

Due: October 05, 2006

Note: Journals can be found online at the Texas A&M University's website: <http://library.tamu.edu>

- 1) See manuscript by Wanat et al. in *Inorg. Chem.* (2002, 41, 4).
  - Using the temperature dependent rate constants for  $k_{\text{on}}$  at 0.1 MPa pressure provided in Table 1, calculate the values of  $\Delta H^\ddagger$  and  $\Delta S^\ddagger$  for the process.
  - Using the pressure dependent rate constants for  $k_{\text{on}}$  at 20°C provided in Table 1, calculate the value of  $\Delta V^\ddagger$ .
  - What mechanistic conclusions can be drawn from the  $\Delta S^\ddagger$  and  $\Delta V^\ddagger$  values obtained?
  
- 2) See manuscript by Bengali in *Organometallics* (2000, 19, 4000).
  - Derive equation 1 for the reaction described in **Scheme 1**.
  - How was the value of  $k_2/k_{-1}$  determined, and what does it tell you about the intermediate,  $\text{CpMn(CO)}_2(\text{heptane})$ ?