Assignment 3, due Monday May 7th.

1. Explain the Franck-Condon idea in electronic excitation. What are the possible fates of an excited electron.
2. Why is there frequently no Stokes shift in the luminescence of a nanoparticle?
3. How can plasmons on gold nanoparticles be used for diagnostic purposes?
4. What is the nature of plasmons in gold nanoparticles when the nanoparticles are anisotropic (for example, gold nanorods).
5. What is the characteristic size below which excitons in semiconductors will be quantum confined?
6. What is a good/simple way to estimate that size dependence of the band gap in quantum dots?