



# 10<sup>th</sup> Annual GC3 Innovators Roundtable

## Session Summaries

**Tuesday, April 28<sup>th</sup>**

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### **Session II**

*Moving Forward on Mainstreaming*

**Ray Garant**, American Chemical Society

**Tess Fennelly**, T Fennelly & Associates, Inc.

**Libby Bernick**, Trucost

**Amy Perlmutter**, Perlmutter Associates

**Joel Tickner**, University of Massachusetts Lowell (*moderator*)

Green chemistry policymaking began in the 1990's with voluntary programs (awards and conferences) that capitalized on the energy surrounding the new field. Beginning with discussions about federal green chemistry research and development legislation, in 2010, the America COMPETES legislation was passed supporting the establishment of the SusChem green chemistry programs at NSF. Confusion over definitions of sustainable vs. green chemistry as well as what green chemistry policy should include (incentives/disincentives) is an issue in federal legislation and in emerging state policies.

Tess Fennelly and Associates (TFA) identified 9 key issues that are slowing green chemistry adoption (see "Challenges for Implementation" below). TFA also identified "accelerators" to overcome these barriers, and speed the adoption of green chemistry. By utilizing collaboration, compromise, technology forcing, and enhanced education, the mainstreaming process can be advanced.

Trucost analyzed the business case for green chemistry. Some trends are: Considerable market growth for safer products and growing investment in green chemistry R&D on the part of chemical companies. Regulations, enforcement, and liability are putting business value at risk when green chemistry is neglected. Improved metrics and communication around the value of green chemistry, as well as further quantification of societal and economic benefits, should help accelerate the mainstreaming movement.

The GC3 has developed an Agenda for Mainstreaming Green Chemistry based on input from GC3 members, a Mainstreaming Steering Committee, Roundtable discussions, interviews with thought leaders, and original research. The Agenda identifies drivers, barriers and an action plan to accelerate mainstreaming. The Agenda will be finalized, publicized, and implemented over the next several months.

### **Opportunities for Safer Chemicals and Products**

- staying ahead of regulations—being proactive rather than reactive
- avoiding fines and cleanup costs
- taking advantage of new technologies

### **Key Drivers for Green Chemistry**

- innovation potential
- conferences and awards
- legislation incorporating government funding
- European regulatory restriction via REACH and RoHS
- consumer awareness and market demand

### **Challenges for Implementation (many of which from the Tess Fennelly and Associates report)**

- lack of cohesive definition of “green chemistry”
- complexity of supply chains
- technology incumbency
- confusion over what chemistries are problematic
- switching risk, where alternatives may perform poorly or have risks of their own
- price/performance
- supply & demand
- transparency in supply chains of information
- new technology access/placement in complex supply chains

### **Helpful Actions**

- enhanced education
- collaboration
- compromise, where supply chain actors share risk of green chemistry solutions
- technology forcing from decision makers with buying power
- quantify societal/economic benefits
- improve metrics and communication around business value of green chemistry
- enhanced education

### **Role for the GC3**

- finalize, publish, and implement Agenda for Mainstreaming Green Chemistry
- continue pursuing education of consumers and businesses