Transport Property Needs Related to Chemical Separation Processes

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Chemical separations processes, primarily membrane-based, at the MAST Center involve the use of novel membrane materials. These materials include nanostructured polymer and inorganic crystalline films. The very small pore sizes (0.5 to 2.0 nm) and the strong attractive or repulsive forces between the penetrating solute and the structure provide a means to obtain highly selective separations. Much of the research to date has been experimental since the methods to independently measure diffusion coefficients and sorption parameters for these films was not available. In addition, these films can also be used for chemical reaction as well as separation. We are also using ionic liquids as a stable liquid membrane film. This talk will describe some of the work currently being done on these topics and focus on the transport property needs associated with the research.