**Department of Chemical**

**Engineering Seminar Schedule**

**Vapor Sorption and Relaxation in Glassy Polymers:**

**Experimental Characterization and Modeling**

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**Abstract**

Sorption of gas and vapor components in polymeric materials is a key phenomenon in many different industrial applications, from membrane separation to drug delivery or gas detection. Reliable models for both thermodynamic and transport properties in polymer/solute systems are thus essentials for the optimal design of corresponding devices and processes. On the other hand, the analysis of vapor sorption in thermoplastic materials below the glass transition temperature is complicated by the non-equilibrium nature of the system and by the relaxation phenomenon which the sorption of low molecular weight species induces in the polymeric matrix. An empirical approach is presented in this work for the extension to glassy states of the representation of thermodynamic properties already tuned for the same polymer-solute systems in the equilibrium melt phase. A specific experimental procedure is also proposed to interpret the structural relaxation induced by the sorption process, in view of the development of a comprehensive modeling tool which could anticipate the behavior of the polymeric system when stimulated by arbitrary variations of temperature and chemical potential of the solute component.

**Seminar**

**Monday, August 28, 2017**

**3:00 pm**

**Livermore 101**