Homework 4
Please send your answers electronically to epotma@uci.edu by midnight.

a You want to image skin tissue at video-rate (20 frames per second) using the SRS microscope. The image size is 600 by 800 pixels. What is the minimum response time that the lock-in amplifier should have?

b Vibrational energies are usually indicated on the wavenumber scale (cm^{-1}). Given that $E = hc/\lambda$, the scale is based on dividing E by hc and then expressing it in cm^{-1} (as opposed to m^{-1}). The vibrational energy of the symmetric CH_2 stretch vibration is 2845 cm^{-1}. If your pump light is 800 nm, what wavelength for the Stokes beam do you need to tune into this vibrational mode?

c Can you think of a way of using the FWM microscope for your own research? What kind of experiment would you do?