West Side Science Club – Event #19– "Making Ornaments"

Original Presentation

Date: 7 December 2013
Time: 10 am to 12 pm
Site: West Side Science Club

Big Questions

- These questions are meant to frame the day's event and might be written on the chalkboard

  (1) Which plastic is best suited to make the ornament or toy you would like (ease of construction, end durability)?

  (2) What molding techniques have you learned over the past 3 weeks?

Concepts

- Concepts to cover from the "Work of CCI Solar" Mind Map: Compounds- molecules, everything is chemistry; Engineering- synthesis, design; Sustainability- renewable vs non renewable

Lesson Plan

Student Objectives

- Make Christmas presents for family and friends using materials and techniques learned in the past 3 lessons
- Compare properties of all the plastic materials

Schedule/Agenda

- Review: Event # 16, 17, 18– "Plastics" (10 min.)
- Activity: Make ornaments using plastics (1 hr 40 min.)
- Wrap-up (10 min.)

Materials

Activity: Make ornaments using plastics

- Thermoplastics
- Hot plate
- Pyrex dishes
- Heat gloves
- Plastic grocery bags
- Vegetable oil
- Styrofoam
- Acetone
- Corn starch
- Silicon cookie and ice cube molds
- Markers

Safety

- Gloves and goggles. Careful of hot thermoplastics and bioplastics. All acetone/styrofoam creations need to be done outside in a ventilated area.

Review of Previous Event: plastics

- Recall the activities: Thermoplastics, Bioplastics- cornstarch and milk protein, PPE- acetone/Styrofoam and melting grocery bags

Facilitation Questions

- What properties did each of the plastics you previously made have?
- Which material was the most fun and/or easiest to work with?

Activity: Make ornaments using plastics

Procedure

1. Use the materials and techniques from the last lesson to create ornaments or other objects for gifts
2. Be sure to have a small sample of at least one of the materials saved to test at Caltech next time

Facilitation Questions and Concepts

- Can you combine techniques and materials to make something different?
- Which materials will be the most durable? The most moldable? The best for the environment?

Check for Understanding

- What is the chemistry name for plastics? What does the name mean?
- Does the definition of that material make sense given the properties of the plastics?

Wrap Up: Event #20 Preparation

- Save small samples of each types of plastic to measure properties of next time at Caltech

References

See lessons 16, 17 and 18