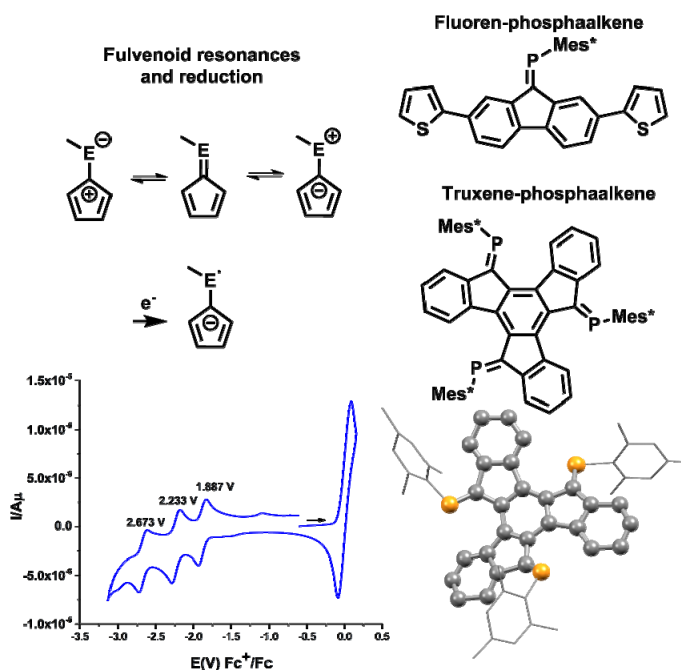


Elemental substitution of carbon with phosphorus and arsenic in π -conjugated materials

Jordann A. Wells, Joshua P. Green, Muhammad A. Shameem, Daniel Morales-Salazar, Arvind K. Gupta, Andreas Orthaber

Institute of Chemistry, Ångström laboratories, Uppsala University, 75120 Uppsala, Sweden

Combining organic conjugated frameworks with p-block elements constitutes a major approach in tuning the opto-electronic properties of materials for organic-electronics.[1] Elemental substitution, introducing heavier group 16 elements (S, Se, Te) in the form of thiophene, selenophenes and telurophenes has been successfully applied harnessing the beneficial heavy element effects. In our work we use heavier group 15, i.e. pnictogen, cyclic and unsaturated derivatives such as phospholes/arsoles and phospho-, arsaalkenes, respectively to fabricate stable (multi-)electron acceptor materials.[2] Electronic properties are studied using optical spectroscopy and electrochemical analysis and correlated to structural parameters and ab initio calculations.[3]



[1] Vidal, F.; Jakle, F., *Angew. Chem. Int. Ed. Engl.* **2019**, *58* (18), 5846-5870

[2] a) Shameem, M. A.; Orthaber, A., *Chem. Eur. J.* **2016**, *22* (31), 10718-10735 b) Green, J. P.; Wells, J. A. L.; Orthaber, A., *Dalton Trans.* **2019**, *48* (14), 4460-4466

[3] a) Morales Salazar, D.; Mijangos, E.; Pullen, S.; Gao, M.; Orthaber, A., *Chem. Commun.* **2017**, *53* (6), 1120-1123. b) Green, J. P.; Gupta, A. K.; Orthaber, A., *Eur. J. Inorg. Chem.* **2019**, (11-12), 1539-1543