E11 – Autonomous Vehicles
Presentations
Outline

- Technical Presentations
- Basics
- E11 Presentations
What is the purpose of creative presentations (e.g. poetry reading, stand-up comedy)?
- To entertain

What is the purpose of technical presentations?
- To inform and/or to persuade
What are the major goals of technical presentations?

- Clarity
- Accuracy
Barrier Membranes with Flakes and reaction and Nanocomposite Gas Separation Membranes

Nancy K. Lape and Christopher Clark
Associate Professor of Engineering
Harvey Mudd College
November 10, 2009
Talk Overview

- Introduction
- Background
- Effects of flakes on transport in membranes
- Effects of reaction on transport in membranes
- Effects of combining flakes and reaction on transport in membranes
- Effects of impermeable particles on transport in ultra-high free volume glassy polymer membranes
- Conclusions
Introduction and Background

- Barrier membranes have many important applications, such as food protection and landfill liners.

- Typically, the best barriers are inorganics such as metals or glass, but these have poor mechanical properties.

- We want to make a flexible polymer membrane that will have low permeability but will good mechanical properties. Unfortunately, most polymers with good mechanical properties have high permeability.

- We have therefore decided to test combining inorganic flakes with flexible polymers to make barrier films.

- In addition to adding flakes, we have examined if adding reactive species will decrease the rate of transport across the film. Finally, we have combined flakes and reactive species.
Effect of Flakes on Transport in Barrier Membranes

- Muscovite mica flakes were added at 10-30 wt.% to PVA membranes solvent-cast from hexane. The mica was suspended in water before adding to the PVA. The PVA was then dried for an hour in the oven.

- The membrane was placed in a diaphragm cell and HCl was placed on the upstream side. We used a pH probe to measure the concentration of acid on the downstream side.

- As compared to the pure membrane, the acid took longer to come across the membrane for the flake-filled membrane.
TUNABLE COMPOSITE MEMBRANES

Session in Honor of E. L. Cussler

Nancy K. Lape
Assistant Professor of Engineering
Harvey Mudd College
November 10, 2009
Two Possible Membrane Design Goals:

1. Slowing things down
   - *Flake-filled Barrier Membranes*

2. Speeding things up
   - *Nanocomposite Gas Separation Membranes*

*What can slowing things down teach us about speeding things up?*
Why Slow Down?
How to Slow Down

1. Better polymer

2. Flakes

3. Reactions
Why Flakes?

- Spheres
- Cylinders
- Flakes

The graph shows the relative permeability as a function of volume fraction, $\phi$, for spheres, cylinders, and flakes.
Outline

- E11 Presentations
- Technical Presentations
- Basics
Basics

- Consider the Occasion
  - Format
  - Formality
  - Politics and Ethics
  - Process and Deadline
Know your Audience:
- Who they are?
- What they know?
- Why they will read watch?
- How will they read watch?

http://www.wellhappypeaceful.com/who-are-you/
Your audience will assess:

- **Content**
  - The *information* contained in the presentation.

- **Delivery**
  - The *way* information is presented, including structure, spoken language, illustration.

- **Form**
  - The *appearance* of the information, including grammar, punctuation, spelling, font and font size, and slide template.
Begin with the end in mind:
- What is the purpose of your talk?
- What message should the audience take away?

Keep it simple and concise:
- What three things should the audience remember from your talk?

Outline your content before preparing slides . . .
- But don’t hesitate to rearrange your presentation if you discover it doesn’t flow well during rehearsal!
Basics

- Delivery: Slides
  - Minimize text
  - Add useful figures
  - Use animation only for a purpose (not just for fun!)
  - Make sure tables and charts are legible
Delivery: Speech and Affect

- Rehearse!
  - Edit slides while rehearsing
  - Improve flow (know what is coming next)
  - Speak efficiently, confidently
- Look at the audience
- Do not read off slides
Basics

Undergraduate Students Unwittingly Subjected to World's Worst Research Presentation

Session One: Oral Presentations
June 22, 2012
Museum of Science
Outline

- Technical Presentations
- Basics
- E11 Presentations
E11 Final Presentations

- 5-minute limit
  - This is harder than you think! You must practice to make sure you fall under the limit.

- Your audience is literally your audience:
  - Your classmates already know about base bot and game rules, so don’t waste precious time describing these!
E11 Final Presentations

- Your presentation should describe novel features in your vehicle, including:
  - The algorithm you used,
  - Any interesting issues in the software implementation, and
  - Any modifications to the stock chassis, sensors, and actuators.

- Your presentation should be clear, lively, and interesting!
Presentation slides must be turned into Sakai by Sunday, December 8\textsuperscript{th} at 10:00pm.