

Breakout Session Report Out

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Chemical Recycling: Challenges and Opportunities

Objective

- **Session Goals:**
 - Gain a better understanding of the potential of chemical recycling technologies
 - What technologies are currently available?
 - Should use of these technologies be increased?
 - Can they be integrated into the current recycling infrastructure or do system-wide changes need to be made?
 - Can they work with existing plastics, or would they rely on the design of new plastics?
 - Identify specific R&D needs to advance chemical recycling.
 - Identify specific parties that should be involved in addressing needs related to chemical recycling.

Technologies

- Solvent extraction/dissolution
- Filtration
- Upcycling
- Thermal processes
 - Pyrolysis and gasification
- Catalytic Processes

Issues Associated with Technologies

- **What is the objective?**
 - Replacing drop-in vs. new
- Point of insertion into the value chain
- **What are the issues?**
 - Collection, sorting, pre-processing
 - Feedstock handling
 - Process intensification and automation
 - Limit on separations – plateaued around 85%
 - What are opportunities to increase the efficiency?
 - LCA/TEA & carbon and energy efficiency
 - Environmental management metrics
 - Economics of Scale