Chemistry 416, Dr. Glaser

Applications of UV/Vis Spectra: Dual Wavelength Spectroscopy

Dual Wavelength Spectroscopy means that we are looking at two wavelengths at the same time and we record the difference of the A values at these wavelengths. This is an important method for the determination of one component of a binary system. The principle is fairly simple: Measure at one wavelength where only one (the reference) of the two absorbs and then also measure at a wavelength where the other absorps (with or without the reference).

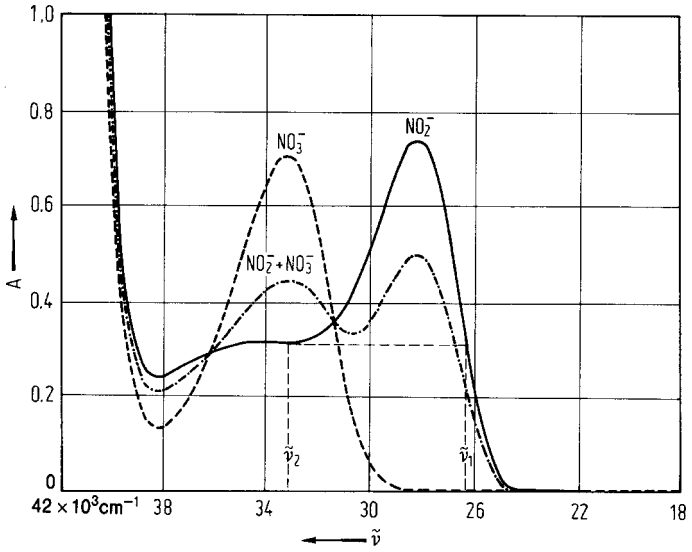

Fig. 21. Example of the selection of analytical wavelengths in dual-wavelength spectroscopy; NO_3^-/NO_2^- system in H_2O; NO_2^- (———), NO_3^- (– – –), mixture (–.–.–)

(a) Suggest suitable wave lengths to analyze the nitrite/nitrate mixture (in nm!).

(b) What is the advantage of this method? Can you determine nitrate in the presence of nitrite? Can you determine nitrite in the presence of nitrate?