

Fluorescence spectra of pyrene-containing compound and SAM were recorded with a Perkin Elmer LS 55 luminescence spectrometer using a 343 nm excitation wavelength and slit widths of 2 nm for both excitation and emission. Data were collected using Perkin Elmer FL WinLab molecular spectroscopy software package. The sample was adjusted to make the incident angle of the excitation light 60° in the front phase mode so that the luminescence of the gold substrate was minimized.¹ The spectra resolution was 1 nm.

The steady state fluorescence spectrum of the SAM prepared using pyrene as a probe shows the characteristic emission of 1-substituted pyrene at 376, 397, 411 nm. The excimer emission showed a weak broad shoulder peak at ~ 457 nm. Fluorescence was observed due to the partially insulating organic layer between the metal and fluorophore.² Because of the small quantity of pyrene molecules on the SAM, the intensity of the fluorescence is smaller than that in solution. Measurable excited state lifetime is comparable to that in the metal induced fluorescence quenching process.

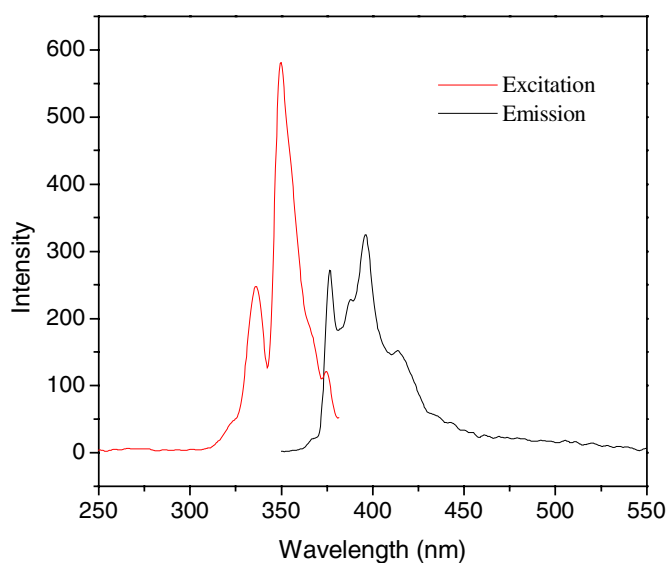


Figure 1: Fluorescence spectra of TPCOCH₂Py (2.0×10^{-3} mg/mL in CH₂Cl₂, 4.4 μ M) with an excitation wavelength of 343 nm

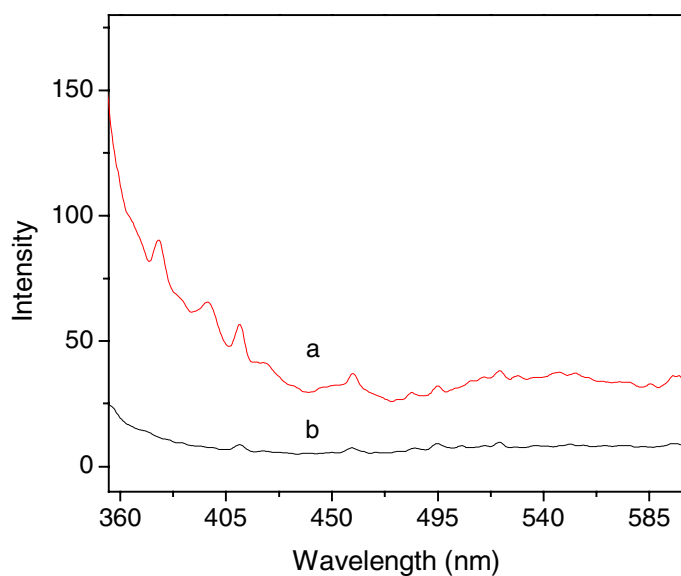


Figure 2: Fluorescence spectra of a) TPCH₂COOCH₂Py SAM on gold surface b) bare gold surface as background with an excitation wavelength of 343 nm.

¹ a) Bruening, M. L.; Zhou, Y.; Aguilar, G.; Agee, R.; Bergbreiter, D. E.; Crooks, R. M. *Langmuir*, 1977, 13, 770-778. b) Fox, M. A.; Li, W.; Wooten, M.; McKerrow, A.; Whitesell, J. K. *Thin Solid Films*, 1998, 327, 477-480.

² a) Wolf, M. O.; Fox, M. A. *J. Am. Chem. Soc.* 1995, 117, 1845. b) Wolf, M. O.; Fox, M. A. *Langmuir*, 1996, 12, 955.