



Call for Papers

255th ACS National Meeting
March 18-22, 2018, New Orleans, Louisiana

CELL Program Chair:
Maren Roman, maren.roman@vt.edu

Abstracts Accepted: August 21, 2017 - October 16, 2017

Submit abstracts to the CELL Division at <http://maps.acs.org>. Inquiries should be directed to the symposium organizers or program chair.

2018 ACS Sustainable Chemistry & Engineering Lectureship Awards: Symposium in honor of Rafael Luque, Ning Yan and Fengqi You *(Invited Papers Only)*

Organizers: Sherine Obare, sherine.obare@wmich.edu; Gregg Beckham, Gregg.Beacham@nrel.gov; Jiaguang Zhang, jason.jiaguang.zhang@gmail.com; Daniel Garcia, daniel.garcia.cheme@gmail.com

Cosponsors: I&EC, ENVR, ACS Publications Division

4th International Bacterial NanoCellulose Symposium: The Biotech Cellulose: Commercial Production & Applications, Latest Research State

Organizers: Francisco Miguel Portela Gama, fmgama@deb.uminho.pt; Thomas Rosenau, thomas.rosenau@boku.ac.at; Dieter Klemm, dieter.klemm@uni-jena.de

Cosponsors: ANYL

The subject of this symposium is the current state of R&D in the field of Bacterial Nanocellulose (BNC). Presentations are encouraged that highlight topics such as: scaled-up and commercial production, design of BNC materials regarding shape, dimensions, and structure of surfaces and interfaces, modification of BNC during biosynthesis and in post-processing steps, polymer composites, analytical characterization of BNC products and their properties, and technical, cosmetic, and medical applications of BNC. The content of the symposium is not limited to these areas. Beyond these topics, new and interdisciplinary insights into BNC are welcome.

Assembly & Colloidal Interactions of Cellulose Nanocrystals

Organizers: Wim Thielemans, wim.thielemans@kuleuven.be; Christina Schütz, christina.schuetz@gmail.com

Cosponsor: COLL, EPNOE

This symposium is dedicated to presentations of work focused on controlling and understanding the assembly behavior of cellulose nanocrystals. This can entail the control over assembly in liquid state or in the dried state, either through external influences or through interactions of the

nanocrystals. We are also open to studies using the change in surface chemistry to control the assembly behavior and the study of interaction with other nanoparticles or molecules as a function of varying surface chemistry.

Biobased Gels & Porous Materials

Organizers: Tatiana Budtova, tatiana.budtova@mines-paristech.fr; Falk Liebner, falk.liebner@boku.ac.at

Cosponsor: COLL, PMSE, EPNOE

Gels are intriguing materials which have - virtually unnoticed by most people - become a “sine qua non” in our everyday life. Hydrogels, which are commonly associated with jelly, gummi bears, pudding, contact lenses or “super-slurping” polymers in disposable diapers, and organo gels – porous materials hosting organic liquids in their continuous void system – are of comparable importance as both types of gels feed a wide range of applications, such as in the food industry, medicine and cosmetics. Biobased gels are of particular importance because they are biocompatible and biodegradable.

Less well-known is that both hydrogels and organogels can be converted into highly open-porous, ultra-lightweight cryogels and aerogels, which are valuable materials, such as for surface protection, adsorption, filtration, catalysis, thermal and acoustic insulation, tissue engineering, paints, shock adsorption or slow release matrices. Provided that these porous solids are composed of an organic matrix, they can be furthermore converted to carbon aerogels, which are promising candidates for a variety of electrochemical applications.

This 2018 ACS CELL Symposium invites all material scientists dealing with biopolymers to present their most recent findings about hydrogels, organogels and open-porous solids derived thereof, and intends to serve as a platform for networking in this vivid field of research.

Biobased Water Purification System Approaches

Organizers: Lucian Lucia, lalucia@ncsu.edu; Nancy Simon, nssimon@usgs.gov; Hasan Jameel, jameel@ncsu.edu; Ronalds Gonzalez, rwgonzal@ncsu.edu

Cosponsor: AGFD, CHAS, ENVR

This symposium will provide a forum to discuss both pure and applied approaches for remediating water having toxic loads that include either one or more of the following, but are not limited to, pathogens, heavy metals, solvents, fertilizers, phosphates, and BOD/COD. The thrust is to shed light on new and emerging scientific approaches that are intimately biobased in nature, viz., based on replenishable resources.

Cellulose & Other Structural Biopolymers: Structure, Formation & Degradation: Anselme Payen Award Symposium in Honor of Junji Sugiyama *(Invited Papers Only)*

Organizers: Umesh Agarwal, uagarwal@fs.fed.us; Rajai Atalla, rhatalla@wisc.edu; Henri Chanzy, chanzy@cermav.cnrs.fr; Akira Isogai, aisogai@mail.ecc.u-tokyo.ac.jp

Cosponsor: BIOL, POLY

Recent discoveries in the fields of cellulose microfibril structure, biogenesis, and biodegradation have provided us with a better understanding of cellulose microfibrils as a product of a unique biological system. Cellulose and other structural biopolymers, such as chitin and lignin, are an important resource for a sustainable future. Therefore, it is now essential to share our new

insights among physicists, biochemists, cell biologists, and molecular biologists to collectively advance our knowledge and understanding of these materials.

Failed Brilliance in Nanocellulose Science & Technology

Organizers: Eero Kontturi, eero.kontturi@aalto.fi; Koon-Yang Lee, koonyang.lee@imperial.ac.uk; Alexander Bismarck, alexander.bismarck@univie.ac.at

Cosponsors: ANYL

Although the concept was known earlier, nanocellulose started to cause a stir in the research community only around ten years ago. The stakes were high: nanocellulose as an inexhaustible and cheap raw materials was to provide renewable substitutes to plastics and totally new templates for electronics among many other potential applications. Significant advances have been made within the past decade but - as is the case with all new research fields - many approaches have hit a dead end. This symposium is dedicated to the ideas and approaches that did not work with nanocellulose. It is open to both young academics and senior researchers. All areas of nanocellulose research are considered, from preparation, characterization and modification to end use applications. The aim of this symposium is to generate caution on falling into obvious traps and repeating the same mistakes all over again.

Frontiers in Glycoscience: Bridging the Gap Between Carbohydrate & Polysaccharide Chemistries *(Invited Papers Only)*

Organizers: Hiroshi Kamitakahara, hkamitan@kais.kyoto-u.ac.jp; Chi-Huey Wong, wong@scripps.edu

Cosponsor: AGFD, ANYL, CARB

This symposium will feature perspectives in the field about critical issues in glycoscience, and about recent progress against those issues. Two years ago, "Frontiers in Glycoscience, Control of sequence and regiochemistry" was jointly organized and sponsored by the ACS divisions of Cellulose and Renewable Materials (CELL) and Carbohydrate Chemistry (CARB), in collaboration with the National Research Council (NRC) on the occasion of the 249th ACS National Meeting in Denver, CO on March 22-26, 2015. The NRC white paper "Transforming Glycoscience, A Roadmap for the Future" describes glycoscience in health, energy, and materials as a key issue. After two years, we would like to update our knowledge with regard to the state-of-the-art advances in glycoscience.

Functional Structures from Wood-Based Materials

Organizers: Tiina Nypelö, tiina.nypelo@chalmers.se; Ilari Filpponen, ilari.filpponen@auburn.edu; Stefan Spirk, stefan.spirk@tugraz.at; Monica Ek, monicaek@kth.se; Justin Zoppe, justin.zoppe@unifr.ch

Cosponsor: COLL, EPNOE

The symposium will discuss the transformation of molecules, particles and fibers from wood to interconnected structures, e.g., films, fibers and paper through both covalent and non-covalent interactions. The topics involve molecular level interactions in solvent-rich structures leading to organized dry structures, fiber and film formation phenomena, wood-based biopolymers as structural raw materials and potential end-uses of such structures.

General Posters

Organizer: Maren Roman, maren.roman@vt.edu

Lignin: From Fundamentals to New Materials & Applications

Organizers: Claudia Crestini, crestini@uniroma2.it; Heiko Lange, heiko.lange@uniroma2.it; Monika Österberg, monika.osterberg@aalto.fi; Mika Sipponen, mika.sipponen@aalto.fi; Maija-Liisa Mattinen, majja-liisa.mattinen@aalto.fi

Cosponsor: ENVR, POLY

Lignin is a major plant polymer, and largely untapped industrial side product needing valorization. Recent years have seen great progress in our understanding of fundamental chemical and physical structure and properties of lignin. Technologies to render lignin into defined morphologies from nano-sized spherical particles to microcapsules and carbon fibers have also been developed. Scale-up and commercialization of new lignin-based products can be expected in due course. Another trend in the field is the application of biochemical and chemical modifications of lignin that can significantly alter physico-chemical properties and functionality of lignin products. Despite the many advances in characterization, processing, and applications of lignin, its heterogeneous and source-dependent structure still poses many challenges. It is therefore essential to bring together different experts to increase collaboration across various disciplines, and to unlock the full potential of this interesting polymer.

New Horizons in Sustainable Materials

(Invited Papers Only)

Organizers: Maren Roman, maren.roman@vt.edu; Sheila Murphy, murphysheila@gmail.com

Sustainable materials are of growing importance to society for environmental, security, and quality of life reasons. This symposium celebrates the works of the KINGFA Young Investigator Awardee, the Graduate Student Awardee, and fellow early career scientists who show outstanding promise in the field.

Plant Heteropolysaccharides: Interactions within Lignocellulosics, New Modifications & Future Applications

Organizers: Kirsi Mikkonen, kirsi.s.mikkonen@helsinki.fi; Francisco Vilaplana, franvila@kth.se; Maija Tenkanen, majja.tenkanen@helsinki.fi

Cosponsor: CARB

Lignocellulosic plant biomass comprises a complex hierarchical structure with cellulose microfibrils embedded in a matrix of non-cellulosic polysaccharides (hemicelluloses and pectins) and polyphenolic lignins. The role of matrix heteropolysaccharides in guaranteeing the integrity of lignocellulosic biomass is receiving increasing attention. In this symposium we intend to gather innovative scientific contributions focused on the fine molecular structure and the conformation of plant heteropolysaccharides, with a focus on hemicelluloses and pectins, towards a fundamental understanding of the biosynthesis and the interactions with other cell wall components, including water, cellulose and lignin. The development of novel strategies to modify the structure and properties of plant heteropolysaccharides using chemo-enzymatic and in planta (molecular biology) strategies will be highlighted. Finally, the role of heteropolysaccharides in the development of integral lignocellulosic biorefineries with an optimized utilization of these valuable biomolecules in biomass will be considered, focusing on novel fractionation techniques and innovative applications.

Polysaccharide Solutions & Their Processing

Organizers: Patrick Navard, patrick.navard@mines-paristech.fr; Tatiana Budtova, tatiana.budtova@mines-paristech.fr

Cosponsor: EPNOE

Processing of polysaccharides is often made from their solutions. The solubility of polysaccharides is still not well understood which limits its uses. New solvents are emerging. The symposium aims at bringing scientists from different fundamental disciplines: chemistry, theoretical physics, thermodynamics, rheology, together with materials science and processing (spinning, filming, 3D objects) and end-use applications such as food, cosmetics, textile, packaging or emerging ones like 3D printing.

It is hoped that such symposium will contribute to open widely the opportunities offered to individual scientists to collect knowledge developed in fields distant from their own ones.

Sustainable Production & Processing of Agricultural Crops: The Food, Energy, Water Nexus

Organizers: Ali Ayoub, ali.ayoub@adm.com; Baljit Ghotra, baljit.ghotra@adm.com; Lucian Lucia, lalucia@ncsu.edu; Tamim Younos, tyounos@gmail.com

Cosponsor: AGFD, ENFL, ENVR, MPPG

Water is a finite resource. Agriculture accounts for 69% of global water withdrawal (FAO). In addition, the food production and supply chain accounts for more than one-quarter of total global energy consumption (UNESCO). The inextricable link between food, water, and energy requires an integrated approach to sustainable agriculture. This symposium intends to showcase innovations in the sustainable production and processing of agricultural crops that will improve our ability to meet future global water, energy, and/or food demands. The symposium will also discuss the food, water and energy nexus in urban environments, and the potential for water/energy conservation and food security through integrated urban agriculture and decentralized water and energy systems.

Valorization of Renewable Resources & Residuals into New Materials & Multiphase Systems

Organizers: Maria L. Auad, auad@auburn.edu; Orlando Rojas, orlando.rojas@aalto.fi; José Campos Terán, jcampos@correo.cua.uam.mx

Cosponsor: ENVR, POLY

This symposium will consider contributions in the area of valorization of residual lignocellulose and bio-based materials (biomass processing by-products, wastes, agricultural and fiber processing side-streams, etc.) to develop new materials (functional fibers, composites, films and particles) as well as multiphase systems, including dispersions, suspensions, foams, gels, emulsions, etc. Possible Subjects:

1. Valorization of residual lignocellulose (biomass processing by-products, wastes and side-streams) I: Nanomaterials, intermediates and end products
2. Valorization of residual lignocellulose (biomass processing by-products, wastes and side-streams) II: Other materials different than nanocellulose-based
3. Valorization of non-lignocellulosics
4. Valorization of agricultural residues and proteins

Wood-Based Materials for Energy & Water

Organizers: Liangbing Hu, binghu@umd.edu; Junyong Zhu, jzhu@fs.fed.us; Leif Nyholm, leif.nyholm@kemi.uu.se; Sang-Young Lee, syleek@unist.ac.kr; Jason Ren, zhiyong.ren@colorado.edu; Lars Wågberg, wagberg@kth.se

Cosponsor: ENFL, ENVR, MPPG

Energy and water are two of the most essential needs of human life, but both have increasingly faced shortage issues around the world. Over 80% of the energy consumed nowadays is generated from fossil fuels, requiring an urgent switch to more sustainable sources. Wood represents an enormous reservoir of renewable materials that, if being utilized efficiently, could be the foundation for a sustainable economy and ensure the longevity of our globe while maintaining the welfare of human beings.

This symposium will focus on the most recent developments in utilizing wood-based materials for energy generation and water treatment. Presentation should place emphasis on using wood-based materials (wood as whole, or its individual components, such as cellulose, hemicellulose and lignin) in electrochemical, electrical, thermal, chemical, and mechanical energy generation, as well as water treatment, including desalination, steam generation, and water purification.