The behavior of materials confined at the nanoscale has been of considerable interest over the past decade. In this seminar, recent calorimetric results from our laboratory for ultrathin polystyrene films will be reported and discussed in the context of unanswered questions in the field. It is noted that although differential scanning calorimetry is used to characterize the glass transition temperature ($T_g$) in bulk samples and is used to measure the $T_g$ depression of materials confined to other nano-geometries, only one previous calorimetric study of the $T_g$ depression of ultrathin films has been made due to the demanding requirements of sample preparation. In our work, the absolute heat capacity and $T_g$ of ultrahigh molecular weight polystyrene stacked thin films is measured as a function of film thickness and cooling rate. We also examine the timescale and conditions needed to regain bulk behavior, as well as the aging behavior of the stacked polystyrene films. A related area of research that will be discussed concerns the reactivity of materials having nanoscale dimensions. Recent work in our laboratory has focussed on the reactivity of cyanate esters in nanoporous matrices. We study both difunctional cyanate esters which form crosslinked networks in the nanopores and monofunctional cyanate esters which form low molecular weight products. We find enhanced reactivity of both reactants with decreasing nanopore size. In addition, depressions in the glass transition temperatures of the nanoconfined reactants and their products are observed. Explanations for the behavior and implications will be discussed.