

Polymer Science and Engineering for Sustainable Energy and Environment Applications

Objectives

Polymers are needed to address many of the most critical challenges we face today in areas such as energy, sustainability, clean water, health care, informatics and national security, because they are light, robust, low cost, flexible and easy-to-process materials. A major opportunity of the field of polymer science lies in the direct integration of functional polymers into an energy-generating device. Polymers will play an important role in the shift to alternate fuels and energy sources. For example, polymers have served as the basis of advanced batteries, the fuel cell membranes and polymer photovoltaic diodes including solar cells. The development of more “green” materials and composites is also critical. The drive to decrease our dependence on petroleum-based product has arisen because of the decreasing availability of petroleum reserves and the importance in minimizing the impact of manufactured goods to environment. Flexibility in the design and processing of polymers makes it possible to form complex structures that can impact the sustainability in a number of ways. Therefore, we would like to propose organizing technical sessions of polymer science and engineering to discuss the challenges and opportunities of polymer materials in energy and environmental applications.

Scope

Polymers for Sustainable Energy Applications

Topics

- 1) Charged polymers for battery and fuel cell applications.
- 2) Semiconducting polymers for display and light harvesting applications.
- 3) Structure-property-processing relationship of functional polymers.
- 4) Development of new methods of synthesis routes, catalysts and processing that use environmentally “friendly” solvents and require significant less energy.
- 5) Polymers from renewable sources.
- 6) Biodegradable and recyclable polymers.
- 7) Polymer materials for water purification and waste treatment.

Symposium Chair and Co-Chairs & Committee Members

United States	Korea
Session Chair and Co-Chairs	
TBD	TBD
Conference Organizers	
Yong L. Joo (Cornell University) Chang Y. Ryu (Rensselaer Polytechnic Institute) Chulsung Bae (University of Nevada at Las Vegas)	Byung Ohk Rhee (Ajou University) Taihyun Chang (Pohang University of Science and Technology) Kyusoon Shin (Seoul National University)

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Invited Speakers (TBD)	
Mario Gerla (UCLA) Babak Daneshrad (UCLA) Sumit Roy (University of Washington) Babak Daneshrad (Caltech Fastsoft) Steven Low (Caltech) Claudiu Danilov (Boeing Research & Technology)	Hyung Kyu Lim (Samsung)