

Chem 2440 – HW #3.

Assigned Jan. 31, due Feb. 9.

1. Chandler, 3.18
2. Chandler, 3.19
3. Chandler, 3.23
4. Consider a single lattice model of a 4-unit polymer. In this model the polymer units (beads) are located on a square 2-dimensional lattice (i.e., the angles are 0, 90, 180 deg.) Suppose there is a stabilization energy of $-\epsilon$ when two non-bonded beads are nonadjacent sites. Assume all other interactions of 0. For simplicity redefine the zero of energy to correspond to the most stable arrangement.
 - (i) How many microstates are there and what are their energies?
 - (ii) Plot the population of the most stable configuration as a function of T ? (Hint, calculate the population for $kT = 0, 0.5\epsilon, \epsilon, 2\epsilon, 3\epsilon$.)
 - (iii) Plot E and S vs. kT .