

Artificial Photosynthesis
28 February – 2 March 2017

Tuesday 28 February

08:45	Registration	
09:40	Welcome and Introductions Professor Haruo Inoue, <i>Chair of Scientific Committee</i> Dr Hiromitsu Urakami, <i>Royal Society of Chemistry Manager, Japan</i>	
09:55	Outline of Discussion Format Colin King and Kathryn Gempf, <i>Royal Society of Chemistry Publishing Editors</i>	
10:00	Introductory lecture: Sunlight-driven water splitting and carbon dioxide reduction by heterogeneous semiconductor systems as a key process of artificial photosynthesis (Session Chair: Haruo Inoue) <u>Kazunari Domen</u> , Takashi Hisatomi <i>University of Tokyo, Japan</i>	
	Session 1: Biological approaches to artificial photosynthesis, fundamental processes and theoretical approaches (Session Chair: Hitoshi Tamiaki)	
11:00	Towards artificial methanogenesis: biosynthesis of the [Fe]-hydrogenase cofactor and characterization of the semisynthetic hydrogenase Liping Bai, Takashi Fujishiro, Gangfeng Huang, Jürgen Koch, Atsushi Takabayashi, Makio Yokono, Ayumi Tanaka, Tao Xu, Xile Hu, Ulrich Ermler, <u>Seigo Shima</u> <i>Max Planck Institute for Terrestrial Microbiology, Germany</i>	Paper 12324
11:05	Strategies to enhance the excitation energy-transfer efficiency in a light-harvesting system using the intramolecular charge transfer character of carotenoids Nao Yukihiro, Yuko Sugai, Masazumi Fujiwara, Daisuke Kosumi, Masahiko Iha, Kazuhiko Sakaguchi, Shigeo Katsumura, Alastair T. Gardiner, Richard J. Cogdell, <u>Hideki Hashimoto</u> <i>Kwansei Gakuin University, Japan</i>	Paper 12339
11:10	Development of a dye molecule-biocatalyst hybrid system with visible-light induced carbon-carbon bond formation from CO₂ as a feedstock <u>Yutaka Amao</u> , Shusaku Ikeyama, Takayuki Katagiri, Kohei Fujita <i>Osaka City University, Japan</i>	Paper 12497
11:15	Discussion	
12:30	Lunch	
13:30	Large-scale QM/MM calculations of the CaMn₄O₅ cluster in the S₃ state of the oxygen evolving complex of photosystem II. Comparison between water-inserted and no water-inserted structures Mitsuo Shoji, Hiroshi Isobe, Takahito Nakajima, Yasuteru Shigeta, Michihiro Suga, Fusamichi Akita, <u>Jian-Ren Shen</u> and Kizashi Yamaguchi <i>Okayama University, Japan</i>	Paper 12323
13:35	Mutual relationships between structural and functional changes in a PsbM-deletion mutant of photosystem II S. Uto, K. Kawakami, Y. Umena, M. Iwai, M. Ikeuchi, J.-R. Shen and <u>N. Kamiya</u> <i>Osaka City University, Japan</i>	Paper 12368
13:40	Fluorescence property of photosystem II protein complexes bound to a gold nanoparticle Kazuki Tahara, Ahmed Mohamed, Kousuke Kawahara, Ryo Nagao, Yuki Kato, Hiroshi Fukumura, Yutaka Shibata, <u>Takumi Noguchi</u> <i>Nagoya University, Japan</i>	Paper 12451

13:45	Catecholamine-functionalized graphene as a biomimetic redox shuttle for solar water oxidation <u>Eun Jin Son</u> , Jae Hong Kim, Jong Wan Ko, Chan Beum Park <i>KAIST, South Korea</i>	Paper 12354
13:50	Discussion	
15:30	Afternoon tea	
Session 2: Molecular catalysts for artificial photosynthesis (Session Chair: Anthony Harriman)		
16:00	Temperature dependence of electrocatalytic water oxidation: a triple device model with a photothermal collector and photovoltaic cell coupled to an electrolyzer Biaobiao Zhang, Quentin Daniel, Ming Cheng, Lizhou Fan, <u>Licheng Sun</u> <i>KTH Royal Institute of Technology, Sweden</i>	Paper 12325
16:05	Fe, Ru, and Os complexes with the same molecular framework: comparison of structures, properties and catalytic activities Masaki Yoshida, Mio Kondo, Masaya Okamura, Mari Kanaike, Setsiri Haesuwannakij, Hidehiro Sakurai, <u>Shigeyuki Masaoka</u> <i>Institute for Molecular Science, Japan</i>	Paper 12379
16:10	Photocatalytic H₂ production using a hybrid assembly of an [FeFe]-hydrogenase model and CdSe quantum dots linked through a thiolato-functionalized cyclodextrin Minglun Cheng, <u>Mei Wang</u> , Shuai Zhang, Fengyuan Liu, Yong Yang, Boshyn Wan, Licheng Sun <i>Dalian University of Technology, China</i>	Paper 12365
16:15	Stabilisation effects of phosphane ligands in the homogeneous approach of sunlight induced hydrogen production C. M. Strabler, S. Sinn, R. Pehn, J. Pann, J. Dutzler, W. Viertel, J. Prock, K. Ehrmann, A. Weninger, H. Kopacka, L. De Cola, <u>P. Brügge</u> <i>University of Innsbruck, Austria</i>	Paper 12359
16:20	Discussion	
18:00	Lightning presentations (by invitation of the scientific committee)- TBC	
18:15	Poster Session	

Wednesday 1 March

Session 3: Inorganic assembly catalysts for artificial photosynthesis (Session Chair: Can Li)		
08:30	Photocatalytic CO₂ reduction using water as an electron donor by a powdered Z-scheme system consisting of metal sulfide and an RGO–TiO₂ composite Tomoaki Takayama, Ko Sato, Takehiro Fujimura, Yuki Kojima, Akihide Iwase, <u>Akihiko Kudo</u> <i>Tokyo University of Science, Japan</i>	Paper 12364
08:35	Electrochemical CO₂ reduction with low overpotential by a poly(4-vinylpyridine) electrode for application to artificial photosynthesis Hohyun Jung, Myung Jong Kang, Hyeyeong Jung, <u>Young Soo Kang</u> <i>Sogang University, South Korea</i>	Paper 12370

08:40	Photocatalytic H₂ production on trititanate nanotubes coupled with CdS and platinum nanoparticles under visible light: revisiting H₂ production and material durability Hyunwoong Park, Hsin-Hung Ou, Minju Kim, Unseock Kang, Dong Suk Han, and Michael R. Hoffmann <i>Kyungpook National University, South Korea</i>	Paper 12375
08:45	Stable hybrid organic/inorganic photocathodes for hydrogen evolution with amorphous WO₃ hole selective contacts Alessandro Mezzetti, Fumagalli Francesco, Antonio Alfano, Daniele Iadicicco, Maria Rosa Antognazza, <u>Fabio Di Fonzo</u> <i>Istituto Italiano di Tecnologia, Italy</i>	Paper 12357
08:50	Discussion	
10:30	Morning Tea	
11:00	Charge-transfer dynamics at the dye-semiconductor interface of photocathodes for solar energy applications Fiona A. Black, Christopher J. Wood, Simbarashe Ngwerume, Gareth H. Summers, Ian P. Clark, Michael Towrie, Jason E. Camp, <u>Elizabeth A. Gibson</u> <i>Newcastle University, UK</i>	Paper 12327
11:05	Spatial distribution of active sites on a ferroelectric PbTiO₃ photocatalyst for photocatalytic hydrogen production <u>Rengui Li</u> , Yue Zhao, Can Li <i>Dalian Institute of Chemical Physics, China</i>	Paper 12331
11:10	Unravelling charge separation via surface built-in electric fields within single particulate photocatalysts Ruotian Chen, Jian Zhu, Hongyu An, <u>Fengtao Fan</u> , Can Li <i>Dalian Institute of Chemical Physics, China</i>	Paper 12361
11:15	Discussion	
12:30	Lunch	
	Session 2: Molecular catalysts for artificial photosynthesis cont'd (Session Chair: Devens Gust)	
13:30	Photo-driven electron transfer from the highly reducing excited state of naphthalene diimide radical anion to a CO₂ reduction catalyst within a molecular triad Jose Martinez, Nathan T. La Porte, Catherine M. Mauck and <u>Michael R. Wasielewski</u> <i>Northwestern University, USA</i>	Paper 12480
13:35	CuAAC-based assembly and characterization of a ruthenium-copper dyad containing a diimine–dioxime ligand framework Nicolas Queyriaux, Eugen S. Andreiadis, Stéphane Torelli, Jacques Pecaut, Brad S. Veldkamp, Eric A. Margulies, Michael R, Wasielewski, Murielle Chavarot-Kerlidou, <u>Vincent Artero</u> <i>Université Grenoble Alpes, France</i>	Paper 12475
13:40	Temperature dependence of photocatalytic CO₂ reduction by <i>trans</i>(Cl)–Ru(bpy)(CO)₂Cl₂: activation energy difference between CO and formate production <u>Hitoshi Ishida</u> , Akihiko Sakaba <i>Kitasato University, Japan</i>	Paper 12483
13:45	Discussion	
15:00	Afternoon Tea	
15:30	Bio-inspired CO₂ reduction by a rhenium tricarbonyl bipyridine-based catalyst appended to amino acids and peptidic platforms: incorporating proton relays and hydrogen-bonding functional groups S. A. Chabolla, C. W. Machan, J. Yin, E. A. Dellamary, S. Sahu, M. Gilson, F. A. Tezcan, C. P. Kubiak	Paper 12326

	<i>University of Virginia, USA</i>	
15:35	Hydricity, electrochemistry, and excited-state chemistry of Ir complexes for CO₂ reduction Gerald F. Manbeck, Komal Garg, Tomoe Shimoda, David J. Szalda, Mehmed Z. Ertem, James T. Muckerman, <u>Etsuko Fujita</u> <i>Brookhaven National Laboratory, USA</i>	Paper 12489
15:40	Discussion	
16:30	Close of sessions	
18:00	Conference Dinner	

Thursday 2 March

	Session 2: Molecular catalysts for artificial photosynthesis cont'd (Session Chair: Sang Ook Kang)	
08:30	Supramolecular photocatalysts constructed with a photosensitizer unit with two tridentate ligands for CO₂ reduction Yusuke Tamaki, <u>Osamu Ishitani</u> <i>Tokyo Institute of Technology, Japan</i>	Paper 12492
08:35	Organic–inorganic hybrid photocatalyst for carbon dioxide reduction Dong-Il Won, Jong-Su Lee, Ha-Yeon Cheong, Minji Cho, Won-Jo Jung, Ho-Jin Son, Chyongjin Pac, Sang Ook Kang <i>Korea University, South Korea</i>	Paper 12517
08:40	Discussion	
9:30	Morning Tea	
	Session 4: Integration of systems for demonstrating realistic devices (Session Chair: Sang Ook Kang)	
10:00	The challenges of solar hydrogen in chemical industry: how to provide, and how to apply? <u>Tohru Setoyama</u> , Takahiko Takewaki, Kazunari Domen and Takashi Tatsumi <i>Mitsubishi Chemical Science and Research Center, Japan</i>	Paper 12330
10:05	¹³C-Labeling the carbon-fixation pathway of a highly efficient artificial photosynthetic system Chong Liu, Shannon N. Nangle, Brendan C. Colón, Pamela A. Silver and <u>Daniel G. Nocera</u> <i>Harvard University, USA</i>	Paper 12329
10:15	Discussion	
11:05	Concluding Remarks Lecture (Session Chair: Haruo Inoue) Leif Hammarström <i>Uppsala University, Sweden</i>	
11:35	Acknowledgements	
11:45	Close of meeting	

Presenting authors are indicated in the programme by an underline. The affiliation is for the presenting author. If the presenting author of your paper has changed since abstract selection please email chinaevents@rsc.org. Please note that this is a draft programme and timings may change.