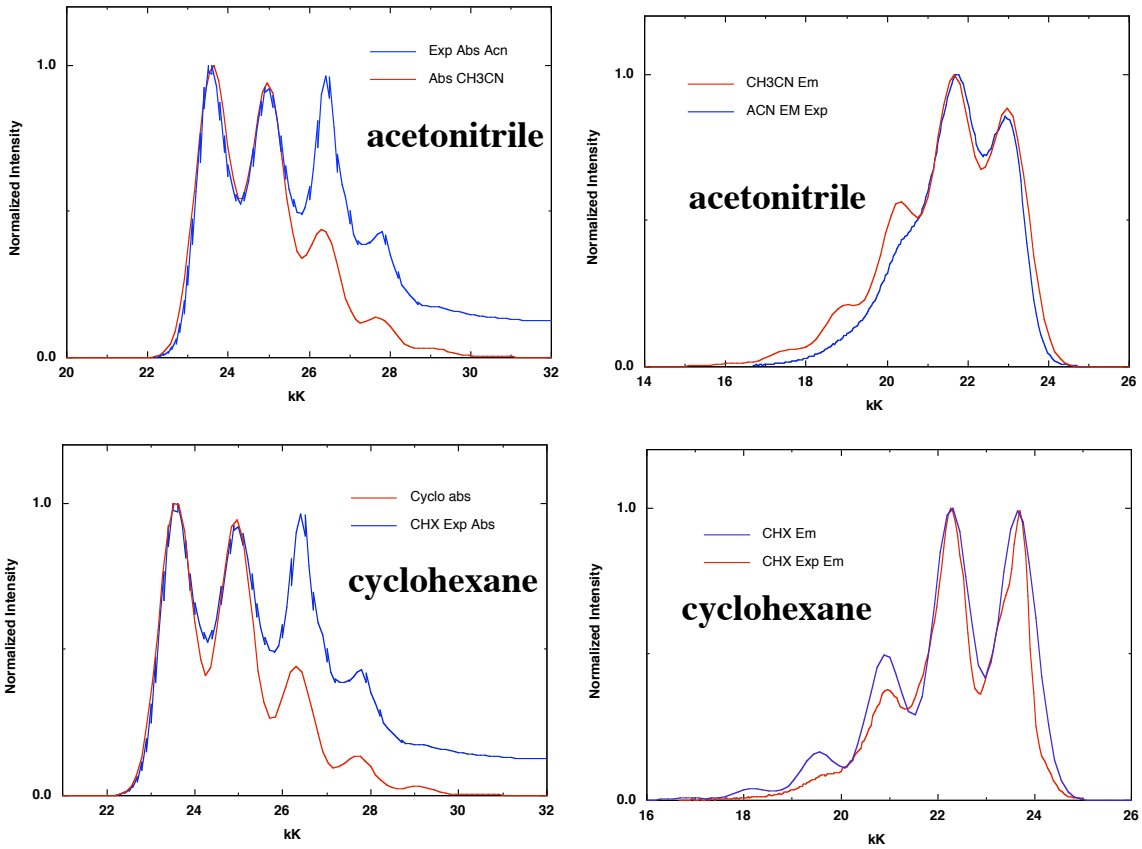
CHM 598, Photochemistry, Spring 2005, Homework 5, my answers!

Absorption **Emission**



	$\Delta E_{0,0}$	λ_s	λ_v	ν_v
Cyclohex Em	24.0 kK	0.045 eV	0.205 eV	1370 cm^{-1}
Cyclohex Abs	23.2 kK	0.045 eV	0.15 eV	1370 cm^{-1}
CH3CN Em	23.55 kK	0.070 eV	0.23 eV	1370 cm^{-1}
CH3CN Abs	23.15 kK	0.055 eV	0.15 eV	1370 cm^{-1}

Now that I look at the spectra, the absorption spectrum in acetonitrile and cyclohexane look the same, probably my mistake! The fits aren't very good, as expected for this simplistic model. Anyway, we expect that λ_s should increase going from cyclohexane to acetonitrile, especially for the emission in acetonitrile where there is clearly a CT interaction with the solvent, and it generally does. We expect λ_v and ν_v to be constant, since they should not change with solvent. The ν_v are, but the λ_v aren't, which I think reflects the assumptions in the model.