



MIT 3.071

Amorphous Materials

Final Review

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Glass Science

- What are the mechanisms for charge transport in amorphous materials?
- What is the temperature dependence of electrical conductivity in amorphous materials?
- What is the electronic structure of an amorphous semiconductor and how does it impact its electronic and transport properties?
- What is the microscopic origin of optical refraction and dispersion?
- What are the optical attenuation mechanisms in materials?

Glass Science (cont'd)

- What are the optical attenuation mechanisms in amorphous materials?
- Where do colors come from in (silicate) glasses?
- What information can we obtain from X-ray diffraction spectra of amorphous solids?
- What information can we obtain from Raman spectroscopy?
- What factors dictate the glass transition regime behavior in calorimetry?

Glass Engineering

- What are fast ion conductors?
- How are defects in a-Si passivated?
- What is light induced degradation in a-Si:H?
- How do we characterize chromatic dispersion and compensate for such dispersion in optical design?
- What mechanisms define the low loss transmission window in optical fibers?
- What are the sources of optical loss in planar waveguides?
- How are optical fibers and planar waveguides made?

Glass Engineering (cont'd)

- How do digital optical communication system work?
- How do we calculate PDFs from diffraction spectra?
- What are the differences between DSC and DTA?

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