

INTERSOCIETY POLYMER EDUCATION COUNCIL (IPEC)

Semi-Annual Report to Sponsors, August, 2011

IPEC is a 501(c) not-for-profit corporation supported by the American Chemical Society Divisions of Polymer Chemistry and of Polymeric Materials Science and Engineering, the Society of Plastics Engineers (SPE), the Akron Section of SPE, and the Plastics Pioneers Association. Its volunteer Board of Directors comprises two voting representatives from each member organization. IPEC's website is www.ipeconline.org.

IPEC's broad goal is to interest K-12 students in science and technology. We believe that polymers are an excellent medium for interesting students at all grade levels. Students experience polymeric materials every day in shoes, cars, clothes, computers, bandages, and other items, so it is relatively easy to stir their curiosity about what polymers are and how they are used. The need is evident: International science and math tests show that students in the United States lag behind students in 17 other countries, in some cases far behind.

IPEC accomplishes its mission primarily by supporting and helping organize the Polymer Ambassadors. The Ambassadors (www.polymerambassadors.org) are about 20 talented and dedicated K-12 classroom teachers, located coast-to-coast. Their activities include:

- Organizing and conducting workshops at local, regional and national teachers' meetings, where the Ambassadors **teach other teachers** to use polymers in classroom instruction. These workshops continue to be popular with teachers.
- Performing demonstrations.
- Developing and writing laboratory experiments, some available as Quick Time Movies.

The Polymer Ambassadors and IPEC are attempting to develop a rationale for estimating impact. Various formulas and multipliers have been tried. They all indicate that several million students have been instructed about polymers as a result of 21 years of Polymer Ambassador activity. A preliminary estimate for 2009 – 2010 is 201,000 students and still counting.

The Ambassadors are recognized as leaders in K-12 education. For example, they have won

- Five Presidential Awards for Excellence in Science Teaching
- Two Ohaus Awards
- Three Chemical Manufacturers Association Catalyst Awards
- Two state Teacher of the Year Awards
- One Disney Award (it included a parade at Disney World)
- A single PA and her students won eight regional and seven national awards in ExploraVision using polymers in designs for future technologies.

Polymer Ambassadors have learned that K-12 teachers will teach about polymers (1) when a teacher is excited about them, (2) when a teacher can get the materials inexpensively, and (3) when the activities fit the State Science Educational Standards.

Polymer Ambassadors had another productive and busy year. For the July, 2010 -- June 2011 year, 1654 teachers and 1102 students were introduced to polymer topics in

workshops. Over 1000 K-12 teachers attended workshops at American Chemical Society and National Science Teachers Association regional and national meetings. Among the topics that attracted excellent attendance:

- Polydensity tube Make-Learn-Take: Serious fun with a dense subject
- Polymers: New Twists on Old Favorites
- Basic polymer chemistry demonstrations, labs, and activities
- Solids – the neglected state of chemistry
- What in the world are bioplastics?
- Lotions, potions, and scrubs: Polymer science in cosmetics
- Polymerically perfect sodas: The science and technology of plastics

While the main thrust is “teachers teaching teachers,” Polymer Ambassadors also interact directly with students. For example Sherri Conn Rukes has done several “Girls Empowered by Math and Science” and ExploreMore programs that reached over 500 students.

To disseminate their materials more broadly, the Ambassadors publish their materials in leading journals and on the world wide web. A partial list of about 25 publications is on the above website. A recent example: Mary E. Harris and Barbara Walker, “A Novel, Simplified Scheme for Plastics Identification,” *J. Chem. Ed.*, **2010**, [2] 147-149.

IPEC also co-sponsors “Polymer Science of Everyday Things” (PSOET) Workshops and Symposia at National ACS Meetings. A fifth PSOET is planned for 2012.

IPEC’s core activities are constrained by a shortage of funds. The original idea was to pay travel expenses for Polymer Ambassadors for one training year and three active years. Now a pool of Emeritus Ambassadors has completed their three years but continue doing workshops and other IPEC activities. These master teachers are recognized to be among the finest in their profession. Priority goals for IPEC are to find travel funds for new Ambassadors and to enable Emeritus Ambassadors to expand their activities.

Polymer Ambassadors volunteer their time. About 85% of IPEC’s budget supports Polymer Ambassador expenses, mostly travel.

We would be welcome new board members. Sponsoring organizations are encouraged to appoint third and fourth Board representatives to increase the workforce and assure attendance at meetings.

IPEC member organizations can be proud of what IPEC accomplishes and can look forward to more high-impact activities.

Frank Jones, IPEC Board Secretary [frankjones@comcast.net], August, 2011