

- 1) Measure UV-vis absorption spectra of concentrated (stock) and diluted (30x) acridine yellow (AcY) solution in acetonitrile (500-200 nm, 1 nm step). Indicate the concentrations and plot the spectra.
- 2) Measure fluorescence emission spectra of stock AcY solution at $\lambda_{exc} = 266$ nm and $\lambda_{exc} = 400$ nm in the range from 420 nm to 750 nm in standard T-geometry arrangement. Inspect the obtained spectra and discuss, in your group, any unexpected/strange features. Place the 330 nm cut-off filter in the emission beam path (between the sample and emission lens or behind the emission lens) and repeat the measurements. Compare spectra (normalized) acquired with and without filter. Explain differences.

Measure fluorescence excitation spectra of stock AcY solution at two suitable λ_{em} (near the max and tail of the emission), first without any filter and then with proper filter. Explain your choice and compare spectra (normalized) acquired with and without filter. Explain differences.

- 3) Repeat procedures described in "2)" with use of front-face (F-F) arrangement and compare resulting spectra (T geometry vs. F-F geometry).
- 4) Repeat procedures described in "2)" and "3)" with use of diluted AcY solution.
- 5) Measure fluorescence decay curve of AcY in diluted solution at $\lambda_{exc} = 266$ nm and λ_{em} (max) with nanosecond flash-lamp. Measure instrument response function (IRF) at $\lambda_{exc} = \lambda_{em} = 266$ nm with a scattering solution (LUDOX) and calculate fluorescence lifetime of AcY via reconvolution of the fit.
- 6) Measure the quantum yield of AcY in acetonitrile. (see 'Technical note for QY measurements' for instructions).