

>>> ANNOUNCEMENT

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Functional Materials - Biomass as A Platform for Molecular Design

ABSTRACT

In future research, developing materials from renewable resources would be fascinating yet demanding practice, which will have a direct impact on industrial applications, and economically viable alternatives. This study presents an emerging concept of generating new chemicals, intermediates and materials in a 'Biorefinery'. Our continuous efforts in this area have led us to develop new amphiphiles and surfactants from industrial by-products, which upon self-assembly produced molecular materials including micelles, emulsions, lipid nanotubes, twisted/helical nanofibers, thickening agents (molecular gels) and liquid crystals. More recently, harnessing the availability of 'chiral pool' of carbohydrates and selectivity of enzymes catalysis, our laboratory produced an array of amphiphilic molecules from simple sugars and sugar alcohols. Intriguingly, by combining biocatalysis, with principles of green and supramolecular chemistry, we have developed building blocks-to-assembled materials. The second part of the talk addresses the templated synthesis of organic-inorganic hybrid materials for targeted use in coatings, liquid crystal templates and energy storage devices. These results will lead to efficient molecular design of supramolecular architectures and multifunctional soft materials from underutilized plant/crop-based renewable feedstock.

BIO

Dr. George John is a Professor of Chemistry, the City College of the City University of New York (CUNY). After obtaining his Ph.D. in Chemistry from Kerala University (worked at the Regional Research Laboratory (now NIIST), he held several research positions in the Netherlands, Japan and at the Rensselaer Polytechnic Institute, Troy, New York before joining CUNY. The research in John's laboratory is highly interdisciplinary and encourages blending of fields such as organic synthesis, green chemistry, material chemistry, colloid/interface science and biomimetics. The intriguing research has led to several high-impact original peer-reviewed articles in coveted journals; among them almost dozen publications were featured as cover page stories over the past seven years. The research has been widely highlighted by scientific publications (Nature, Science, Scientific American, Nature Materials, Nature Chemistry, C&EN 'News of the Week') and the media - The New York Times, Discovery News, Newsweek and MSNBC. He is on the editorial team of three international journals. He holds more than a dozen patents on inventions related to value-added chemicals/surfactants from renewable resources and biomaterials.

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Leibniz Institute of Polymer Research, Max Bergmann Center of Biomaterials Dresden
Seminar Room B1, Ground Floor, Budapester Straße 27

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