International Online Conference on Bio-hybrid Approaches to Solar Energy Conversion (Biohybrid)

2020 October 27th - 29th
Conference organizers: Jenny Zhang, Vincent Friebe and Lars Jeuken

Conference Program

October 27th - Day 1 (Tuesday) 1	
	Biohybrid systems - Session 1 Chair: Vincent Friebe
11:00 - 11:10 1-O1	Intro Org *(Online)* Organizer's Introduction
11:10 - 11:30 1-I1	Takehisa Dewa *(Nagoya Institute of Technology)* Extension of Light-Harvesting and Photocurrent Generation Activities of Biohybrid Light-Harvesting and Reaction Center Complexes Through Attachment of Artificial Chromophores
11:30 - 11:40 1-T1	David Swainsbury *(University of Sheffield)*, Kaitlyn Faries, Dariusz Niedzwiedzki, Elizabeth Martin, Adam Flinders, Daniel Canniffe, Gaozhong Shen, Donald Bryant, Christine Kirmaier, Dewey Holten, Neil Hunter Engineering of B800 bacteriochlorophyll binding sitespecificity in the Rhodobacter sphaeroides LH2 antenna
11:40 - 11:50 1-T2	Ashley Hancock *(University of Leeds, School of Physics and Astronomy)*, Sophie A. Meredith, Simon D. Connell, Lars J. C. Jeuken, Peter G. Adams Enhancing the spectral range of light-harvesting proteins using synthetic chromophores localised within lipid membranes
11:50 - 12:05	Discussion
12:05 - 12:25 1-I2	Julea Butt *(University of East Anglia, School of Chemistry, UK)* Photosensitised Biowires: Biohybrid Materials Offering Fresh Insights and Opportunities.
12:25 - 12:35 1-T3	Alexandra Teodor *(Graduate School of Genome Science and Technology, University of Tennessee at Knoxville and Oak Ridge National Labs)*, Michael Vaughn, Jesse Bergkamp, Barry Bruce Design and Application of Bipyridine-Based Cobalt (II/III) Redox Mediator Complexes For Use in Photosystem-I Biohybrid Photovoltaics
12:35 - 12:45	Discussion
12:45 - 13:00	**Coffee Break**
13:00 - 13:20 1-I3	Nikolay Kornienko *(University of Montreal, Canada)* Investigating Charge Transfer Processes at the Materials-Biology Interface
13:20 - 13:30 1-T4	Fangyuan Zhao *(Ruhr-Universität Bochum, Analytical Chemistry, Center for Electrochemical Sciences (CES))*, Felipe Conzuelo, Volker Hartmann, Adrian Ruff, Marc Nowaczyk, Nicolas Plumeré, Matthias Rögner, Wolfgang Schuhmann Photosystem 1/Redox Polymer-Based Bioelectrodes as the Basis for Efficient Biophotovoltaic Devices
13:30 - 13:40 1-T5	Sascha Morlock *(Technical University of Applied Sciences Wildau, Biosystems Technology, Institute of Life Sciences and Biomedical Technologies, Germany)*, Senthil Subramanian, Athina Zouni, Fred Lisdat Biophotovoltaics Based on Photosystem I and a Scalable 3D Electrode Structure
13:40 - 13:55	Discussion
	Fundamentals in biology - Session 2A Chair: Vincent Friebe
13:55 - 14:15 2A-I1	Caroline Ajo-Franklin *(Rice University, Houston, US)*, Lin Su, Sara Tejedor-Sanz Powering Catalysis and Growth in Microorganisms Using Electrochemistry

14:15 - 14:25 2A-T1	tianpei Li *(University of Liverpool, Institute of Systems, Molecular and Integrative Biology, United Kingdom)*, Qiuyao jiang, Jiafeng Huang, Catherine Aitchison, Fang Huang, Mengru Yang, Gregory Dykes, Reiner Sebastian Sprick, Qiang Wang, Andrew Cooper, Lu-Ning Liu Reprogramming bacterial protein organelles as a new nanoreactor for hydrogen production
14:25 - 14:35 2A-T2	Laura Wey *(University of Cambridge, Department of Biochemistry, United Kingdom)*, Jenny Zhang, Christopher Howe Biological basis of exoelectrogenesis in cyanobacteria
14:35 - 14:50	Discussion

October 28th - Day 2 (Wednesday) 2	
	Fundamentals in biology - Session 2B Chair: Jenny Zhang
11:00 - 11:10 2B-O1	Intro Org. *(Online)* Organizer's Introduction
11:10 - 11:30 2B-I1	Conrad Mullineaux *(Queen Mary University of London)*, Helder Carmen, Rui-Qian Zhou, Fabian Conradi Micro-optical Properties of Cyanobacterial Cells and Their Influence on Solar Energy Conversion
11:30 - 11:40 2B-T1	Sophie Meredith, Takuro Yoneda, Ashley Hancock, Simon Connell, Stephen Evans, Kenichi Morigaki, Peter Adams *(University of Leeds)* “Bio-hybrid membranes” comprised of lipid bilayers and natural thylakoids to study the spatial arrangement and photophysics of Light-Harvesting proteins
11:40 - 11:50 2B-T2	Masaru Kato *(Hokkaido University, Japan)*, Narumi Yoshida, Yuya Masuda, Shogo Nakagawa, Takehiko Tosha, Ichizo Yagi Surface-Enhanced Infrared Absorption Spectroscopy of Bacterial Nitric Oxide Reductase under Electrocatalytic Conditions
11:50 - 12:05	Discussion
12:05 - 12:25 2B-I2	Yagut Allahverdiyeva *(University of Turku, Photosynthetic microbes group, Molecular Plant Biology unit, Department of Biochemistry)* Redirecting photosynthetic electrons into the targeted chemicals
12:25 - 12:35 2B-T3	Marc Nowaczyk *(Ruhr University Bochum, Germany)* How to build a water-splitting machine: structural insights into photosystem II assembly
12:35 - 12:45	Discussion
12:45 - 13:00	**Coffee Break**
13:00 - 16:00	**Poster Session**

October 29th - Day 3 (Thursday) 3

Biophysical techniques for understanding biohybrids - Session 3A
Chair: Lars Jeuken

11:00 - 11:10 3A-O1	Intro Org. *(Online)* Organizer's Introduction
11:10 - 11:30 3A-I1	Neil Hunter *(University of Sheffield)* Surface Fabrication of Protein Architectures for Excitation Energy and Electron Transfers
11:30 - 11:40 3A-T1	Juntai Liu *(University of Warwick, Department of Physics)*, Judith Mantell, Mike Jones Polychromatic biohybrid photosystems for expanded solar energy conversion
11:40 - 11:50 3A-T2	Nate Brady *(University of Tennessee at Knoxville)*, Barry Bruce PSI-SMALP: Can enhanced in vitro photochemistry improve efficiency of biohybrid solar devices?
11:50 - 12:05	Discussion
12:05 - 12:25 3A-I2	Nicolas Plumeré *(Technical University of Munich)* The Electron as a Probe to Study Biohybrid Photosynthetic System
12:25 - 12:35 3A-T3	Thomas Hoefer *(Technische Universität München)*, Laura T. Wey, Jenny Zhang, Nicolas Plumeré Continuous Modelling of Cyanobacterial Biophotoelectrodes
12:35 - 12:45	Discussion
12:45 - 13:00	**Coffee Break**

Biophysical techniques for understanding biohybrids - Session 3B
Chair: Lars Jeuken

13:00 - 13:20 3B-I1	Momo Yaguchi *(Freie Universität Berlin)*, Xiaodan Jia, Ramona Schlesinger, Xiue Jiang, Kenichi Ataka, Joachim Heberle Near-Infrared Activation of Rhodopsins via Upconversion Nanoparticles
13:20 - 13:30 3B-T1	Manuel Lopez-Ortiz *(Institute for Bioengineering of Catalonia (IBEC))*, Ricardo Zamora Brito, Marina Inés Giannotti, Nuria Camarero Palao, Chen Hu, Roberta Croce, Pau Gorostiza Unidirectional Photosynthetic Complex Functionalization for Tunnel Current Distance Decay Spectroscopy
13:30 - 13:40 3B-T2	Alice Goyal *(Adam Mickiewicz University Poznań, Poland)*, Sebastian Szewczyk, Gotard Burdziński, Krzysztof Gibasiewicz Study of Charge Recombination Reactions in the Photosystem I in Solution and Deposited on Conducting Glass
13:40 - 13:55	Discussion
13:55 - 14:15 3B-I2	Ardemis A. Boghossian *(Ecole Polytechnique Fédérale de Lausanne)*, Melania Reggente, Sara Politi, Alessandra Antonucci, Emanuela Tamburri Design of Optimized PEDOT-Based Electrodes for Enhancing Performance of Living Photovoltaics Based on Phototropic Bacteria
14:15 - 14:35 3B-I3	Charusheela Ramanan *(Max Planck Institute for Polymer Research, Mainz)* Fabrication and Photophysics of Hybrid RCLH1 Based Photoelectrodes
14:35 - 14:45	Discussion
14:45 - 14:50 3B-O1	Closing Conference *(Online)* Closing

Poster Contribution

011	Marcos Pita *(Instituto de Catálisis y Petroleoquímica, CSIC, Madrid)*, Gabriel Luna-Lopez, Melisa del Barrio, Vincent Artero, Jennifer Fize, Sonia Zacarias, Inés A. C. Pereira, Jose Carlos Conesa, Juan Manuel Coronado-Carneiro, Ana Iglesias-Juez, Antonio L. De Lacey Photobio-electrocatalytic production of H2 Using Fluorine-doped Tin Oxide (FTO) Electrodes Covered With a NiO-In2S3 p-n Junction and NiFeSe Hydrogenase
015	George Sutherland *(University of Sheffield)*, Neil Hunter Harnessing Excitonic Conversion in Photovoltaic Devices: a Biological Approach
027	Gwennaël Dufil *(Linköping University, Sweden)*, Daniela Parker, Jennifer Y. Gerasimov, Thuc-Quyen Nguyen, Magnus Berggren, Eleni Stavrinidou Enzyme-assisted in Vivo Polymerisation of Conjugated Oligomer Based Conductors
032	Francesco Milano *(Consiglio Nazionale delle Ricerche (CNR), Istituto di Scienze delle Produzioni Alimentari (ISPA), Lecce)*, Livia Giotta, Rosella Cataldo, Alessandro Carlino, Emanuele Coardo, Anna Rita De Bartolomero, Massimo Trotta, Ludovico Valli, Maria Rachele Guascito, Eleonora Alfinito The Electrochemical Photoresponse of a Bio-Hybrid Device Based on Photosynthetic Reaction Center Proteins Immobilized in a Polyvinyl Alcohol Matrix.
034	Gabriella Buscemi *(Università degli studi di Bari "Aldo Moro")*, Danilo Vona, Rossella Labarile, Roberta Ragni, Francesco Milano, Gianluca M. Farinola, Massimo Trotta Encapsulation of Photosynthetic Reaction Center in Polydopamine Semi-transparent Nanoparticles
035	Danilo Vona *(Università degli studi di Bari "Aldo Moro")*, Gabriella Buscemi, Rossella Labarile, Roberta Ragni, Gianluca Maria Farinola, Massimo Trotta Organic Polymers at the Interface between Photosynthetic Systems and Electrodes for Bioelectronic Applications
037	Huijie Zhang *(University of Leeds, School of Biomedical Sciences)*, Jessica Wonderen, Erwin Reisner, Julea Butt, Lars Jeuken Modifying Bacteria with Light-Harvesting Nanoparticles: Rational Development of Biohybrids for Solar Chemicals and Fuels
039	Samali Weliwatte *(University of Utah)*, Matteo Grattieri, Shelley Minteer Exploring the Role of an Unbranched Redox Polymer in Interfacing Photosynthetic Biofilms and Electrode Surfaces during Photobioelectrocatalysis (PBEC)
040	Anna Frank *(Ruhr University Bochum, Germany)*, Orkun Coruh, Volker Hartmann, Adrian Ruff, Christoph Gerle, Genji Kurisu, Wolfgang Schuhmann, Marc Nowaczyk Efficient Purification and Characterization of the Cyanobacterial Photosystem I Monomer
042	Marc Riedel *(Biosystems Technology, Institute of Life Sciences and Biomedical Technologies, Technical University of Applied Sciences Wildau, Hochschulring 1, D-15745 Wildau, Germany)*, Soraya Höfs, Fred Lisdat A Photobioelectrochemical Tandem Fuel Cell
044	Felipe Conzuelo *(Ruhr University Bochum, Germany)*, Panpan Wang, Fangyuan Zhao, Anna Frank, Anna Lielpetere, Sonia Zacarias, Marc M. Nowaczyk, Ines A. C. Pereira, Adrian Ruff, Matthias Rögner, Wolfgang Schuhmann Controlled Orientation of Photosystem I Monolayers for the Fabrication of Photoelectrochemical Devices with Anisotropic Electron Flow
045	Ashley Hancock, Sophie Meredith, Joel Whipp, Peter Adams *(University of Leeds, School of Physics and Astronomy)* Understanding the Photophysics and Structural Arrangements of Light-Harvesting Proteins and Developing Bio-inspired Nanomaterials
046	qiuyao jiang *(University of Liverpool, Institute of Systems, Molecular and Integrative Biology, United Kingdom)*, luning liu Improvement of Biohydrogen Production by the α-Carboxysome Shell in E. coli
047	Kalyani Thakur *(Max Planck Institute for Polymer Research, Mainz)*, Mike Jones, Paul W.M Blom, Charusheela Ramanan Photosynthetic Reaction Center based Bio-Photovoltaics on Flexible Nanostructured Electrodes

048	Miriam Izzo *(University of Warsaw, Centre of New Technologies, Poland.)*, Joanna Kargul, Małgorzata Kiliszek, Margot Jaquet, Ersan Harputlu, Anna Łasica, Tomasz Uśpieński, Paweł Niewiadomski, Bartosz Trzaskowski, Dariusz Bartosik, Kasim Ocakoğlu, Silvio Osella, Alicja Kowalska Improvement of Direct Electron Transfer in Graphene-based Biophotoelectrodes Containing Novel His6-tagged Cytochrome c553 Peptide Linker Variants
049	Daniel Jun, Sylvester Zhang, Adrian Grzedowski, Tom Beatty, Dan Bizzotto *(The University of British Columbia)* Photocurrents Measured from a Monolayer of Adsorbed Reaction Center (RC) Protein on Gold
050	Eleanor Clifford, Robert Bradley, Laura Wey, Joshua Lawrence *(University of Cambridge, Department of Biochemistry, United Kingdom)*, Xiaolong Chen, Christopher Howe, Jenny Zhang Phenazines as Low-midpoint Potential Electron Shuttles for Photosynthetic Bioelectrochemical Systems
051	Rafal Bialek *(Adam Mickiewicz University Poznań, Poland)*, Vincent Friebe, Kalyani Thakur, Adrian Ruff, Michael Jones, Raoul Frese, Wolfgang Shuhmann, Charusheela Ramanan, Krysztof Gibasiewicz Spectroelectrochemical Investigation of a Biophotoelectrode Based on Photoreaction Centers and a Redox Hydrogel
052	Krzysztof Gibasiewicz *(Adam Mickiewicz University Poznań, Poland)*, Sebastian Szewczyk, Rafał Białek, Gotard Burdziński Photovoltaic Activity of Simple Photosystem I/conducting Glass Electrode
053	Olga Aleksejeva *(Biomedical Science, Malmö University, Malmö, Sweden)*, Nicklas Nilsson, Vladislav Genevskiy, Kristian Thulin, Sergey Shleev Supercapacitive Biosolar Cell Based on Nanoimprinted Gold Electrodes
054	Kody Wolfe *(Vanderbilt University - Interdisciplinary Materials Science & Engineering Program)*, Avi Gargye, Kane Jennings Electrostatic Interactions between Photosystem I and PEDOT:PSS Enable Layer-by-Layer Assembly
055	Umberto Contaldo *(Univ. Grenoble Alpes, CEA, CNRS, IRIG, CBM, F-38000 Grenoble, France)*, Bruno Guigliarelli, Julien Perard, Clara Rinaldi, Alan Le Goff, Christine Cavazza Electrochemical CO2-to-CO interconversion by an engineered Carbon Monoxide Dehydrogenase-Immobilized on Multiwall Carbon Nanotubes
060	John Williams *(Vanderbilt University - Interdisciplinary Materials Science & Engineering Program)*, Chris Stachurski, Kane Jenning, David Cliffel Carbon Paper Electrodes for Biohybrid Photochemical Cells
061	Joshua Passantino *(Vanderbilt University - Department of Chemical and Biomolecular Engineering)*, Kody Wolfe, Keiann Simon, David Cliffel, Kane Jennings Photosystem I Integration in Natural, Two-Electrode, Gel-Based Dye-Sensitized Solar Cells
062	Daniela Parker *(Linköping University, Sweden)*, Gwennaël Dufil, Eleni Stavrinidou Biohybrid Plants
063	Xiaolong Chen *(University of Cambridge , Department of Chemistry, United Kingdom)*, Laura Wey, Joshua Lawrence, Christopher Howe, Sohini Kar-Narayan, Jenny Zhang Aerosol Jet Printed Micropillar Electrodes For Biophotovoltaics