

YSU Chemistry Seminar Series 2017-2018

Upcoming Seminar

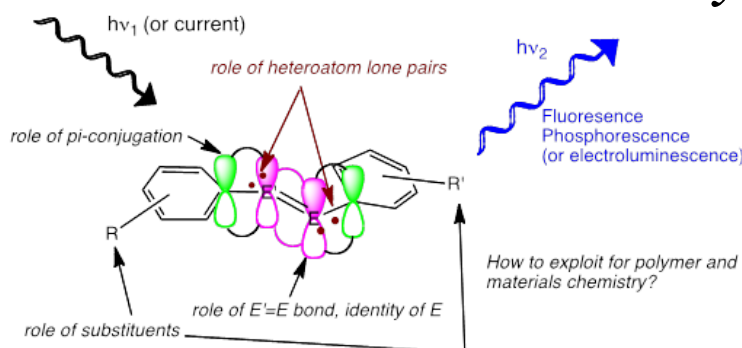
Friday: 2/9/2018 3PM

Room 3022 Ward Beecher Hall

Refreshments Provided

Phosphorus as an element for hybrid inorganic-organic materials having interesting optoelectronic properties

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Phosphaalkenes ($R_2C=PR'$) and diphosphenes ($RP=PR$) represent main group analogs of alkenes ($R_2C=CR'_2$). Molecules featuring these phosphorus containing subunits often show structural and chemical behavior that mimic their purely organic counterparts, justifying the claim that these low coordinate phosphorus compounds are "a carbon copy".¹ We have been working to extend this analogy to polymers and materials having extended conjugation that directly involve P=C and P=P units. Many materials, however, do not show significant photoluminescence (PL).² In this presentation we will summarize past work and report on materials having significant PL and that can be said to be mimic or "photocopy" the PL properties of the phosphorus-free systems. Specifically, new materials based on benzoxaphospholes, benzobisoxaphospholes, and higher analogues having high fluorescence quantum yields will be discussed.³

References:

- (1) (a) Dillon, K. B.; Mathey, F.; Nixon, J. F. *Phosphorus: The Carbon Copy*; John Wiley & Sons: New York, 1998. (b) Mathey, F. *Angew. Chem., Int. Ed. Engl.* **2003**, *42*, 1578.
- (2) (a) Smith, R. C.; Protasiewicz, J. D. *J. Am. Chem. Soc.* **2004**, *126*, 2268. (b) Smith, R. C.; Chen, X.; Protasiewicz, J. D. *Inorg. Chem.* **2003**, *42*, 5468.
- (3) (a) Washington, M. P.; Payton, J. L.; Simpson, M. C.; Protasiewicz, J. D. *Organometallics* **2011**, *30*, 1975. (b) Washington, M. P.; Gudimetla, V. B.; Laughlin, F. L.; Deligonul, N.; He, S.; Payton, J. L.; Simpson, M. C.; Protasiewicz, J. D. *J. Am. Chem. Soc.* **2010**, *132*, 4566.