Supplementary Information

A Luminescent Assay for Ketones and Aldehydes Employing Catalytic Signal Amplification

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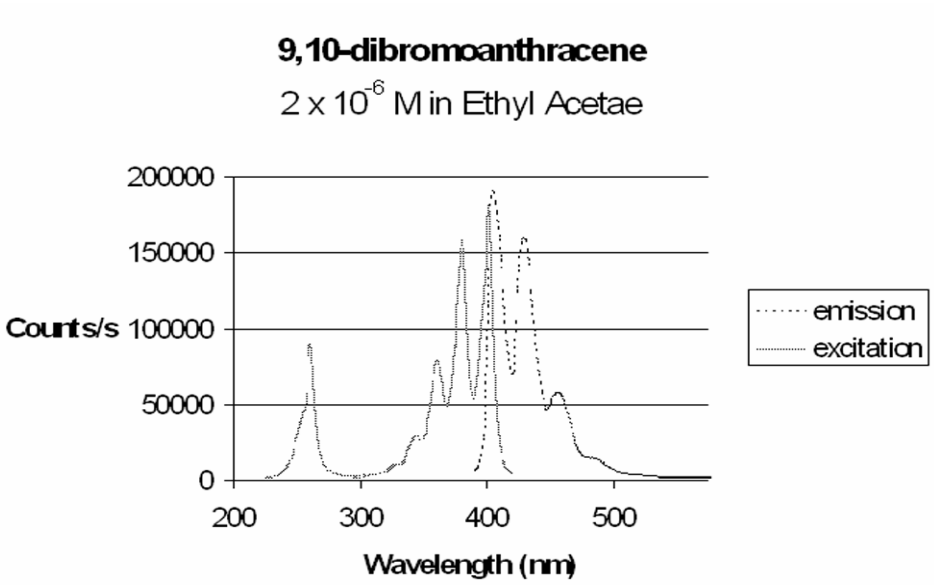
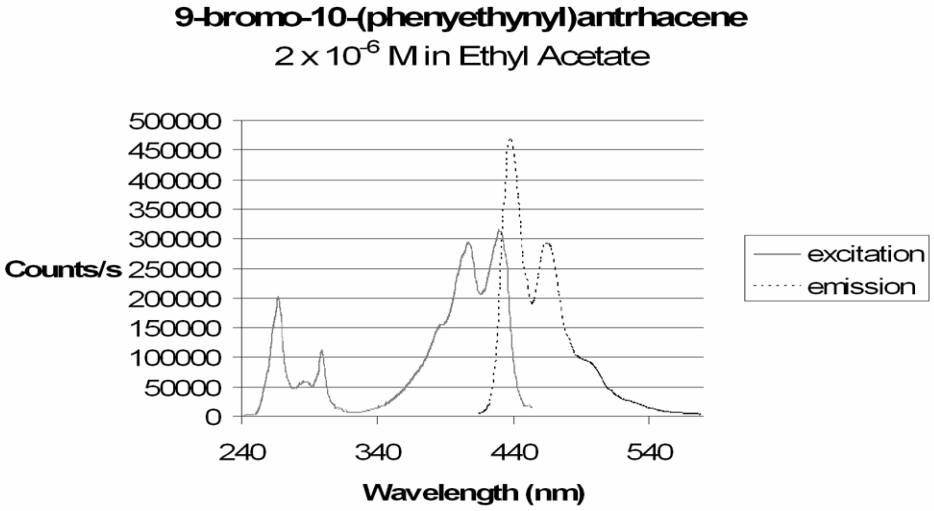
Excitation and Emission Profiles

9,10-Dibromoanthracene



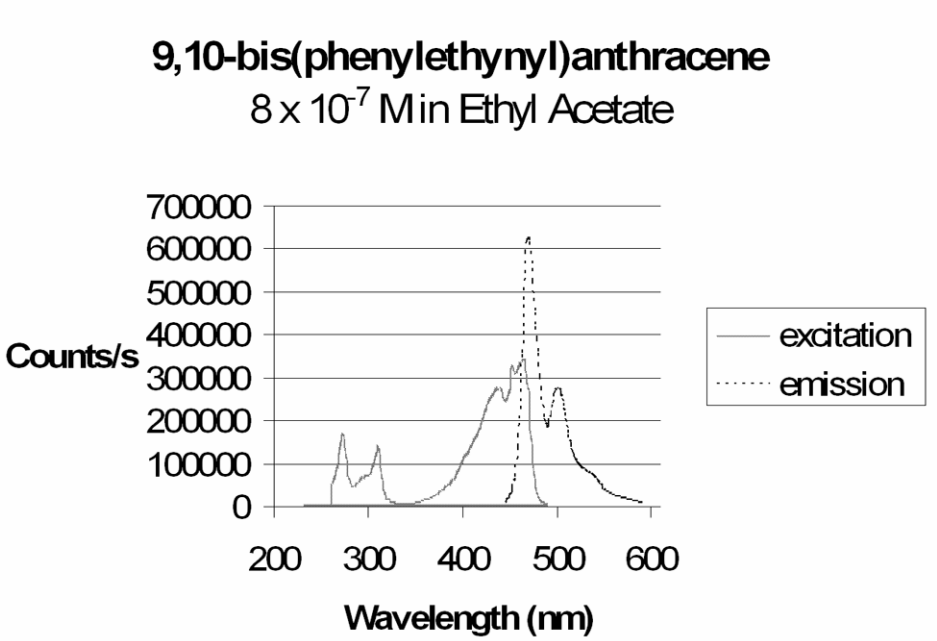
Emission scan: excite 381 nm: λ_{max}em=406 nm. Excitation scan: emit 430 nm, range 225-420nm, λ_{max}ex=402 nm

9-bromo-10-(phenylethynyl)anthracene



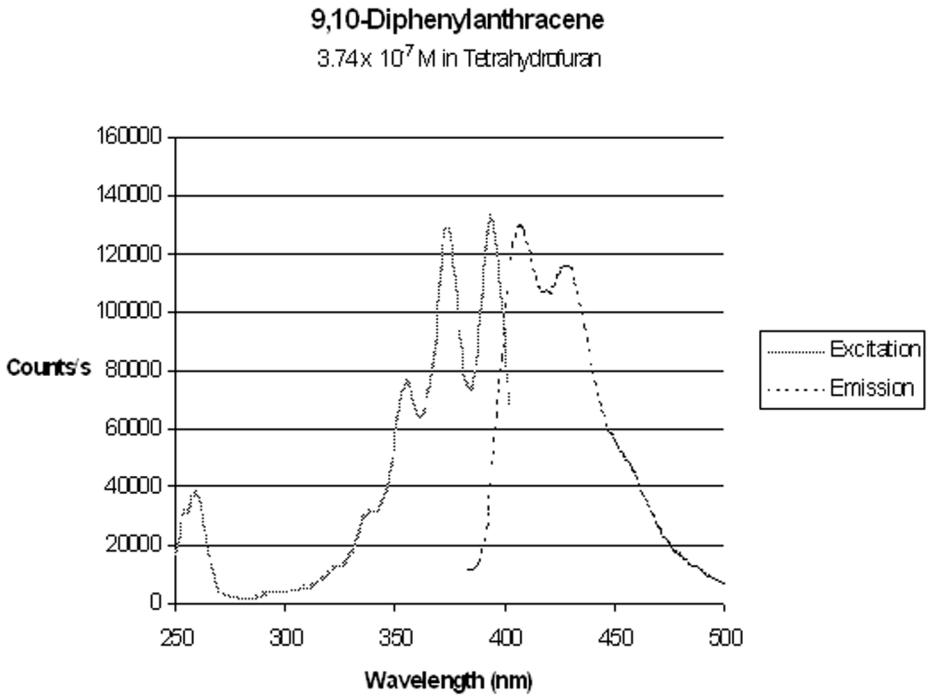
Emission scan: excite 405 nm, λ_{max}em=437 nm. Excitation scan: emit 464 nm, range 242-454 nm, λ_{max}ex=430 nm

9,10-bis(phenylethynyl)anthracene



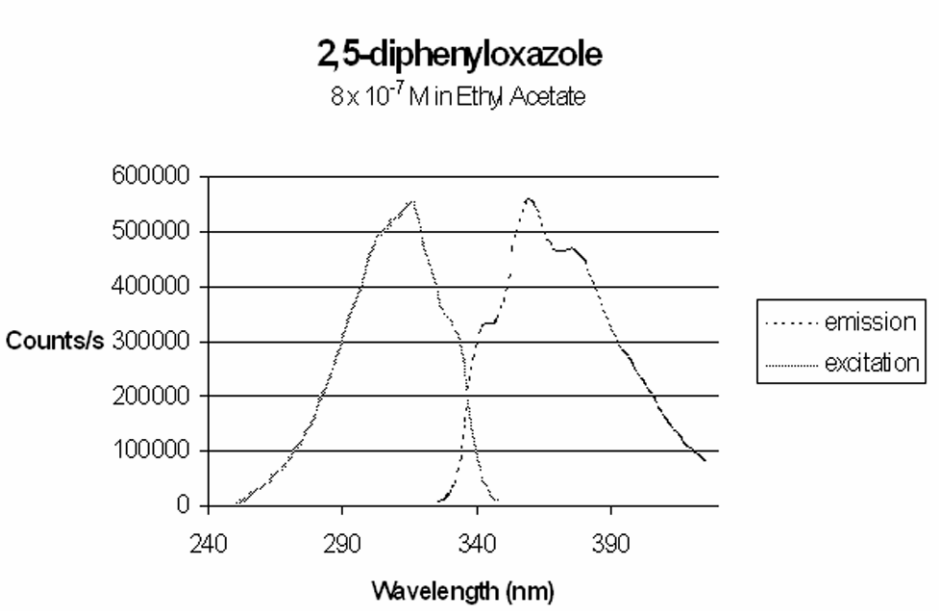
Emission scan: excite 436 nm: λ_{max}em=470 nm. Excitation scan: emit 500 nm, range 260-490nm, λ_{max}ex=463 nm

9,10-diphenylanthracene



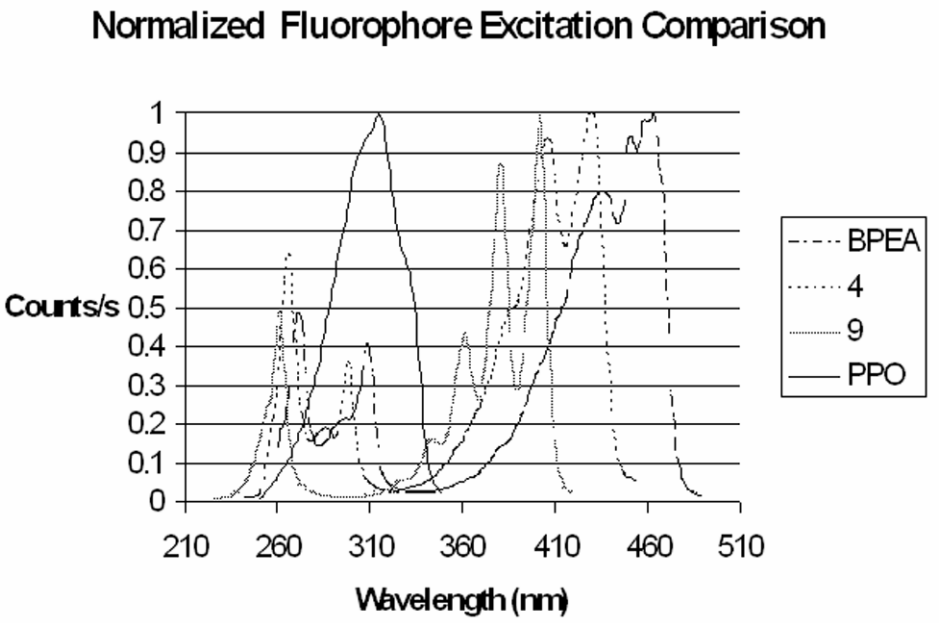
Emission scan: excite 373 nm: λ_{max}em=407 nm. Excitation scan: emit 407 nm, range 250-402nm, λ_{max}ex=393 nm

2,5-diphenyloxazole



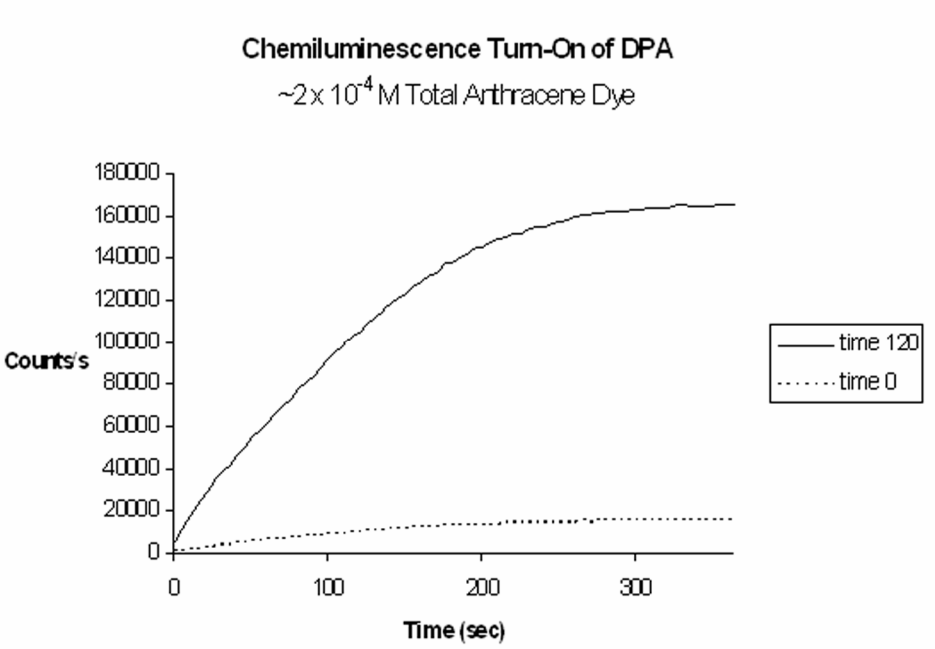
Emission scan: excite 316 nm: λ_{max}em=359 nm. Excitation scan: emit 359 nm, range 250-349nm, λ_{max}ex=315 nm

Comparison of excitation spectra.



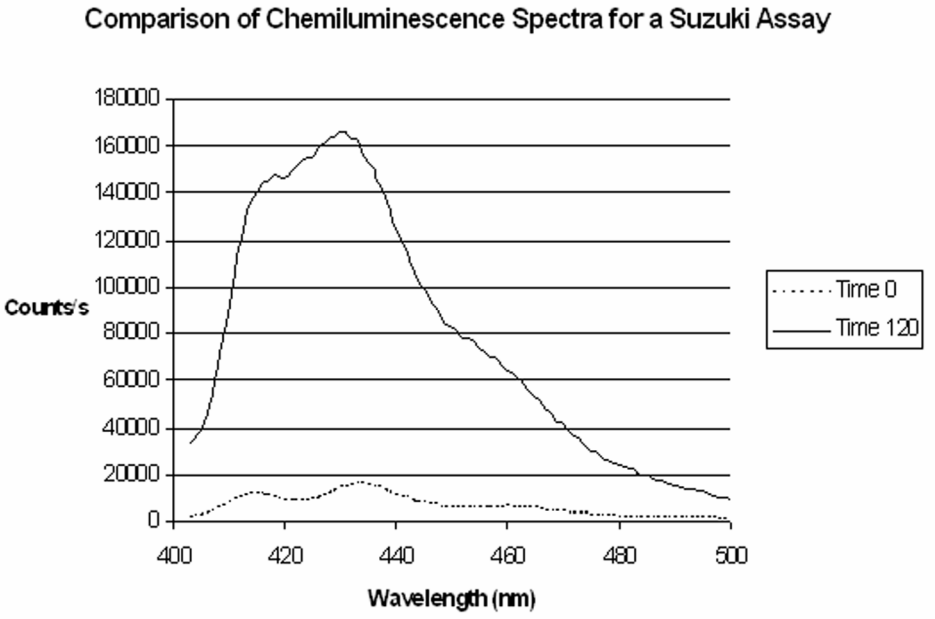
The excitation spectrum of PPO falls nicely within the trough of the anthracene dyes, allowing for unspoiled excitation of just PPO. No energy transfer activity was observed between PPO and the anthracene dyes.

Trace of Chemiluminescent Turn-on



This sample is from a Suzuki assay utilizing 93% cinnamaldehyde vs. ethaneditiol. Conversion of 9,10-dibromoanthracene to DPA was quite facile and the increase in chemiluminescence intensity increased from less than 20,000 counts/s to well over 160,000. Data was recorded at 431 nm.

Spectra from Luminescing Samples



For the same determinations as the previous chart, spectra were taken upon plateauing of the of the intensity output. The energy associated with the peroxyoxalate initiation mechanism appears to favor the second peak of the vibrational fine structure.