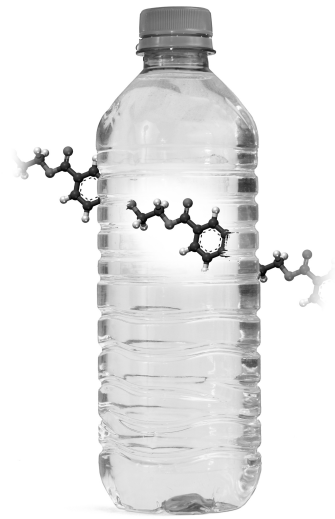


HOMework 3.



PROJECT WORK

Believe it or not, we are quickly approaching the halfway point of the first project. By now, your team has crafted a detailed project approach, run some experiments, analyzed some laboratory data, and perhaps developed some understanding of your materials. This week, you will continue your materials research and your experimentation, and hopefully make some good progress toward answering questions about your consumer product's materials, properties, and impacts. This will likely be an intensive week from an analysis perspective, as you begin to integrate and evaluate your researched information and lab data, and turn your understanding into a compelling analytical narrative. As always, I recommend trying to analyze your experimental data as soon as you collect it, so you have sufficient time to ask questions, digest materials science theory, and find resources that help you explain your measurements.

This week's readings and exam are related to the broader impacts of the material(s) used in your consumer product. The big questions we hope to answer are:

- What are the negative impacts of extraction, processing, use or disposal of the materials in your product?**
- What are the positive impacts of our product or its materials?**
- Which environmental or societal impacts should we be most concerned about?**
- Can we quantify some of the impacts?**
- What are the costs of these impacts? Who (or what) pays the costs of these negative impacts?**
- Could alternative materials or processes reduce the environmental or societal impacts? How?**

READINGS

1. Weisman, *The World Without Us*, Chapter 9: Polymers are Forever (I'll send out a copy via email). This reading asks the question of what might happen to the plastics we've created if humans suddenly disappeared from the earth. It's kind of a hybrid case study/thought experiment.
2. Prugh and Assadourian, "What is Sustainability Anyway?" (available on the course web site). This reading offers a perspective on sustainability framed as four dimensions: human survival, biodiversity, equity, and life quality. Think about how these dimensions intersect with the life cycle of your Project 1 consumer product, or of modern consumer products more generally. Strongly linked? Completely disconnected? What do you think?
3. Ashby, *Materials and the Environment*, 2nd Ed., Chapter 2 – Resource consumption and its drivers, pp. 15-48. <http://www.sciencedirect.com/science/book/9780123859716>
4. Ashby, *Materials and the Environment*, 2nd Ed., Chapter 3 – The material life cycle, pp. 49-77. <http://www.sciencedirect.com/science/book/9780123859716>

The Ashby readings provide a more traditional materials science perspective on environmental impacts, by exploring how much stuff we consume relative to how much stuff is available, and examining how different phases of the material life cycle contribute to the overall environmental or societal impact scenario.