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(UN)USUAL PHOSPHORUS-BASED CONCEPTS FOR ORGANIC MATERIALS

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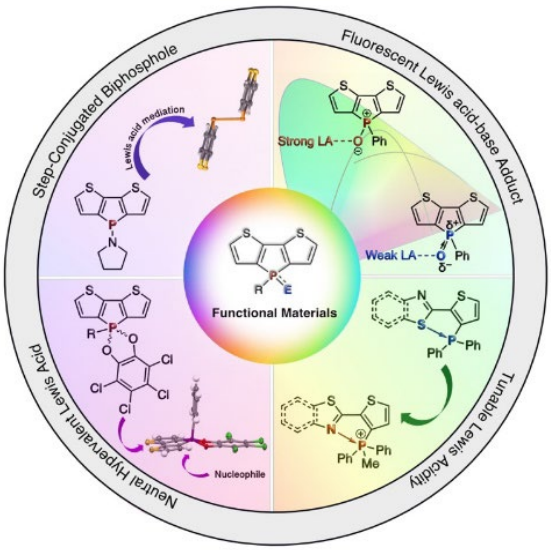
Recent research in the area of functional π-conjugated organic materials has shown that the incorporation of main group elements such as boron, silicon, selenium, tellurium, and phosphorus in particular - is an efficient strategy to obtain sustainable materials with intriguing properties for a host of practical applications ranging from organic light emitting devices (OLEDs), field-effect transistors (OFETs), photovoltaics (OPVs), batteries, to sensors and metal-free catalysts for chemical transformations.[1]



My group's research program deals with the development of fused phosphacyclic compounds that have attracted significant attention due their unique electronic and photophysical properties. Our multi-pronged approach addresses the effective design of ring-fused organophosphorus building blocks that leverage beneficial phosphorus-specific chemistries that arise from the element's unique structures and electronics, including hypervalency, to explore their suitability as sustainable functional materials for a variety of practical applications.[2] This presentation will highlight two of our recent strategies toward value-added functional species for organic electronics and small-molecule activation that tap into key electronic interactions that are core to the electron-acceptor features of phosphole-based conjugated materials

References:

[1] T. Baumgartner, F. Jäkle (eds.), *Main Group Strategies Towards Functional Hybrid Materials*; John Wiley & Sons Ltd: Hoboken, **2018**.

[2] N. Asok, J. R. Gaffen, T. Baumgartner, *Acc. Chem. Res.* **2023**, *56*, 536-547.