 – 1220  PCC 05	Oral Presentation <b>Bio-mimetic C-O co-doped Graphitic Carbon Nitride for Highly Enhanced Photocatalytic Hydrogen Evolution</b> Mohamad Saufi Rosmi Universiti Kebangsaan Malaysia, Malaysia
1220 – 1240  PCC 06	Oral Presentation <b>Photocatalytic polymeric-based materials for wastewater treatment and renewable energy production</b> Mohamad Azuwa Mohamed Universiti Kebangsaan Malaysia, Malaysia
1300 – 1400	Lunch
Session IVb	<b>Chairperson: Assoc. Prof Ts ChM Dr Mohd Sani Sarjadi</b> <b>Universiti Malaysia Sabah, Malaysia</b>
1400 – 1420  PCC 07	Slot move to 23 November 2022 (1750 – 1810)
1420 – 1440  PCC 08	Oral Presentation <b>Synthesis and characterization of novel Ag-based superatomic molecules using halogen as bridging ligands</b> Sayuri Miyajima Tokyo University of Science, Japan

# ICPAC KK 2022–Meeting Room 3, Level 1

Tuesday, 22 November 2022	
1440 – 1500 PCC 09	Oral Presentation <b>Production of green diesel from waste cooking oil over Ni-Co organo-functionalized-SBA-15 catalyst</b> Darfizzi Derawi Universiti Kebangsaan Malaysia, Malaysia
1500 – 1520 PCC 10	Oral Presentation <b>Application of NiO Catalysts Towards CO<sub>2</sub> Reforming of CH<sub>4</sub> on Fixed-Bed Reactor and Membrane Reactor with Stability Reaction Test</b> Mohd Razali Bin Shamsuddin Universiti Malaysia Sabah, Malaysia
1520 – 1540 PCC 11	Invited Lecture <b>Understanding Adsorption Site Preference Based on the Topology of the Adsorption Interface</b> Yuta Tsuji Kyushu University, Japan
1540 – 1600 PCC 12	Invited Lecture <b>Ultrafast Dynamics of Product Formation in 6p Electrocyclic Reactions of Photochromic Diarylethene Derivatives</b> Hikaru Sotome Osaka University, Japan
1600 – 1700	Refreshments
WELCOME RECEPTION (SUTERA MARINA JETTY)	

Wednesday, 23 November 2022	
0830 – 1000	<b>Plenary Lectures 3 &amp; 4</b> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
1000 – 1030	Refreshments
<b>Thematic Session:</b> <b>Physical Chemistry and Catalysis (PCC)</b> <b>Venue: Meeting Room 3, Level 1</b>	
Session IVc	<b>Chairperson: ChM Li Hui Ling</b> Institut Kimia Malaysia, Malaysia
1030 – 1100 PCC 13	Keynote Lecture <b>Non-metal Photocatalyst based on Boron doped Photoreduced Graphene oxide for removal of VOCs</b> Joon Ching Juan Universiti Malaya, Malaysia
1100 – 1120 PCC 14	Invited Lecture <b>Photochemistry of Rhodopsins in the Microorganism World</b> Keiichi Inoue The University of Tokyo, Japan
1120 – 1140 PCC 15	Invited Lecture <b>Low-temperature Redox and Catalytic Performances of Cr and Rh-incorporated Cerium Oxides</b> Satoshi Muratsugu Nagoya University, Japan
1140 – 1200 PCC 16	Oral Presentation <b>Critical methanol transesterification of crude jatropha oil over calcium-based catalyst for biodiesel production</b> Teo Siow Hwa Universiti Malaysia Sabah, Malaysia



# ICPAC KK 2022–Meeting Room 3, Level 1

Wednesday, 23 November 2022	
1200 – 1220 PCC 17	Oral Presentation <b>Production of sustainable aviation fuel (SAF) over deoxygenation of palm kernel oil (PKO) by using Ni<sub>x</sub>-Co<sub>x</sub>/Fe<sub>3</sub>O<sub>4</sub> catalyst</b> Nur Athirah binti Adzahar Universiti Putra Malaysia, Malaysia
1220 – 1240 PCC 18	Invited Lecture <b>Combustion Catalysts for Fuel Ammonia</b> Satoshi Hinokuma National Institute of Advanced Industrial Science and Technology, Japan
1300 – 1400	Lunch
Session IVd	<b>Chairperson: ChM Dr Awis Sukami Bin Mohmad Sabere</b> <b>International Islamic University Malaysia, Malaysia</b>
1400 – 1420 PCC 19	Invited Lecture <b>Liquid-liquid phase separation of PNIPAM aqueous solutions depending on the size of reverse micelles</b> Kenji Sakota Osaka City University, Japan
1420 – 1440 PCC 20	Oral Presentation <b>The Phenomenon of Carbon Inhibit the Transformation of Anatase to Rutile</b> Nurul Najidah Mohamed Universiti Sultan Zainal Abidin, Malaysia
1440 – 1500 PCC 21	Invited Lecture <b>Gas-Phase Spectroscopy of Cryogenically Cooled Molecular Ions: A Case Study of Cyanine Dyes</b> Satoru Muramatsu Hiroshima University, Japan
1500 – 1520 PCC 22	Oral Presentation <b>Catalytic Deoxygenation of Palm Fatty Acid Distillate Using Thermally Stable MOF Based Catalyst</b> Ainil Hafiza Abdul Aziz Universiti Putra Malaysia, Malaysia
1520 – 1540 PCC 23	Oral Presentation <b>Development of magnetic core-shell catalyst for deoxygenation of palm kernel oil into bio-jet fuel</b> Nurul Asikin Mijan Universiti Kebangsaan Malaysia, Malaysia
1540 – 1600 PCC 24	Oral Presentation <b>A new magnetic catalyst on mesoporous support MCM-48 for the biodiesel production: CaO-Fe<sub>3</sub>O<sub>4</sub>/MCM-48</b> Wan Nur Aini Wan Mokhtar Universiti Kebangsaan Malaysia, Malaysia
1600 – 1630	Refreshments
Session IVe	<b>Chairperson: Dr Mohd Razali Bin Shamsuddin</b> <b>Universiti Malaysia Sabah, Malaysia</b>
1630 – 1650 PCC 25	Invited Lecture <b>Evaluation of Nanostructure and Position-Dependent Diffusivity of Guest Molecules in Polymeric Materials by Using Single-Molecule Tracking of Fluorescence-Switchable Diarylethene Derivatives</b> Syoji Ito Osaka University, Japan

# ICPAC KK 2022–Meeting Room 3, Level 1

Wednesday, 23 November 2022	
1650 – 1710 PCC 26	Oral Presentation <b>Synthesis And Characterization of Calcium Oxide for Catalytic Transesterification Biodiesel of Coconut Solid Waste</b> Salmiah Jamal Binti Mat Rosid Universiti Sultan Zainal Abidin, Malaysia
1710 – 1730 PCC 27	Invited Lecture <b>Enhancing Total Luminance Intensity of a Eu(III) Complex Doped in Host-Guest Films using Triplet Sensitization</b> Kiyoshi Miyata Kyushu University, Japan
1730 – 1750 PCC 28	Invited Lecture <b>Electrophoretic mobility of a water-in-oil droplet separately affected by the net charge and surface charge density</b> Yuki Uematsu Kyushu Institute of Technology, Japan
1750 – 1810 PCC 07 (NEW SLOT)	Oral Presentation <b>Endurance Capacity of Supported Potassium Oxide Catalyst in Transesterification Reaction of Waste Cooking Oil</b> Susilawati Toemen Universiti Teknologi Malaysia, Malaysia
1750	End

Thursday, 24 November 2022	
0830 – 1000	<b>Plenary Lectures 5 &amp; 6</b> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
1000 – 1030	Refreshments and Posters Viewing
<b>Thematic Session: Physical Chemistry and Catalysis (PCC)</b>	
<b>Venue: Meeting Room 3, Level 1</b>	
Session IVf	<b>Chairperson: Academician ChM Dr Ho Chee Cheong Institut Kimia Malaysia, Malaysia</b>
1030 – 1050 PCC 29	Invited Lecture <b>Digital Screening for High Entropy Alloy Nanocatalysts</b> Michihisa Koyama Shinshu University, Japan
1050 – 1110 PCC 30	Oral Presentation <b>Hydro-processing of palm products for renewable diesel production using La- zeolite-based catalyst</b> Nur Azreena Idris Malaysian Palm Oil Board, Malaysia
1110 – 1130 PCC 31	Invited Lecture <b>DFT Mechanistic Study on C-H Activation by Heterogeneous Catalysts</b> Jun-ya Hasegawa Hokkaido University, Japan
1130 – 1150 PCC 32	Invited Lecture <b>Development of memory partitioned parallel TDDFT program for calculation of response quantities of large molecules</b> Muneaki Kamiya Gifu University, Japan
1150 – 1210 PCC 33	Invited Lecture <b>CO<sub>2</sub> photoreduction using molecular anion-based materials</b> Kazuhiko Maeda Tokyo Institute of Technology, Japan

# ICPAC KK 2022–Meeting Room 3, Level 1



Thursday, 24 November 2022	
1210 – 1230 PCC 34	Invited Lecture <b>Abiotic synthesis and catalytic activity of iron-sulfur clusters</b> Daisuke Ishikawa Tokyo Institute of Technology, Japan
1300 – 1400	Lunch
Session IVg	<b>Chairperson: Dr. Mohamad Saufi Rosmi</b> <b>Universiti Kebangsaan Malaysia, Malaysia</b>
1400 – 1420 PCC 35	Invited Lecture <b>Theoretical study of the reaction mechanism of inhibition of SARS-CoV-2 M<sup>pro</sup> by N3 complex</b> Toshio Asada Osaka Prefecture University, Japan
1420 – 1440 PCC 36	Invited Lecture <b>Surface Complex Chemistry from Weak- to Strong-Coupling Regime</b> Junichi Fujisawa Gunma University, Japan
1440 – 1500 PCC 37	Oral Presentation <b>A guide to designing graphene-philic surfactants</b> Azmi Mohamed Universiti Pendidikan Sultan Idris, Malaysia
1500 – 1520 PCC 38	Invited Lecture <b>Reaction Kinetics of Nitric Oxide Molecules on Silver Cluster Cations: Size-Dependent Reaction Pathways</b> Masashi Arakawa Kyushu University, Japan
1520 – 1540 PCC 39	Invited Lecture <b>Phase Equilibria for Sulfur Dioxide (SO<sub>2</sub>) with Methanol or Dimethyl ether and their Application to SO<sub>2</sub> Absorbents</b> Tomoya Tsuji Universiti Teknologi Malaysia, Malaysia
1540 – 1600 PCC 40	Invited Lecture <b>Fabrication and Evaluation of Memory Properties of Lateral-type FET with Preyssler-type Polyoxometalates</b> Masaru Fujibayashi Hiroshima University, Japan
1600 – 1700	Refreshments and Posters Viewing
1900 – 2200	Congress Banquet
2200	End




# ICPAC KK 2022–Meeting Room 3, Level 1

Friday, 25 November 2022	
0830 – 1000	<b>Plenary Lectures 7 &amp; 8</b> <span style="float: right;"><b>Venue: Ballroom 2, Level 1</b></span>
1000 – 1030	Refreshments and Posters Viewing
<b>Thematic Session: Analytical and Environmental Chemistry &amp; Engineering (AEC)</b>	
<b>Venue: Meeting Room 3, Level 1</b>	
<b>Session IIc</b>	<b>Chairperson: ChM Dickens Wong Vui Foo</b> <b>Jabatan Kimia Malaysia, Malaysia</b>
<b>1030 – 1050</b> <b>AEC 14</b>	Invited Lecture <b>Novel Toxicity Evaluation of Aerosol Particles using Cyclone Collection followed by Exposure Experiments</b> Tomoaki Okuda Keio University, Japan
Friday, 25 November 2022	
<b>1050 – 1110</b> <b>AEC 15</b>	Oral Presentation <b>Determination of Skin Exposure Limit for Factory Workers, Distributors and Consumers while Handling Perfumes: From Industry Perspective</b> Muhammad Zamir Othman SugarBomb Worldwide Sdn Bhd, Malaysia
<b>1110 – 1130</b> <b>AEC 16</b>	Invited Lecture <b>Development of colorimetric sensor using microparticles</b> Yukiko Moriwa Tokyo University of Pharmacy and Life Sciences, Japan
<b>1130 – 1150</b> <b>AEC 17</b>	Oral Presentation <b>Nickel Complexes for Oxygen Evolution Reaction</b> Sota Funaki Tokyo University of Science, Japan
<b>1150 – 1210</b> <b>AEC 18</b>	Oral Presentation <b>Assessment of Titrimetric, Calorimetric and Spectrometric Method for Determination of Exchangeable Aluminium in Soils : A Comparison Study</b> Dalila Daud United Plantations Berhad, Malaysia
<b>1210 – 1230</b> <b>AEC 19</b>	Invited Lecture <b>SARS-CoV-2 Protein Detection Using Photonic Integrated Biosensor Based on Silicon Micro-Ring Resonator</b> Yuhei Ishizaka Kanto Gakuin University, Japan
<b>1300 – 1400</b>	Lunch
<b>Thematic Session: Physical Chemistry and Catalysis (PCC)</b>	
<b>Session IVh</b>	<b>Chairperson: Assoc Prof Dr Nor Shifa bin Shuib</b> <b>Universiti Pendidikan Sultan Idris, Malaysia</b>
<b>1400 – 1420</b> <b>PCC 41</b>	Invited Lecture <b>High ionic conductivity at the interfaces of solid electrolytes and electrodes</b> Taro Hitosugi The University of Tokyo, Japan
<b>1440 – 1500</b> <b>PCC 42</b>	Oral Presentation <b>Shaping of Manganese Oxide/Zirconia Oxide Catalysts for Ketonization of Palmitic Acids</b> Koi Zi Kang PETRONAS, Malaysia





# ICPAC KK 2022–Meeting Room 3, Level 1



Friday, 25 November 2022		
1500 – 1520 PCC 43	Invited Lecture <b>Time-Resolved Infrared Spectroscopic Studies of Artificial Photosynthesis Using Metal Complexes</b> Ken Onda Kyushu University, Japan	
1520 – 1540 PCC 44	Oral Presentation <b>Solid-state ion exchange to organic cations using channel structures in the crystal</b> Mizuki Ito Hiroshima University, Japan	
1540 – 1600 PCC 45	Invited Lecture <b>Universal Relationship between Fractal Dimensions and Cooperative Phenomena</b> Toshio Naito Ehime University, Japan	
1600 – 1630	Refreshments and Posters Viewing	
<b>Thematic Session: Physical Chemistry and Catalysis (PCC)</b>		
Session IVi	<b>Chairperson: ChM Biling Peter Raig</b> Jabatan Kimia Malaysia, Malaysia, Malaysia	
1630 – 1650 PCC 46	Invited Lecture <b>Solid State Structure, Property and Application of Lithium-Cation Endohedral [C60] Fullerene</b> Eunsang Kwon Tohoku University, Japan	
1650 – 1710 PCC 47	Invited Lecture <b>Application of Universal Neural Network Potential to Nitrogen Dissociation over Ru/La<sub>0.5</sub>Ce<sub>0.5</sub>O<sub>1.75-x</sub> for Ammonia Synthesis</b> Valadez Gerardo Shinshu University, Japan	 zoom
1710 – 1730 PCC 48	Invited Lecture <b>Femtosecond Pump-Probe Microspectroscopy of Single Organic Nanoparticles</b> Yukihide Ishibashi Ehime University, Japan	 zoom
1730 – 1750 PCC 49	Invited Lecture <b>Stable Mixed-Anion Semiconductors for Photocatalytic Water Splitting under Visible Light</b> Ryu Abe Kyoto University, Japan	
1750 – 1810 PCC 50	Invited Lecture <b>Nanoarchitectonics of Heterogeneous Photocatalysts Based on Nanospace Materials and Titania</b> Makoto Ogawa VISTEC, Japan	
1810	End	

# ICPAC KK 2022–Meeting Room 4, Level 1






Tuesday, 22 November 2022	
Thematic Session: Inorganic and Coordination Chemistry (ICC)	
Venue: Meeting Room 4, Level 1	
0800 – 0830	Opening Ceremony <span style="float: right;">Venue: Ballroom 2, Level 1</span>
0830 – 1000	Plenary Lectures 1 & 2 <span style="float: right;">Venue: Ballroom 2, Level 1</span>
1000 – 1030	Refreshments
Thematic Session: Inorganic and Coordination Chemistry (ICC)	
Venue: Meeting Room 4, Level 1	
Session Va	Chairperson: Assoc Prof ChM Dr Darfizzi Derawi Universiti Kebangsaan Malaysia, Malaysia
1030 – 1100  ICC 01	Keynote Lecture <b>Design of metal-containing host molecules with capping functions</b> Shigehisa Akine Kanazawa University, Japan <span style="float: right;"> zoom</span>
1100 – 1120  ICC 02	Invited Lecture <b>Vapochromism of Metal Complexes Based on Intermolecular Interactions</b> Shingo Hattori Yokohama City University, Japan <span style="float: right;"> zoom</span>
1120 – 1140  ICC 03	Oral Presentation <b>Synthesis, Crystal Structure, and DNA-Binding Studies of phenolbenzimidazole complexes</b> Nurul Huda Abd Karim Universiti Kebangsaan Malaysia, Malaysia
1140 – 1200  ICC 04	Oral Presentation <b>Efficient Fluorophores Featuring D-<math>\pi</math>-A and D-<math>\pi</math>-D Systems of Chalcone Derivatives as Active Materials in OLEDs</b> Wan Mohd Khairul Wan Mohamed Zin Universiti Malaysia Terengganu, Malaysia
1200 – 1220  ICC 05	Oral Presentation <b>Metallodrug against drug-resistant malaria</b> Ng Chew Hee International Medical University, Malaysia
1220 – 1240  ICC 06	Invited Lecture <b>Ultrafast Charge Transfer Architecture via Dielectric Interface</b> Takashi Teranishi Okayama University, Japan
1300 – 1400	Lunch
Session Vb	Chairperson: Prof. Wan Mohd Khairul Wan Mohamed Zin Universiti Malaysia Terengganu, Malaysia
1400 – 1420  ICC 07	Invited Lecture <b>Thermo- and Mechano-Triggered Luminescence ON/OFF Switching of Supercooled Liquid of Platinum(II) Complex</b> Masaki Yoshida Hokkaido University, Japan <span style="float: right;"> zoom</span>
1420 – 1440  ICC 08	Invited Lecture <b>Strong <math>\sigma</math>-Donating N-Heterocyclic Silylenes</b> Norio Nakata Saitama University, Japan

# ICPAC KK 2022–Meeting Room 4, Level 1

Tuesday, 22 November 2022		
1440 – 1500 ICC 09	Invited Lecture <b>Selective Catalytic Conversion of Natural Products in a Confined Nanospace of a Porous Metal-Macrocycle Framework</b> Shohei Tashiro The University of Tokyo, Japan	 zoom
1500 – 1520 ICC 10	Invited Lecture <b>Ruthenium-Catalyzed Regio- and Stereoselective Hydrosilylation of Alkynes with Hydrooligosilanes without Si–Si Bond Cleavage</b> Ken-ichiro Kanno Gunma University, Japan	 zoom
1520 – 1540 ICC 11	Invited Lecture <b>Redox Control of Diruthenium Complexes by Bridging or Co-existing Ligands</b> Tomoyo Misawa-Suzuki Sophia University, Japan	 zoom
1540 – 1600 ICC 12	Invited Lecture <b>Proton–Electron Coupling Behaviors Based on a d-<math>\pi</math> Hybridized System</b> Mikihiro Hayashi Nagasaki University, Japan	 zoom
1600 – 1700	Refreshments	
WELCOME RECEPTION (SUTERA MARINA JETTY)		


Wednesday, 23 November 2022		
0830 – 1000	<b>Plenary Lectures 3 &amp; 4</b>	<i>Venue: Ballroom 2, Level 1</i>
1000 – 1030	Refreshments	
<b>Thematic Session: Inorganic and Coordination Chemistry (ICC)</b>		
<b>Venue: Meeting Room 4, Level 1</b>		
Session Vc	<b>Chairperson: Dr Wan Nur Aini Wan Mokhtar Universiti Kebangsaan Malaysia, Malaysia</b>	
1030 – 1100 ICC 13	Keynote Lecture <b>Organometallic molecular devices</b> Munetaka Akita Tokyo Institute of Technology, Japan	
1100 – 1120 ICC 14	Invited Lecture <b>Probing order within disorder in glasses and liquids by X-ray and neutron diffraction</b> Shinji Kohara National Institute for Materials Science, Japan	
1120 – 1140 ICC 15	Invited Lecture <b>Printed Electronics Based on Self-assembly</b> Lingying Li National Institute for Materials Science, Japan	 zoom
1140 – 1200 ICC 16	Oral Presentation <b>Synthesis, Spectroscopy, and Conductivity Studies of 4(diphenylamino)benzaldehyde-4-(3-fluorophenyl) thiosemicarbazone and Their Metal Complexes</b> Md. Uwaisulqarni Osman Universiti Malaysia Terengganu, Malaysia	
1200 – 1220 ICC 17	Invited Lecture <b>Preparation and Reactivity of Air-stable Palladium(II)-(<math>\sigma</math>-heteroaryl) Complexes via Hydropalladation of o-Alkynyl naphthol Derivatives</b> Sachie Arae Kumamoto University, Japan	 zoom





# ICPAC KK 2022–Meeting Room 4, Level 1

Wednesday, 23 November 2022	
1220 – 1240 ICC 18	Invited Lecture <b>Coordination-recombination driven novel ferroelectric materials</b> Shintaro Yasui Tokyo Institute of Technology, Japan
1300 – 1400	Lunch
Session Vd	<b>Chairperson: ChM Suzanna J. Rice Oxley</b> <b>Institut Kimia Malaysia, Malaysia</b>
1400 – 1420 ICC 19	Invited Lecture <b>Photo-driven Transformations of Methane and Benzene by Organometallic Complexes</b> Takahiro Matsumoto Kyushu University, Japan 
1420 – 1440 ICC 20	Invited Lecture <b>Photocatalytic CO<sub>2</sub> reduction and H<sub>2</sub> production using metal complexes</b> Takahiko Kojima University of Tsukuba, Japan 
1440 – 1500 ICC 21	Invited Lecture <b>Paradigm Change for Solid State Reaction</b> Kenji Toda Niigata University, Japan
1500 – 1520 ICC 22	Invited Lecture <b>Molecular Conductors with Polyoxometalates and Multinuclear Complexes</b> Kazuhiro Uemura Gifu University, Japan 
1520 – 1540 ICC 23	Invited Lecture <b>Molecular Conductor with Proton-Assisted Electron Transfer</b> Makoto Tadokoro Tokyo University of Science, Japan 
1540 – 1600 ICC 24	Invited Lecture <b>Local Structure Analysis of Ca<sub>2</sub>(Mn,Ti)O<sub>4</sub> Black Pigments by X-ray Synchrotron Radiation</b> Ryohei Oka Nagoya Institute of Technology, Japan
1600 – 1630	Refreshments
Session Ve	<b>Chairperson: ChM Siti Fatima Binti Dek</b> <b>Institut Kimia Malaysia, Malaysia</b>
1630 – 1650 ICC 25	Invited Lecture <b>Development of External-stimuli-responsive Cyanide-bridged Metal Complex</b> Yoshihiro Sekine Kumamoto University, Japan
1650 – 1710 ICC 26	Oral Presentation <b>Synthesis and Spectroscopic Characterisations of Phosphorescent Iridium(III) Complex with 2-(2-butoxy-4-fluorophenyl)pyridine Ligand</b> Noorshida Mohd Ali Universiti Pendidikan Sultan Idris, Malaysia
1710 – 1730 ICC 27	Invited Lecture <b>Inorganic materials discovery at high pressures using super-high-energy ball milling</b> Satoshi Ohara Osaka University, Japan 



# ICPAC KK 2022–Meeting Room 4, Level 1





Wednesday, 23 November 2022	
1730 – 1750	Invited Lecture <b>Influence of additives and heat treatment on infrared emission properties of rutile type titanium dioxide</b> Yuichiro Kuroki Salesian Polytechnic, Japan
ICC 28	 zoom
1750	End

Thursday, 24 November 2022	
0830 – 1000	<b>Plenary Lectures 5 &amp; 6</b> <span style="float: right;"><b>Venue: Ballroom 2, Level 1</b></span>
1000 – 1030	Refreshments and Posters Viewing
<b>Thematic Session: Inorganic and Coordination Chemistry (ICC)</b>	
<b>Venue: Meeting Room 4, Level 1</b>	
Session Vf	<b>Chairperson: ChM Halimah Abdul Rahim Jabatan Kimia Malaysia, Malaysia</b>
1030 – 1050	Invited Lecture <b>Highly Potent Methane Oxidation Catalyst Achieved by Close Stacking of Double-Decker-Type Iron Phthalocyanine Complex on Graphite Surface</b> Yasuyuki Yamada Nagoya University, Japan
ICC 29	 zoom
1050 – 1110	Invited Lecture <b>High Water-Oxidation Catalytic Activity of FeNi-Layered Double-Hydroxide Nanoflakes on Carbon Paper</b> Manabu Ishizaki Yamagata University, Japan
ICC 30	 zoom
1110 – 1130	Invited Lecture <b>Formal Hydrogenation of Zirconacycloalkynes And -allenes by Metal Hydrides</b> Noriyuki Suzuki Sophia University, Japan
ICC 31	 zoom
1130 – 1150	Cancel Participation
1150 – 1210	Invited Lecture <b>Development of MgM<sub>2</sub>O<sub>4</sub> Positive Electrode Nanoparticles for Post Lithium-Ion Batteries Based on Total Scattering Data</b> Naoto Kitamura Tokyo University of Science, Japan
ICC 33	 zoom
1210 – 1230	Invited Lecture <b>Liquid crystal properties of two-dimensional borophene analogues synthesized in solution phase</b> Dongwan Yan Kanagawa Institute of Industrial Science and Technology, Japan
ICC 34	
1230 – 1250	Oral Presentation <b>Anomalous evolution of Ni<sup>2+</sup> local environment with miscibility change in Na<sub>2</sub>O-B<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> glass and melt</b> Kana Tomita Tokyo Institute of Technology, Japan
ICC 35	 zoom
1300 – 1400	Lunch

# ICPAC KK 2022–Meeting Room 4, Level 1

Thursday, 24 November 2022	
Session Vg	Chairperson: ChM Dr Muhammad Zamir Othman SugarBomb Worldwide Sdn Bhd, Malaysia
1400 – 1420 ICC 36	Invited Lecture <b>Amphidynamic Molecular Crystal for Functional Materials</b> Ryo Tsunashima Yamaguchi University, Japan
1420 – 1440 ICC 37	Invited Lecture <b>Catalytic Nitrogen Fixation by a Dinitrogen-Bridged Dirhenium Complex Bearing PNP-Pincer Ligands under Mild Reaction Conditions</b> Shogo Kuriyama The University of Tokyo, Japan
1440 – 1500 ICC 38	Invited Lecture <b>Bright Lanthanide(III) Emission Using Polyaromatic Photosensitizers and Their Photo-Functional Properties</b> Yuichi Kitagawa Hokkaido University, Japan
1500 – 1520 ICC 39	Invited Lecture <b>Atomic-scale and in-situ electron microscopy study on nanostructure in ferroelectrics</b> Yukio Sato Kyushu University, Japan
1520 – 1540 ICC 40	Invited Lecture <b>Application of metal cluster compounds as catalysts</b> Satoshi Kamiguchi RIKEN, Japan
1540 – 1600 ICC 41	Invited Lecture <b>A New Structural Form in Layered Perovskites: Charge-Neutral Perovskite Layer Composed from Tetravalent Cerium</b> Takuya Hasegawa Tohoku University, Japan
1600 – 1700	Refreshments and Posters Viewing
1900 – 2200	Congress Banquet
2200	End


# ICPAC KK 2022–Meeting Room 4, Level 1

Friday, 25 November 2022	
Venue: Meeting Room 4, Level 1	
0830 – 1000	Plenary Lectures 7 & 8 <span style="float: right;">Venue: Ballroom 2, Level 1</span>
1000 – 1030	Refreshments and Posters Viewing
Thematic Session: Inorganic and Coordination Chemistry (ICC)	
Venue: Meeting Room 4, Level 1	
Session Vh	Chairperson: Dato ChM Dr Hj Mas Rosemal Hakim Mas Haris Institut Kimia Malaysia, Malaysia
1030 – 1050  ICC 42	Invited Lecture <b>Application of Porous Coordination Polymer Containing Aromatic Azo Linkers as Cathode Active Materials in Sodium-Ion Batteries</b> Hirofumi Yoshikawa Kwansei Gakuin University, Japan 
1050 – 1110  ICC 43	Oral Presentation <b>The Addition of Extra Atom in High Nuclear Silver Cluster and Its Impact on Photoluminescence</b> Mana Nakamoto Tokyo University of Science, Japan
1110 – 1130  ICC 44	Invited Lecture <b>Novel Near-Infrared Reflective Black Inorganic Pigment Based on Cerium Vanadate</b> Toshiyuki Masui Tottori University, Japan 
1130 – 1150  ICC 45	Invited Lecture <b>Reversible Chemical Modification of Terbium Complexes: Chirality and Luminescence Switching</b> Chihiro Kachi-Terajima Toho University, Japan
1150 – 1210  ICC 46	Invited Lecture <b>Photoluminescence of Eu<sup>2+</sup>-activated silicate phosphors designed by crystal-site engineering</b> Yasushi Sato Okayama University of Science, Japan 
1210 – 1230  ICC 47	Invited Lecture <b>Iron uptake in dicotyledons using trihydroxamate-type microbial artificial siderophores with terminal carboxyl groups</b> Kenji Matsumoto Kochi University, Japan
1230 – 1250  ICC 48	Oral Presentation <b>Spectroscopic and Theoretical Studies on Reaction Mechanism of Iridium Complex with Pyridine-Formimidamide Ancillary Ligand</b> Nurul Husna As Saedah Bt Bain Universiti Pendidikan Sultan Idris, Malaysia
1300 – 1400	Lunch
Session Vi	Chairperson: ChM Debbie Annabell Peter Institut Kimia Malaysia, Malaysia
1400 – 1420  ICC 49	Invited Lecture <b>Nanostructured Anodic Metal Oxides for Photoreduction of Hexavalent Chromium</b> Wai Kian Tan Toyohashi University of Technology, Japan 

# ICPAC KK 2022–Meeting Room 4, Level 1

Friday, 25 November 2022	
1420 – 1500 ICC 50	Invited Lecture <b>DNA-Scaffolded Bioluminescence Energy Transfer (dsBRET)</b> Akinori Kuzuya Kansai University, Japan
1500 – 1520 ICC 51	Invited Lecture <b>Solvato- and Piezofluorochromism of Organoboron Complexes with the [2.2]Paracyclophane Moiety</b> Hiroschi Ikeda Osaka Metropolitan University, Japan
1520 – 1540	<b>Cancel Participation</b>
1540 – 1600 ICC 53	Invited Lecture <b>Molybdenum Complex Featuring a Mo≡Ge Triple Bond</b> Hisako Hashimoto Tohoku University, Japan
1600 – 1630	Refreshments and Posters Viewing
<b>Thematic Session: Organic and Biomolecular Chemistry (OBC)</b>	
Session Iq	<b>Chairperson: Prof Ryo Okamoto (TBC)</b> Osaka University, Japan
1630 – 1650 OBC 96	Oral Presentation <b>Thiourea Fused <math>\gamma</math>-amino Alcohol Organocatalyst for Asymmetric Mannich Reaction of <math>\beta</math>-keto Carbonyl Compounds with Imines</b> Miku Nomura Muroran Institute of Technology, Japan
1650 – 1710 OBC 97	Oral Presentation <b>Asymmetric Hetero Diels-Alder Reaction of Isatins with Enones Using Amino Alcohol Organocatalyst</b> Chisato Tsutsumi Muroran Institute of Technology, Japan
1710 – 1730 OBC 98	Invited Lecture <b>Development of Nanoparticle Composed of BSH and Cationic Polymer for Boron Neutron Capture Therapy (BNCT)</b> Tomohiro Tanaka Tokyo University of Science, Japan
1730 – 1750 OBC 99	Invited Lecture <b>Single-Molecule Device-Inspired Metal-Organic Framework for Merging Photocatalysis and Transition-Metal Catalysis with Confinement Effect</b> Tiexin Zhang Dalian University of Technology, China
1750 – 1810 OBC 100	Invited Lecture <b>Direct polymerization of atmospheric CO<sub>2</sub> and <math>\alpha,\omega</math>-diols by CeO<sub>2</sub> catalyst</b> Masazumi Tamura Osaka City University, Japan
1810	End

# ICPAC KK 2022– Meeting Room 5, Level 1

Tuesday, 22 November 2022	
0800 – 0830	Opening Ceremony <span style="float: right;">Venue: Ballroom 2, Level 1</span>
0830 – 1000	Plenary Lectures 1 & 2 <span style="float: right;">Venue: Ballroom 2, Level 1</span>
1000 – 1030	Refreshments
Thematic Session: ICPAC General Session (IGS)	
Venue: Meeting Room 5, Level 1	
Session VIa	Chairperson: Assoc Prof Dato ChM Dr Yew Chong Hooi Institut Kimia Malaysia, Malaysia
1030 – 1100 IGS 01	Keynote Lecture <b>Structures and Properties of Stimuli-responsive Molecular Crystalline Materials Composed of Unique Shaped Molecules</b> Yumi Yakiyama Osaka University, Japan 
1100 – 1120 IGS 02	Invited Lecture <b>A series of glycopolymers having N-acetyl-D-glucosamine moieties that can be used for evaluations of lectin—carbohydrate interactions</b> Koji Matsuoka Saitama University, Japan
1120 – 1140 IGS 03	Oral Presentation <b>Fatty Acid Ketonization: The Catalytic Activity Mn/ZrO<sub>2</sub> Catalysts for Decarboxylative Coupling of Neat Palmitic Acid</b> Shamina binti Abdul Aleem PETRONAS, Malaysia
1140 – 1200 IGS 04	Invited Lecture <b>Formation of Nanostructured Oxynitrides from Precisely designed Precursors</b> Yusuke Asakura Waseda University, Japan
1200 – 1220 IGS 05	Oral Presentation <b>Radiological Risks Related to Natural Radionuclide in Selected Fish from The Coast Of Terengganu, Malaysia</b> Muhammad Nur Rashidi Bin Rosli Universiti Malaysia Sabah, Malaysia 
1220 – 1240 IGS 06	Invited Lecture <b>Toward the Development of “Symbiosis”-Targeted Environmentally-Friendly Control of Whitefly</b> Akiko Fujiwara Gunma University, Japan 
1240 – 1300 IGS 07	Invited Lecture <b>Design and Synthesis of Boron-Containing Macrocyclic Polyamines as Boron Neutron Capture Therapy (BNCT) Agents</b> Shin Aoki Tokyo University of Science, Japan 
1300 – 1400	Lunch
Session VIb	Chairperson: Assoc Prof ChM Dr Ng Chew Hee International Medical University, Malaysia
1400 – 1420 IGS 08	Invited Lecture <b>Supercritical CO<sub>2</sub> technology for the dry production of surface modified iron oxide nanocrystal</b> Yasuhiko Orita Tokyo Institute of Technology, Japan 

# ICPAC KK 2022– Meeting Room 5, Level 1

Tuesday, 22 November 2022	
1420 – 1440 IGS 09	Invited Lecture <b>Roles of hydration water on the self-assembly of soft matters and biomolecules</b> Mafumi Hishida University of Tsukuba, Japan
1440 – 1500 IGS 10	Invited Lecture <b>Water-Induced Crystal Transition and Accelerated Relaxation Processes of Melt-spun Polyamide 4 Microfibers</b> Hisao Matsuno Kyushu University, Japan
1500 – 1520 IGS 11	Invited Lecture <b>Modulation of superconductivity using Li-ion secondary battery technique</b> Kohei Yoshimatsu Tohoku University, Japan
1520 – 1540 IGS 12	Invited Lecture <b>Ultra-stretching of poly(methyl methacrylate) doped with lithium salts due to the water absorption</b> Asae Ito Kanazawa University, Japan
1540 – 1600 IGS 13	Invited Lecture <b>Highly-Sensitive Hydrogen Sensor and Biosensor Based on Silicon Micro-Ring Resonators</b> Taro Arakawa Yokohama National University, Japan
1600 – 1700	Refreshments
WELCOME RECEPTION (SUTERA MARINA JETTY)	

Wednesday, 23 November 2022	
0830 – 1000	<b>Plenary Lectures 3 &amp; 4</b> <span style="float: right;"><i>Venue: Ballroom 2, Level</i></span>
1000 – 1030	Refreshments
<b>Thematic Session: ICPAC General Session (IGS)</b>	
<b>Venue: Meeting Room 5, Level 1</b>	
Session VIc	<b>Chairperson: Prof ChM Dr Yang Farina Abdul Aziz Universiti Kebangsaan Malaysia, Malaysia</b>
1030 – 1100 IGS 14	Keynote Lecture <b>Retaining Early Career Chemists: Crafting Career Paths in Chemistry</b> Quek Ai Hwa HELP University Malaysia, Malaysia
1100 – 1120 IGS 15	Invited Lecture <b>Electronic Band Structure of Ferroelectric BaTiO<sub>3</sub></b> Jun Kano Okayama University, Japan
1120 – 1140 IGS 16	Invited Lecture <b>Generation Of Multifunctional Capsules and Visualization Of Complex Fluid Flow Fields</b> Keiko Ishii Aoyama Gakuin University, Japan

# ICPAC KK 2022– Meeting Room 5, Level 1

Wednesday, 23 November 2022		
1140 – 1200 IGS 17	Invited Lecture <b>Fiber-optic sensor device for distributed and quasi-distributed hydrogen leakage detection</b> Shinji Okazaki Yokohama National University, Japan	 zoom
1200 – 1220 IGS 18	Invited Lecture <b>Extraordinary Metal-Insulator Transitions at 25 Å Periodic Thickness</b> Masahito Sakoda Osaka Metropolitan University, Japan	 zoom
1220 – 1240 IGS 19	Invited Lecture <b>Hidden Symmetry and Periodicity of Polyatomic Clusters</b> Naoki Haruta Kyoto University, Japan	 zoom
1240 – 1300 IGS 20	Invited Lecture <b>miRNA Detection System Based on DNA-mediated Catalytic Reaction and Nanoparticle Assembly</b> Seiichi Ohta The University of Tokyo, Japan	
1300 – 1400	<b>Lunch</b>	
Session VI d	<b>Chairperson: Dr Salmiah Jamal Binti Mat Rosid</b> <b>Universiti Sultan Zainal Abidin, Malaysia</b>	
1400 – 1420 IGS 21	Invited Lecture <b>Unique Carbon-Nanotube Composites and Hydrogels</b> Takahide Oya Yokohama National University, Japan	
1420 – 1440 IGS 22	Invited Lecture <b>Development of drug-free liposomal formulation with anti-tumor effect induced by near-infrared irradiation</b> Shoko Itakura Josai University, Japan	 zoom
1440 – 1500 IGS 23	Invited Lecture <b>Development of Catalyst technology for Nitrogen Cycle for a sustainable society</b> Yuichi Manaka Tokyo Institute of Technology, Japan	
1500 – 1520 IGS 24	Invited Lecture <b>Cell-Based Tumor-Targeted Therapy by Cell Surface Engineering</b> Kosuke Kusamori Tokyo University of Science, Japan	 zoom
1520 – 1540 IGS 25	Invited Lecture <b>Carbonate apatite artificial bone made by dissolution-precipitation reaction</b> Kunio Ishikawa Kyushu University, Japan	
1540 – 1600 IGS 26	Invited Lecture <b>Autonomous Flow Synthesis with a Self-Optimising Algorithm</b> Mireia Rodriguez-Zubiri Université de Nantes, France	 zoom
1600 – 1630	Refreshments	









# ICPAC KK 2022– Meeting Room 5, Level 1

Wednesday, 23 November 2022	
Session VIe	Chairperson: ChM Dr Nurul Asikin Mijan Universiti Kebangsaan Malaysia
1630 – 1650 IGS 27	Invited Lecture <b>Identifying time scales for violation/preservation of Stokes-Einstein relation in supercooled water</b> Takeshi Kawasaki Nagoya University, Japan
1650 – 1710 IGS 28	Invited Lecture <b>Air and Water Purification by Photocatalyst</b> Ken-ichi Katsumata Tokyo University of Science, Japan
1710 – 1730 IGS 29	Invited Lecture <b>Dynamical Measurement of Material Characteristics using Diffracted X-ray Blinking</b> Masahiro Kuramochi Ibaraki University, Japan
1730 – 1750 IGS 30	Invited Lecture <b>Optical properties for Red and Infrared Emitting Scintillators Containing a Novel Emission Center</b> Shunsuke Kurosawa Tohoku University, Japan
1750 – 1810 IGS 31	Invited Lecture <b>Quantitative Structure-Activity Relationship Analysis Using Molecular Images: Current Development of the DeepSnap Method</b> Yoshihiro Uesawa Meiji Pharmaceutical University, Japan
1810	End

Thursday, 24 November 2022	
0830 – 1000	<b>Plenary Lectures 5 &amp; 6</b> <span style="float: right;"><b>Venue: Ballroom 2, Level 1</b></span>
1000 – 1030	Refreshments and Posters Viewing
<b>Thematic Session: ICPAC General Session (IGS)</b>	
<b>Venue: Meeting Room 5, Level 1</b>	
Session VI f	Chairperson: Prof Takahiko Matsushita Saitama University, Japan
1030 – 1100 IGS 32	Keynote Lecture <b>Proliferating Coacervate Droplet Revealing “Droplet World” in Origins of Life</b> Muneyuki Matsuo Hiroshima University, Japan
1100 – 1120 IGS 33	Invited Lecture <b>Development of long-haul optical fibers and glasses for fibers</b> Madoka Ono Hokkaido University, Japan
1120 – 1140 IGS 34	Invited Lecture <b>Development of High-throughput and High-Sensitive Single Cell Analysis System using Flow Cytometer and Inductively Coupled Plasma</b> Akitoshi Okino Tokyo Institute of Technology, Japan
1140 – 1200 IGS 35	Invited Lecture <b>Chemical Synthesis of New Magnets by Topotactic Reaction</b> Masaki Mizuguchi Nagoya University, Japan



# ICPAC KK 2022– Meeting Room 5, Level 1

Thursday, 24 November 2022		
1200 – 1220 IGS 36	Invited Lecture <b>Flexible all-solid-state battery for wearable devices</b> Muneyasu Suzuki National Institute of Advanced Industrial Science and Technology, Japan	 zoom
1220 – 1240 IGS 37	Invited Lecture <b>Flash Chemistry Makes Impossible Organolithium Chemistry Possible</b> Aiichiro Nagaki Hokkaido University, Japan	 zoom
1300 – 1400	Lunch	
Session VIg	<b>Chairperson: Dr Mohamad Azuwa Mohamed</b> <b>Universiti Kebangsaan Malaysia, Malaysia</b>	
1400 – 1420 IGS 38	Invited Lecture <b>Ultrasmall Synergistic Nanocluster Catalyst for CO<sub>2</sub> Conversion</b> Wang Jiasheng Dalian University of Technology, China	 zoom
1420 – 1440 IGS 39	Invited Lecture <b>In situ spectroscopic study of electrochemical deposition processes and molecular sensing using microchemical system</b> Akinobu Yamaguchi University of Hyogo, Japan	
1440 – 1500 IGS 40	Invited Lecture <b>Atomically precise fabrication of 1D chalcogenides using nano-test-tubes</b> Yusuke Nakanishi Tokyo Metropolitan University, Japan	 zoom
1500 – 1520 IGS 41	Invited Lecture <b>Ultra-sensitive optical resonance in micro-sphere used for dimensional measurement</b> Masaki Michihata The University of Tokyo, Japan	 zoom
1520 – 1540 IGS 42	Invited Lecture <b>Plastic optical fiber doped with phthalocyanine</b> Rei Furukawa The University of Electro-Communications, Japan	 zoom
1540 – 1600 IGS 43	Invited Lecture <b>High-Resolution Printing of Functional Nanoparticles by Selective Adhesive Transfer</b> Yasuyuki Kusaka National Institute of Advanced Industrial Science and Technology, Japan	 zoom
1600 – 1620 IGS 44	Invited Lecture <b>Infectious Disease Testing Platform Based on AI Nanopore</b> Masateru Taniguchi Osaka University, Japan	 zoom
1620 – 1700	Refreshments and Posters Viewing	
1900 – 2200	Congress Banquet	
2200	End	

# ICPAC KK 2022– Meeting Room 5, Level 1

Friday, 25 November 2022	
0830 – 1000	<b>Plenary Lectures 7 &amp; 8</b> <span style="float: right;"><b>Venue: Ballroom 2, Level 1</b></span>
1000 – 1030	Refreshments and Posters Viewing
<b>Thematic Session: ICPAC General Session (IGS)</b>	
<b>Venue: Meeting Room 5, Level 1</b>	
<b>Session VIh</b>	<b>Chairperson: ChM Chang Hon Fong Institut Kimia Malaysia, Malaysia</b>
<b>1030 – 1050</b> <b>IGS 45</b>	Invited Lecture <b>Thermoelectric measurements of Mg<sub>2</sub>Si at high temperature and high pressure</b> Yoshihisa Mori Okayama University of Science, Japan 
<b>1050 – 1110</b> <b>IGS 46</b>	Invited Lecture <b>Synthetic studies on aculeines, peptide toxins post-translationally modified by long-chain polyamines</b> Raku Irie Yokohama City University, Japan
<b>1110 – 1130</b> <b>IGS 47</b>	Invited Lecture <b>Maleimide-functionalized Carbosilane Dendrimers as Multivalent Platforms</b> Takahiko Matsushita Saitama University, Japan
<b>1130 – 1150</b> <b>IGS 48</b>	Invited Lecture <b>Prevention of Soil Erosion by Microalgae</b> Koji Iwamoto Universiti Teknologi Malaysia, Malaysia
<b>1150 – 1210</b> <b>IGS 49</b>	Invited Lecture <b>Point of Care Testing Devices for Therapeutic Drug Monitoring</b> Manabu Tokeshi Hokkaido University, Japan 
<b>1210 – 1230</b> <b>IGS 50</b>	Invited Lecture <b>One-step fluorescent immunoassay for rapid protein analysis</b> Akihide Hibara Tohoku University, Japan
<b>1230 – 1250</b> <b>IGS 51</b>	Invited Lecture <b>Nuclear quantum effects in various hydrogen-bonded systems: Multi-component quantum mechanics and path integral molecular dynamics studies</b> Taro Udagawa Gifu University, Japan 
<b>1300 – 1400</b>	Lunch
<b>Session VII</b>	<b>Chairperson: ChM Ts Damien Khoo Yiyuan Institut Kimia Malaysia, Malaysia</b>
<b>1400 – 1420</b> <b>IGS 52</b>	Invited Lecture <b>Development of Highly Efficient Dye-Sensitized Solar Cells Using Organosilicon Dyes</b> Minoru Hanaya Gunma University, Japan
<b>1440 – 1500</b> <b>IGS 53</b>	Invited Lecture <b>Marine Natural Products Discovered through Cell-based Assays</b> Rei Suo Nihon University, Japan




# ICPAC KK 2022– Meeting Room 5, Level 1

Friday, 25 November 2022	
1500 – 1520 IGS 54	Invited Lecture <b>Rule Extraction and prediction for Melting Point and Boiling point using Machine learning</b> Ryoko Hayashi Kanazawa Institute of Technology, Japan
1520 – 1540 IGS 55	Invited Lecture <b>Live-cell synthetic epigenome manipulation by chemical catalysts</b> Kenzo Yamatsugu The University of Tokyo, Japan
1540 – 1600 IGS 56	Invited Lecture <b>Hydrogels Based on Metal Coordinated DNA Network</b> Arisa Fukatsu Osaka Metropolitan University, Japan
1600 – 1630	Refreshments and Posters Viewing
Session VIj	<b>Chairperson: Prof Raku Irie (TBC)</b> <b>Yokohama City University, Japan</b>
1630 – 1650 IGS 57	Oral Presentation <b>Formation and properties of a trinuclear copper complex from cyclohexane-1,3-dione dioxime and copper(II) nitrate</b> Yosuke Hosoya Nihon University, Japan
1650 – 1710 IGS 58	Invited Lecture <b>Expanding the applicability of variational quantum algorithms towards the practical quantum chemical calculations with quantum computers</b> Wataru Mizukami Osaka University, Japan
1710 – 1730 IGS 59	Invited Lecture <b>Effects of cocatalysts deposited on perovskite-oxynitrides utilized in Z-scheme water splitting as O<sub>2</sub>-evolving photocatalysts</b> Hideki Kato Tohoku University, Japan
1730 – 1750 IGS 60	Invited Lecture <b>Peptide-Based Biomineralization of Near-Infrared Absorbing Triangular Gold Nanoplate</b> Masayoshi Tanaka Tokyo Institute of Technology, Japan
1750	End

# ICPAC KK 2022– Meeting Room 6, Level 1

Tuesday, 22 November 2022	
0800 – 830	<b>Opening Ceremony</b> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
0830 – 1000	<b>Plenary Lectures 1 &amp; 2</b> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
1000 – 1030	Refreshments
<b>Thematic Session: Organic and Biomolecular Chemistry (OBC)</b>	
<b>Venue: Meeting Room 6, Level 1</b>	
<b>Session II</b>	<b>Chairperson: Assoc. Prof ChM Dr Collin G. Joseph Universiti Sabah Malaysia, Malaysia</b>
1030 – 1100  OBC 65	Keynote Lecture <b>Catalytic Nucleophilic Isocyanation: Selective <i>N</i>-Terminus Substitution of Ambident Cyanide</b> Taiga Yurino Hokkaido University, Japan
1100 – 1120  OBC 66	Invited Lecture <b>Phosphazene base <i>t</i>-Bu-P4 promoted carbon-methoxy bond exchange reactions</b> Masanori Shigeno Tohoku University, Japan 
1120 – 1140  OBC 67	Invited Lecture <b>Development of Intracellular Photocatalytic Proximity Protein Labeling (iPPL) for Profiling Protein–Protein Interactions</b> Hiroyuki Nakamura Tokyo Institute of Technology, Japan
1140 – 1200  OBC 68	Invited Lecture <b>Discovery of Water-Compatible Esterification Motif and Its Application</b> Masanobu Nagano The University of Tokyo, Japan 
1200 – 1220  OBC 69	Invited Lecture <b>Development of a hybrid method of three-dimensional reference interaction-site model theory and quantum chemical electronic structure theory for biomolecules</b> Norio Yoshida Nagoya University, Japan
1220 – 1240  OBC 70	Invited Lecture <b>Development of Novel and Efficient Catalytic Systems for C-H Activation and Application to Practical Synthesis of Pharmaceuticals</b> Masahiko Seki Tokuyama Corporation, Japan
1240 – 1300  OBC 71	Invited Lecture <b>Total Synthesis and Structure-Activity Relationship Study of Ampidinol 3</b> Tohru Oishi Kyushu University, Japan
1300 – 1400	Lunch
<b>Session Im</b>	<b>Chairperson: ChM Dr Stella Ho Yen Ling Institut Kimia Malaysia, Malaysia</b>
1400 – 1420  OBC 72	Invited Lecture <b>Conductive Supramolecular Wire</b> Tohru Nishinaga Tokyo Metropolitan University, Japan 
1420 – 1440  OBC 73	Oral Presentation <b>Synthesis of Hajos-Parrish ketone derivatives via Diels-Alder reaction</b> Nur Zahirah binti Abd Rani Universiti Malaya, Malaysia

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Tuesday, 22 November 2022		
1440 – 1500 OBC 74	Oral Presentation <b>Synthesis of imidazo naphthyridine derivatives and evaluation of its bioassay activities</b> Shadreen Fairuz Monash University Malaysia, Malaysia	
1500 – 1520 OBC 75	Invited Lecture <b>Chemical Phenomena Involving Self-catalytic Reactions</b> Masahiko Yamaguchi Tohoku University, Japan	 zoom
1520 – 1540 OBC 76	Invited Lecture <b>Biohybrid Approach for Constructing Ultrafast Excitation Energy Transfer Systems Using Photosynthetic Light-Harvesting Complexes</b> Takehisa Dewa Nagoya Institute of Technology, Japan	 zoom
1540 – 1600 OBC 77	Invited Lecture <b>Bio Symphonic Systems Using Functional Materials</b> Eijiro Miyako Japan Advanced Institute of Science and Technology, Japan	 zoom
1600 – 1700	Refreshments	
WELCOME RECEPTION (SUTERA MARINA JETTY)		

Wednesday, 23 November 2022		
0830 – 1000	<b>Plenary Lectures 3 &amp; 4</b>	<b>Venue: Ballroom 2, Level 1</b>
1000 – 1030	Refreshments	
<b>Thematic Session: Organic and Biomolecular Chemistry (OBC)</b>		
<b>Venue: Meeting Room 6, Level 1</b>		
Session In	<b>Chairperson: ChM Yap Fei Ching Institut Kimia Malaysia, Malaysia</b>	
1030 – 1050 OBC 78	Invited Lecture <b>Asymmetric Tishchenko Reaction and their Application in Enantiodivergent Synthesis of Natural Products</b> Takeyuki Suzuki Osaka University, Japan	
1050 – 1110 OBC 79	Invited Lecture <b>Asymmetric Hydrofunctionalization of 1,3-Dienes and C-nucleophiles Mediated by Ni/Cu Cooperative Catalyst</b> Haruki Nagae Osaka University, Japan	
1110 – 1130 OBC 80	Invited Lecture <b>Antitumor Marine Macrolide Aplyronine A and the Hybrid Analogs</b> Hideo Kigoshi University of Tsukuba, Japan	
1130 – 1150 OBC 81	Oral Presentation <b>Aerobic Oxidative Homo- and Hetero-Coupling of Thiols Using Riboflavin-Derived Organocatalyst</b> Marina Oka Shimane University, Japan	
1150 – 1210 OBC 82	Invited Lecture <b>Aerobic Oxidative C-N and C-S Bond Formations by Flavin-Iodine-Coupled Organocatalysis</b> Hiroki Iida Shimane University, Japan	

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Wednesday, 23 November 2022	
1210 – 1230 OBC 83	Invited Lecture <b>A Twisted Dioxoheptaphyrin-based Second Near-infrared Absorbing Dyes</b> Masatoshi Ishida Tokyo Metropolitan University, Japan
1230 – 1250 OBC 84	Oral Presentation <b>Synthesis and Investigation for Anticancer of Novel N<sup>2</sup>,N<sup>9</sup>-Benzylated-β-carbolium Bromate Derivatives</b> Mazlin Mohideen Universiti Kuala Lumpur Royal College of Medicine Perak, Malaysia
1300 – 1400	<b>Lunch</b>
Session Io	<b>Chairperson: ChM Dr. Zuhair Jamain</b> <b>Universiti Malaysia Sabah, Malaysia</b>
1400 – 1420 OBC 85	Invited Lecture <b>Development of Porphyrin Dyes and Evaluation of Photovoltaic Performances of the Dye-Sensitized Solar Cells</b> Tomohiro Higashino Kyoto University, Japan 
1420 – 1440 OBC 86	Invited Lecture <b>Inhibition of protein-protein interaction related to autophagy by stapled peptides</b> Takumi Watanabe Microbial Chemistry Research Foundation, Japan
1440 – 1500 OBC 87	Invited Lecture <b>Synthesis and Structural Characterization of β-Turn Mimics Containing (Z)-Chloroalkene Dipeptide Isostere</b> Tetsuo Narumi Shizuoka University, Japan
1500 – 1520 OBC 88	Invited Lecture <b>Synthesis and Selective Guest Encapsulation in Non-porous Crystals of Perfluorinated Dinuclear Metal Complexes</b> Akiko Hori Shibaura Institute of Technology, Japan
1520 – 1540 OBC 89	Invited Lecture <b>Synchronous assembly of chiral skeletal single-crystalline microvessels</b> Yohei Yamamoto University of Tsukuba, Japan 
1540 – 1600 OBC 90	Invited Lecture <b>Stereoselective and visible-light mediated 1,2-cis-α-thio-glycosylation of 2-substituted glycals</b> Kamil Parkan Institute of Chemical Technology, Prague
1600 – 1630	Refreshments
Session Ip	<b>Chairperson: Dr. Nur Amira Solehah Pungut</b> <b>Universiti Malaysia Sabah, Malaysia</b>
1630 – 1650 OBC 91	Invited Lecture <b>Direct Allylation and Benzylolation by Using Pd/Phosphine–Borane Catalyst System</b> Gen Onodera Nagasaki University, Japan
1650 – 1710 OBC 92	Invited Lecture <b>Control of the Self-Assembly Process of an Amphiphilic 4-Aminoquinoline-Tetraphenylethene Conjugate</b> Yosuke Hisamatsu Nagoya City University, Japan 

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Wednesday, 23 November 2022	
1710 – 1730 OBC 93	Invited Lecture <b>Construction of Organosilicon Supported Group 10 Metal Clusters via Template Synthesis</b> Yusuke Sunada The University of Tokyo, Japan
1730 – 1750 OBC 94	Invited Lecture <b>Biomimetic Total Syntheses of Chloropestolides, Chloropupekeanolide D and Chloropupekeananin</b> Takahiro Suzuki Hokkaido University, Japan
1750 – 1810 OBC 95	Invited Lecture <b>An Acetal Protection Strategy for Chemocatalytic Valorization of Biomass-Derived Furanics to Building Blocks for Functional Polyesters</b> Kiyotaka Nakajima Hokkaido University, Japan
1810	End









Thursday, 24 November 2022	
0830 – 1000	<b>Plenary Lectures 5 &amp; 6</b> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
1000 – 1030	Refreshments and Posters Viewing
<b>Thematic Session: Analytical and Environmental Chemistry &amp; Engineering (AEC)</b>	
<b>Venue: Meeting Room 6, Level 1</b>	
Session IIa	<b>Chairperson: ChM Marhayani Bt Md Saad Jabatan Kimia Malaysia, Malaysia</b>
1030 – 1100 AEC 01	Keynote Lecture <b>Base-Promoted Dehydrogenative Coupling of Formate Anions to Oxalates: Effect of Alkali Metal Cations</b> Atsushi Tahara Tohoku University, Japan
1100 – 1120 AEC 02	Invited Lecture <b>Selective fluorescent chemosensing for D-glucose in water using a simple inclusion complex of gamma-cyclodextrin with boronic acid</b> Yota Suzuki Sophia University, Japan
1120 – 1140 AEC 03	Oral Presentation <b>Hydration of Hardened Cement Paste Incorporates Nano-Palm Oil Fuel Ash at Later Age: The Microstructure Studies.</b> Mohd Azrul Bin Abdul Rajak Universiti Malaysia Sabah, Malaysia
1140 – 1200 AEC 04	Oral Presentation <b>Exploring a Silica Enriched Oil Palm Frond Biomass for the Extraction of Polycyclic Aromatic Hydrocarbons from Tropical Fruits Samples</b> Nur Husna Binti Zainal Abidin Universiti Teknologi Mara, Malaysia
1200 – 1220 AEC 05	Oral Presentation <b>Using Thermal Gravimetric Analyzer as Alternative Approach to Conventional Techniques in Measuring Boiling Point Distribution for Crude Oil Sample</b> Voon Chang Hong PETRONAS, Malaysia

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Thursday, 24 November 2022		
1220 - 1240 AEC 06	Oral Presentation <b>Determination of Ochratoxin A in Herbs by High Performance Liquid Chromatography (HPLC)</b> Nor Shifa bin Shuib Jabatan Kimia Malaysia , Malaysia	
1240 – 1300 AEC 07	Invited Lecture <b>Degradation of PAHs during long range transport based on simultaneous measurements in East Asia with the use of international observational network on isolated islands</b> Kojiro Shimada University of the Ryukyus, Japan	
1300 – 1400	Lunch	
Session IIB	<b>Chairperson: Assoc. Prof Ts ChM Dr Mohd Sani Sarjadi Universiti Malaysia Sabah, Malaysia</b>	
1400 – 1420 AEC 08	Invited Lecture <b>CO<sub>2</sub> Selective Capturing Agent in Air</b> Fuyuhiko Inagaki Kobe Gakuin University, Japan	 zoom
1440 – 1500 AEC 09	Oral Presentation <b>Optimisation of New Natural Deep Eutectic Solvent Based DLLME Procedure for HPLC Determination of Anabolic Steroid Drugs</b> Azreen Asyikin Binti Mhd Kamal Universiti Teknologi MARA, Malaysia	
1500 – 1520 AEC 10	Oral Presentation <b>Magnesium Oxide Impregnated Palm Kernel Shell Derived Activated Carbon for Carbon Dioxide Adsorption</b> Jayaprina Gopalan Universiti Malaya, Malaysia	
1520 – 1540 AEC 11	Invited Lecture <b>Biochar application for stable solid-state anaerobic digestion</b> Shohei Riya Tokyo University of Agriculture and Technology, Japan	 zoom
1540 – 1600 AEC 12	Invited Lecture <b>Analysis of N<sub>2</sub>O flux and pathways by a novel dual-tracer method</b> Megumi Kuroiwa Tokyo University of Agriculture and Technology, Japan	 zoom
1600 – 1620 AEC 13	Invited Lecture <b>Waste to Wealth: Value Recovery from Bakery Wastes</b> Kathiresan V. Sathasivam AIMST University, Malaysia	
1620 – 1700	Refreshments and Posters Viewing	
1900 – 2200	Congress Banquet	
2200	End	




# ICPAC KK 2022– Meeting Room 6, Level 1

Friday, 25 November 2022	
0830 – 1000	Plenary Lectures 7 & 8 <span style="float: right;">Venue: Ballroom 2, Level 1</span>
1000 – 1030	Refreshments and Posters Viewing
<b>Thematic Session: ICPAC General Session (IGS)</b>	
<b>Venue: Meeting Room 6, Level 1</b>	
<b>Session VIk</b>	<b>Chairperson: ChM Dr John Chan Sung Tong Institut Kimia Malaysia, Malaysia</b>
1030 – 1050  IGS 61	Invited Lecture <b>Analysis of Exosome Secretion in Cancer Cells Using Luciferase Luminescence Measurement</b> Daisuke Onoshima Nagoya University, Japan 
1050 – 1110  IGS 62	Invited Lecture <b>Effect of flow on critical coagulation concentration of colloidal microplastic particles</b> Takuya Sugimoto University of Tsukuba, Japan 
1110 – 1130  IGS 63	Invited Lecture <b>Effect of crystallization conditions on characteristic of solid phase for cucurbit[7]uril</b> Shuntaro Amari Tokyo University of Agriculture and Technology, Japan 
1130 – 1150  IGS 64	Invited Lecture <b>Divergent synthesis of PTX- and DHQ-type poison frog alkaloids</b> Takuya Okada University of Toyama, Japan 
1150 – 1210  IGS 65	Invited Lecture <b>Development of TCNQ Conductors with N-Alkylated DABCO Cations toward Thermoelectric Application</b> Yoshiaki Nakano Kyoto University, Japan 
1210 – 1230  IGS 66	Invited Lecture <b>Development of Mononuclear Aluminum Complex Carbazole Dendrimer</b> Kohei Nakao Kyushu University, Japan 
1230 – 1250  IGS 67	Oral Presentation <b>Synthesis, Spectroscopic Characterization and Anion Titration Studies of Flexible Amide Ligands</b> Maisara Abdul Kadir Universiti Malaysia Terengganu, Malaysia
1300 – 1400	Lunch
<b>Session VII</b>	<b>Chairperson: Dr Teo Siow Hwa Universiti Malaysia Sabah, Malaysia</b>
1400 – 1420  IGS 68	Oral Presentation <b>Development of Aerobic Oxidation of Amines with Grubbs Catalyst and Its Application</b> Kenta Noda Tohoku University, Japan 
1440 – 1500  IGS 69	Oral Presentation <b>Dehydrogenative Coupling of Group 14 Hydrides via Iron Catalysis</b> Yoshinao Kobayashi The University of Tokyo, Japan 

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Friday, 25 November 2022	
1500 – 1520 IGS 70	Invited Lecture <b>Crystal growth of metal-organic frameworks on metal hydroxide toward device applications</b> Kenji Okada Osaka Prefecture University, Japan
1520 – 1540 IGS 71	Invited Lecture <b>Charging and Aggregation of Cellulose Nanomaterials in Aqueous Solution</b> Motoyoshi Kobayashi University of Tsukuba, Japan
1540 – 1600 IGS 72	Invited Lecture <b>Brønsted Acid-Catalyzed Synthesis of Non-Conjugated Polythiophene Membranes and Their Gas Separation Properties</b> Masashi Shiotsuki Tokyo City University, Japan
1600 – 1630	Refreshments and Posters Viewing
Session VIh	<b>Chairperson: ChM Doreen Benjamin</b> <b>Institut Kimia Malaysia, Malaysia</b>
1630 – 1650 IGS 73	Invited Lecture <b>Application of Layered Double Hydroxides to Electrochemical Devices</b> Kiyoharu Tadanaga Hokkaido University, Japan
1650 – 1710 IGS 74	Invited Lecture <b>Antiviral and antibacterial coating by visible light responsive photocatalyst as a new measure against contact infection risk</b> Koichi Sato Nippon Paint Co., Ltd., Japan
1710 – 1730 IGS 75	Invited Lecture <b>Development of high-performance ferrite nanomagnets and the advancement to next-generation millimeter wave absorbers</b> Asuka Namai The University of Tokyo, Japan
1730 – 1750 IGS 76	Invited Lecture <b>Unstable In-Plane Stress in Ceramic and Glass Thin Films</b> Hiromitsu Kozuka Kansai University, Japan
1750 – 1810 IGS 77 (NEW SLOT)	Oral Presentation <b>Optimisation of pyrolytic oil yield via microwave-induced co-pyrolysis of waste engine oil with brown seaweed <i>Sargassum</i> sp. using response surface methodology</b> Rubia Idris Universiti Malaysia Sabah, Malaysia
1810	End

# ICPAC KK/ ISAPM 2022– Meeting Room 1, Level 1

Friday, 25 November 2022	
INTERNATIONAL SYMPOSIUM ON ADVANCED POLYMERIC MATERIALS 2022 (ISAPM 2022)	
Venue: Meeting Room 1, Level 1	
0830 – 1000	<i>Plenary Lectures 7 &amp; 8</i> <span style="float: right;"><i>Venue: Ballroom 2, Level 1</i></span>
1000 – 1030	Refreshments
Thematic Session: Green and Sustainable Polymers and Materials (GSP)	
Session Ic	Chairperson: Dr. Then Yoon Yee International Medical University, Malaysia
1030 – 1100  GSP 01	Keynote Lecture <b>Development of Environmental Friendly Palm Oil-Based Resins for Coating Applications</b> Gan Seng Neon University of Malaya, Malaysia 
1100 – 1120  GSP 02	Invited Lecture <b>Effect of Zein on Barrier Properties of Gellan Gum-Based Film</b> Thoo Yin Yin Monash University Malaysia, Malaysia 
1120 – 1140  GSP 03	Invited Lecture <b>Bio-waste Resourced Cellulose for Sustainable Energy and Healthcare Applications</b> Jose Rajan Universiti Malaysia Pahang
Thematic Session: Advanced Functional Polymeric Materials (AFP)	
1140 – 1200  AFP 01	Invited Lecture <b>Photoresponsive Azobenzene-Containing PMMA as Smart Coatings with Reversible Surface Polarity</b> Shameer Hisham Universiti Malaya, Malaysia
1200 – 1220  AFP 02	Oral Presentation <b>Effects on the Properties After Addition of Lithium Salt in Poly(Ethylene Oxide)/Poly(Methyl Acrylate) Blends</b> Suhaila Idayu Binti Abdul Halim Universiti Teknologi MARA, Malaysia
Thematic Session: Polymers and Materials in Rubber and Latex Applications (PRL)	
1220 – 1240  PRL 01	Invited Lecture <b>Development of a Greener Preservation System for Hevea Latex: Ammonia-free Latex Preservation System</b> Lee Siang Yin Malaysian Rubber Board, Malaysia
1240 – 1300  PRL 02	Invited Lecture <b>Oxo-biodegradable Rubber for a More Sustainable Rubber Consumption</b> Desmond Teck-Chye Ang Universiti Malaya, Malaysia 
1300 – 1400	Lunch / Posters

# ICPAC KK/ ISAPM 2022– Meeting Room 1, Level 1

Friday, 25 November 2022	
Session Id	Chairperson: Assoc. Prof. Lee Choy Sin International Medical University, Malaysia
Thematic Session: Polymeric Materials for Clean and Sustainable Energy (PME)	
1400 – 1430  PME 01	Keynote Lecture <b>Low Frequency Dielectric Relaxation of Solid Polymer Electrolytes of Miscible and Immiscible PEO/Polyacrylates/Salt for Lithium Rechargeable Battery</b> Chan Chin Han Universiti Teknologi MARA, Malaysia 
Thematic Session: Polymer Characterization (PC)	
1430 – 1450  PC 01	Invited Lecture <b>Investigation on a Ready to Use Therapeutic Food Material Composed of Fatty Substances</b> Jean Marc Saiter University of Rouen Normandy, France
Thematic Session: Polymer Composites and Nanocomposites (PCN)	
1450 – 1510  PCN 01	Invited Lecture <b>Hybrid Nanoalloys Embedded Styrene-Methyl Methacrylate Core-Shell Nanoparticles (SMMA@AuAg) as Thin Film Surface-enhanced Raman Spectroscopy (SERS) Substrate</b> Syara Kassim Universiti Malaysia Terengganu, Malaysia
1510 – 1530  PCN 02	Invited Lecture <b>Enhancement of Poly (Lactic Acid)/Epoxidized Composite Flexibility and Biodegradability by Epoxidized Fatty Hydrazide Modified Montmorillonite</b> Wan Md Zin Wan Yunus National Defence University of Malaysia, Malaysia 
1530 – 1550  PCN 03	Invited Lecture <b>Lignin-based Electrospun Fiber as Precursor for Production of Carbon Micro/Nanofibers</b> Norizah binti Abdul Rahman Universiti Putra Malaysia, Malaysia
Thematic Session: Advanced Polymeric Materials for Industrial Applications (AFP)	
1550 – 1610  AFP 01	Invited Lecture <b>The Corrosion Performance of Mild Steel Treated with Polyaniline Added Extracted Silica from Rice Husks</b> Amirah Amalina Ahmad Tarmizi Universiti Teknologi MARA, Malaysia
1610 – 1630	Refreshments
Session Id	Chairperson: Dr. Lee Siang Yin Malaysian Rubber Board, Malaysia
Thematic Session: Polymers and Composites in Medical and Pharmaceutical Applications (PCM)	
1630 – 1650  PCM 01	Invited Lecture <b>Physicochemical and Biological Properties of Poly(lactic acid) Surface Modified with Superhydrophobic Titanium Dioxide-Graphene Coatings</b> Then Yoon Yee International Medical University, Malaysia

# ICPAC KK/ ISAPM 2022– Meeting Room 1, Level 1

Friday, 25 November 2022	
1650 – 1710 PCM 02	Invited Lecture <b>Solid-state Driven Transparent Hydrogel Microfibers for 3D Cell Cultures and Live Cell Imaging</b> Myung-Han Yoon Gwangju Institute of Science and Technology, South Korea
1710 – 1730 PCM 03	Invited Lecture <b>Evaluation of Cytotoxicity and Antibacterial Properties of Bio-Based Surfactants Synthesised from Palm Oil Derivatives</b> Koh Rhun Yian International Medical University, Malaysia
1730 – 1750 PCM 04	Invited Lecture <b>Titanium Dioxide Nanoparticles Incorporated Gellan Gum Nanocomposite Scaffold for Biomedical Application</b> Mohd Hasmizam Razali Universiti Malaysia Terengganu, Malaysia
1750 – 1810 PCM 05	Invited Lecture <b>Polyesteramide: Excipient for Pharmaceutical Formulations</b> Lee Choy Sin International Medical University, Malaysia
1810	End



# ICPAC KK / ISAPM 2022 – List of Posters & Notes

<b>Venue: Ballroom 2 Foyer, Level 1</b>
<b>ICPAC KK 2022</b>
<b>Thematic Session: Organic and Biomolecular Chemistry (OBC)</b>
<b>OBC 101P</b> <b>Ag-catalyzed enantioselective asymmetric 1,3-dipolar cycloaddition of azomethine ylides to <math>\alpha</math>-alkylidene succinimides</b> Ayana Inoue Chuo University, Japan
<b>OBC 102P</b> <b>Chiral silver complex-catalyzed asymmetric Michael addition reaction of 1-Pyrroline-5-Carbonitrile to <math>\alpha</math>-Enones</b> Haruna Araki Chuo University, Japan
<b>OBC 103P</b> <b>Synthesis, Characterization and Biological Evaluation of Chalcone Derivative as Potential Anticancer Agent</b> Rosniza binti Razali Malaysian Nuclear Agency, Malaysia
<b>Thematic Session: Analytical and Environmental Chemistry &amp; Engineering (AEC)</b>
<b>AEC 20P</b> <b>Analysis of Methanol and Higher Alcohols in Some Local Produced and Imported Alcoholic Beverages.</b> Wong Vui Foo Jabatan Kimia Malaysia Negeri Sabah, Malaysia
<b>Thematic Session: Polymer and Materials Chemistry (PMC)</b>
<b>PMC 62P</b> <b>Effect of Barium Titanate Doping on the Dielectric Properties of Polymer Electrolyte with Lithium Tetrafluoroborate</b> Ngai Koh Sing Universiti Malaya, Malaysia
<b>Thematic Session: Physical Chemistry and Catalysis (PCC)</b>
<b>PCC 51 P</b> <b>Study on the Effect of Short Chain Alcohol on Microemulsion System</b> Suria Binti Ramli Universiti Kebangsaan Malaysia, Malaysia
<b>ISAPM 2022</b>
<b>Thematic Session: Green and Sustainable Polymers and Materials (GSP)</b>
<b>GSP 04P</b> <b>Synthesis of a Non-isocyanate polyurethane via microwave-assisted method</b> Rachel Tan Yie Hang International Medical University, Malaysia








# ICPAC KK / ISAPM 2022 – List of Posters & Notes

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<b>Thematic Session: Advances in Polymer Synthesis and Processing (APS)</b>	
<b>APS 01P</b>	<b>Microwave-assisted Synthesis of Metal Organic Frameworks (MOFs)</b>
Toh Jia En International Medical University, Malaysia	
<b>Thematic Session: Advanced Functional Polymeric Materials (AFP)</b>	
<b>AFP 03P</b>	<b>Light-responsive non-isocyanate polyurethane as multi-functional additive for thermoplastic elastomer</b>
Ki Yan Lam International Medical University, Malaysia	
<b>AFP 04P</b>	<b>Hydrothermal Synthesis of Copper-based Metal Organic Frameworks</b>
Chua Bing Wei International Medical University, Malaysia	

## IN APPRECIATION

Institut Kimia Malaysia (IKM) would like to record our sincere appreciation and gratitude to the following for their support and cooperation in making ICPAC KK / ISAPM 2022 a success:

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-  Professor Dr Tamotsu Takahashi  
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-  Universiti Malaysia Sabah
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-  Malaysia Convention & Exhibition Bureau (MyCEB)
-  All ICPAC KK / ISAPM 2022 Plenary and Keynote Speakers
-  All Invited, Oral and Poster Presenters of ICPAC KK / ISAPM 2022
-  All Session Chairpersons of ICPAC KK / ISAPM 2022
-  Chairpersons and Members of ICPAC KK / ISAPM 2022 Organizing Committee
-  All those who have contributed in one way or another in making ICPAC KK / ISAPM 2022 a success







# ICPAC KK / ISAPM 2022

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