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Title: Functionalizing Polyaromatic Materials with Boranes and Borenium Ions

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In this project, funded by the Chemical Synthesis Program of the Chemistry Division, Professor Jaekle and his team at Rutgers University-Newark explore polycyclic aromatic hydrocarbons (PAHs) and related p-conjugated polyaromatic species that are functionalized with B-N Lewis pairs for applications in areas ranging from organic electronics to molecular switches and singlet oxygen sensitization. The fundamental principle has been demonstrated in an already highly cited publication entitled “*Tuning the structure and electronic properties of B–N fused dipyridylanthracene and implications on the self-sensitized reactivity with singlet oxygens*” in the *Journal of the American Chemical Society* (<https://dx.doi.org/10.1021/jacs.9b01958>). A new direction focuses on the site-specific introduction of functional handles that allow for judicious fine-tuning of the optoelectronic properties. Efforts to systematically vary the steric strain and the ensuing contortions are also planned. At the limits of contortion, closed and open structures may coexist, giving rise to stimuli-responsive properties. The integration of these functional PAHs into polymeric systems and their attachment to quantum dots will be pursued as well. The research is complemented by efforts to encourage participation of students from underrepresented groups. Advances in the field of organic-inorganic hybrid materials are further facilitated through interdisciplinary and international collaborations.