



Call for Papers

253rd ACS National Meeting
April 2-6, 2017, San Francisco, California

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

Abstracts Accepted: September 5, 2016 - October 31, 2016

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

Advances in Polysaccharides: Practice and Application

Organizers: H. N. Cheng, hn.cheng@ars.usda.gov; Atanu Biswas, atanu.biswas@ars.usda.gov

Cosponsors: AGFD, CARB, PMSE, POLY

Polysaccharides and their derivatives have useful properties and are sold commercially. In this symposium, the practical techniques and applications involved in polysaccharide preparation are described and the advances in these areas highlighted. Included in the symposium are industrial practice, characterization methodologies, green chemistry, and novel materials.

Bio-based Gels and Porous Materials

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

Cosponsors: AGFD, CARB, COLL, PMSE, POLY, 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 2017 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.

Cellulose Structure and Biosynthesis

Organizers: Nicholas Carpita, carpita@purdue.edu; Hugh O'Neill, oneillhm@ornl.gov; Paul Langan, langanpa@ornl.gov; Dan Cosgrove, DCosgrove@PSU.EDU; Jochen Zimmer, jochen_zimmer@virginia.edu

Cosponsors: BIOL, BIOT, CARB, ENFL

This symposium focuses on the biological synthesis of cellulose and related polymers, and fine structure of the microfibrils that are formed. We are soliciting papers on the structure of prokaryotic and eukaryotic cellulose synthases and evolutionarily related glycan synthases that make non-cellulosic mannans, hyaluronans, and complex and mixed-linkage glucans. Our aim is to delve into the features of the active sites that accommodate different nucleotide-sugar substrates and linkage structures. Bacterial cellulose synthases form single chains that later coalesce into fibrillar structures, whereas the plant cellulose synthase is a large, multimeric complex that forms large microfibrils within a few residues after extrusion from the complex. We invite contributions that explore plant-unique protein sequences that function in the formation of these multimeric complexes and cellular processes of assembly, export, and integration of synthase complexes at the plasma membrane. Contributions could include the components of the cytoskeleton involved in trafficking of complexes, modeling the molecular structure and interactions of cellulose synthases, and predictions of the sizes and cross-sectional orientations of microfibril structures. Other assembly mechanisms to be explored include the bundling of primary microfibrils into large macrofibrils and the integration of non-cellulosic glycan structures into composite structures.

Chemistry and Physical Chemistry of Thermal Processes for the Circular Carbon Economy

Organizer: Christopher J. Pope, canard@alum.mit.edu; Heather B. Mayes, hbmayes@umich.edu

Cosponsors: ENFL, ENVR

Thermal conversion processes -- gasification, pyrolysis, hydrolysis, partial oxidation, and depolymerization -- have long been used to convert carbon-containing materials like coal into liquid or gaseous fuels. In this symposium, papers are sought on application of these processes to convert NON-fossil-fuel carbonaceous materials into fuels, valuable products, or energy. These above-ground carbon sources include plant materials (wood, agricultural wastes), plastic wastes (harvested from land or sea), municipal wastes, and oily or greasy materials suitable for biodiesel production.

Given the current explosion of such processes being developed and envisioned, a focus of the symposium is to explore the underlying chemistry, physical chemistry (kinetics, thermochemistry, transport properties), and process variables of thermal carbon conversion processes, with the goal of finding both commonalities and significant differences which are functions of the input materials, physical or chemical treatment, or process variables (temperature, pressure, time). Accordingly, submissions should have significant chemical or engineering science content.

Design and Control in Polysaccharide Chemistry: (Invited Papers Only)
Anselme Payen Award Symposium in Honor of Kevin J. Edgar

Organizers: Charles Buchanan, charlesbuchanan@eastman.com; Pedro Fardim, pedro.fardim@cit.kuleuven.be; Orlando Rojas, orlando.rojas@aalto.fi

Cosponsors: CARB, EPNOE

Symposium Topics: 1. Polysaccharides in Drug Delivery
2. Polysaccharides in Tissue Engineering
3. Control of Polysaccharide Structure
4. Novel Polysaccharide Derivatives for Demanding Applications

Developments in the Fields of Celluloses and Lignocelluloses: (Invited Papers Only)
In Honor of Dr. Rajai Atalla

Organizers: Umesh Agarwal, uagarwal@fs.fed.us; Tomas Larsson, tomas.larsson@innventia.com; Akira Isogai, aisogai@mail.ecc.u-tokyo.ac.jp; Thomas Elder, telder@fs.fed.us

Cosponsors: AGFD, ANYL, POLY

The intention of the symposium is to bring together researchers/experts from various areas of activities and have them report on the crucial developments in their sub-fields of R&D. Such presentations are expected to cover a large number of areas, including the production, structures, properties, and uses of cellulose-based materials. A particular focus of the symposium will be methods used in structural investigations. In the context of the latter, it is hoped that further advances can be made to understand precisely the information that such methods provide.

Frontiers in Glycoanalytics (Invited Papers Only)

Organizer: Maren Roman, maren.roman@vt.edu; Geert-Jan Boons, gjboons@ccrc.uga.edu

Cosponsors: ANYL, CARB

Glycoanalytics – the application of analytical techniques for determination of glycan structure, interactions, location, and function – is an important field of glycoscience. Advancing the field of glycoanalytics is critical to progress in areas such as health care, bioenergy, and sustainable materials. The symposium is intended to provide a glimpse of the state-of-the-art through a mix of tutorials and scientific papers at the forefront of glycoanalytics. Cutting-edge papers from all areas of glycoanalytics will be considered.

Functional Lignocellulosics and Nanotechnology

Organizers: Maria Soledad Peresin, soledad.peresin@vtt.fi; Tiina Nypelö, tiina.nypeloe@boku.ac.at; Ilari Filpponen, erkko.filpponen@aalto.fi; Stefan Spirk, stefan.spirk@tugraz.at; Monica Ek, monicaek@kth.se

Cosponsors: CARB, COLL, EPNOE

The aim of this symposium is to discuss the latest achievements in basic and applied research in the field of lignocellulosic materials. This symposium will concentrate on the chemical,

physical and biological functionalization of all kinds of lignocellulosic materials with the emphasis on using such materials in nanotechnology applications.

Submissions on the following topics are invited:

1. Tuning interfacial phenomena with ligno-nanocellulosic materials
2. Dispersions, gels, foams, colloids and films
3. Responsive materials, biosensors
4. Biointeractive materials with antibacterial properties
5. Paper: from fundamentals to applications

General Posters

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

Nanocellulose Processing and Analysis

Organizers: Michael Bortner, mbortner@vt.edu; Wadood Hamad, wadood.hamad@fpinnovations.ca; Tom Lindström, tom.lindstrom@innventia.com; Maren Roman, maren.roman@vt.edu

Cosponsors: AGFD, ANYL, CHAS, I&EC, TAPPI

This symposium focuses on the production and analysis of nanocellulosics, including but not limited to nanofibrillated and nanocrystalline cellulose. Presentations are encouraged that highlight topics such as: alternative production techniques, optimization/analysis of existing production techniques, development of unique characterization approaches, environmental health and safety, biocompatibility, and chemical modification/functionalization during production. Application specific research should target alternative symposia focused on application development of nanocellulosic technologies.

New Horizons in Sustainable Materials

(Invited Papers Only)

Organizers: Scott Rennecker, scott.rennecker@ubc.ca; Noppadon Sathitsuksanoh, sathino@gmail.com; Nicole Robitaille Brown, nrb10@psu.edu; Marie-Pierre Laborie, marie-pierre.laborie@biomat.uni-freiburg.de

Cosponsors: POLY

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

Processing and Properties of Biobased Composites and Blends

Organizers: Justin R. Barone, jbarone@vt.edu; Patrick Navard, patrick.navard@mines-paristech.fr

Cosponsors: EPNOE

This symposium will address multiphase materials where at least one component is a biobased fiber, filler, or polymer. Contributions should focus on understanding and overcoming processing challenges with these materials, new processing methods, and mechanical behavior and other properties. Examples of challenges could be compatibilization between biobased and

nonbiobased materials, degradation of biomass, and biomass variability. Materials could be lignocellulose fiber-filled polymers, blends and composites of biobased polymers, and new multiphase systems of synthetic and biobased materials.

Reactive Extrusion: Advances at the Nexus of Polymer Processing, Materials Technology, and Green Chemistry

Organizers: Ali Ayoub, info@ayoubsciences.org; Lucian Lucia, lalucia@ncsu.edu

Cosponsors: POLY

Reactive extrusion is an attractive green route for cost-effective polymer chemistry and processing that has the potential to enhance the commercial viability of biomass-derived and all types of polymeric materials. The primary focus of this symposium will be on principles and practice that offer attractive opportunities for developing new systems with unique properties and applications in, for example, the coating industry, packaging and paper industries, specialized films and electronic devices, innovative healthy food products, second generation bioenergy technologies, and carbon fibers. Submissions within the domain of rheology, modeling of reactive systems, and advanced characterizations that will ultimately lead to commercial success will also be considered.

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

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

Cosponsors: AGFD

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