

## Building Block Synthesis of Porphyrin Light-Harvesting Arrays.

Prathapan, S.; Johnson, T. E.; Lindsey, J. S. *J. Am. Chem. Soc.* **1993**, *115*, 7519-7520.

See also: *Science* **1993**, *261*, 1388-1389. (From the Final FS93)

UV-Topic: Fluorescence

Chem Topic: Electronic devices, Photosynthesis

Photosynthetic organisms employ light-harvesting complexes to capture dilute sunlight and funnel energy to the reaction centers. Understanding light harvesting phenomena at the molecular level is a major objective of photosynthesis research and might also provide the foundation for the design of synthetic molecular devices. The authors synthesized the pentamers shown in the Scheme. The absorption and emission spectra of compound **8** (M=Zn) are shown in Figure 1. Note that the material absorbs blue light and emits red light. Explain the fluorescence.

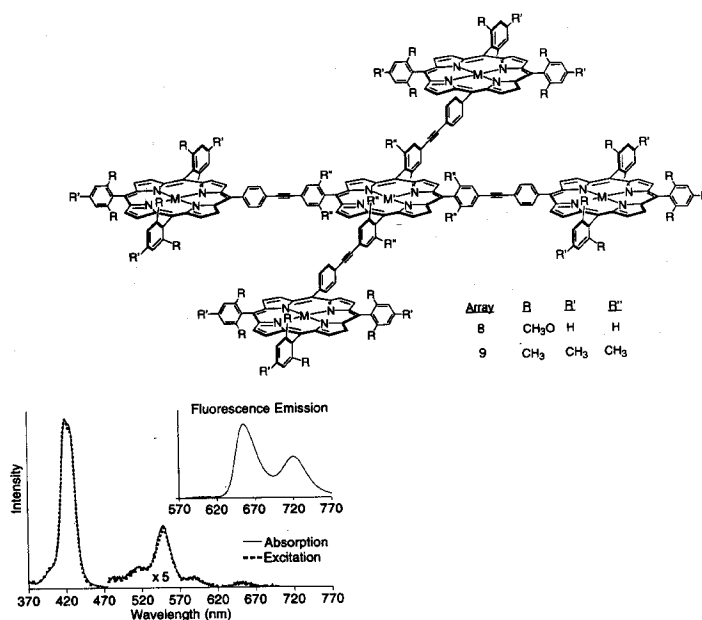


Figure 1. Absorption, fluorescence excitation ( $\lambda_{em}$  721 nm), and fluorescence emission ( $\lambda_{em}$  421 or 547 nm) spectra of **8** in CH<sub>2</sub>Cl<sub>2</sub> at 303 K. The weak fluorescence of the zinc porphyrins (601, 648 nm; assumed 1:4 ratio) is partially obscured by the fluorescence of the core free base porphyrin (656, 721 nm). The absorption and fluorescence excitation spectra were fitted by normalization at the Soret bands.