

# Sustainable Polymers Workshop Proposal May 2020 \* Safety Harbor FL

**Chair:** Marc Hillmyer (University of Minnesota)

**Vice Chair:** Thomas Epps, III (University of Delaware)

**Assistant Chair:** Megan Robertson (University of Houston)

## **Meeting Introduction:**

The use and development of materials from renewable sources is not a new concept, and there are many examples in history. As the complexity of human requirements increased, so did the materials, and by the 19<sup>th</sup> century durable materials were being prepared from renewable resources such as vulcanized rubber and adhesives from starches and other natural resins. However, the widespread use of these bioderived materials was diminished in the 20<sup>th</sup> century with the development of coal and petrol chemistries leading to the polymer renaissance. In the following decades, coal and petrol-based polymers could be found in nearly every item we touched, including in clothing, packaging, paints, adhesives and plastics.

Today, the use of polymers is wide spread, but the sourcing of these macromolecules is coming under significant scrutiny. First, the petroleum and natural gas fossil feedstocks for the vast majority of conventional polymers are finite and will begin to dwindle, and are increasingly becoming harder to extract through environmentally sound approaches. These factors will put significant cost pressure on the polymers prepared from fossil-based resources. Second, the persistent problem of plastic waste is of growing contemporary concern. Third, as the world becomes more aware of the needs associated with a sustainable future, there will be increasing pressure to incorporate sustainable materials and processes. With these concerns, there also is now a growing shift back to polymeric materials from renewable sources that can readily degrade or be recycled. A tremendous amount of research is ongoing to develop new or improved products and processes based on sustainability concepts.

This workshop will bring together researchers from academia, industry, and government labs to discuss the newest ideas and concepts in polymers and composites from renewable resources, along with associated green chemical processes.

## **Budget**

This proposal is for the third iteration of the Sustainable Polymers workshop. The first two events stayed within their budgets and covered the necessary POLY administrative fees. These financial metrics were accomplished through efficient venue location, cost reduction approaches (that include staff travel, shipping

expenses, food/beverage expenses), and significant corporate sponsorship. The conference chairs, in collaboration with the POLY Business Office, will again follow this formula to ensure the workshop meets budget.

With the help of the POLY Business Office, the event budget will be submitted based on conference facility fees and speaker/session chair requirements once the contracts are signed. We request registration waivers for 10 invited speakers. Academia, industry, and government are expected to be well represented. Below are the estimated workshop registration fees.

\$800 Member Registration

\$850 Non-Member Registration

\$375 Member Student Registration

\$425 Non-Member Student Registration

### **Location and Dates:**

The workshop is planned for May 2020 and will be in the same location. The hotel is proposed to be Safety Harbor Conference Center but will be confirmed once the POLY Business office finalizes successful contract negotiations.

### **Topics:**

The following topics will be presented during this workshop:

- Polymers from renewable feedstocks
- Renewable polymer blends and copolymers
- Polymers prepared from biocatalysts (enzymes, microbes, and other organisms) including polymers from lignin depolymerization products
- Renewable polymer composites (renewable fillers and their dispersion/interface in polymer matrices)
- Challenges from an industrial perspective for implementation of green materials
- End-of-life behavior: polymer recycling (physical and chemical routes) and degradation (in composts, oceans, etc).
- Challenges and current art for life cycle assessments (LCA) to quantify the sustainability of green polymers

### **Objectives:**

The objectives of this workshop are as follows:

- Establish a constructive dialogue between government, academic, and industrial representatives to form a shared understanding of future needs in sustainable polymers and composites.
- Promote better awareness of the versatility of renewable resources and the opportunities presented by the use of renewable materials in polymer science.

- Bring together leading research scientists and engineers in this field from around the world to foster networking and stimulate collaborative research to improve the degree of use of renewable polymers and nanocomposites, especially with the growing negative attention on the use of hydrocarbon-based materials.
- Provide a series of state-of-the-art presentations outlining the status of, and recent advancements in, green polymer science.
- Draw a large industry presence at this meeting to highlight current commercially available materials and increase interaction between the user, supplier and materials developer to further the field of sustainable polymer chemistry.

**Diversity:**

The organizers will work hard to ensure that the invited speakers are diverse and include good representation from underrepresented groups in the natural and physical sciences.