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## *Recent Progress in the Synthesis and Characterization of Diarylethene-based MOFs*

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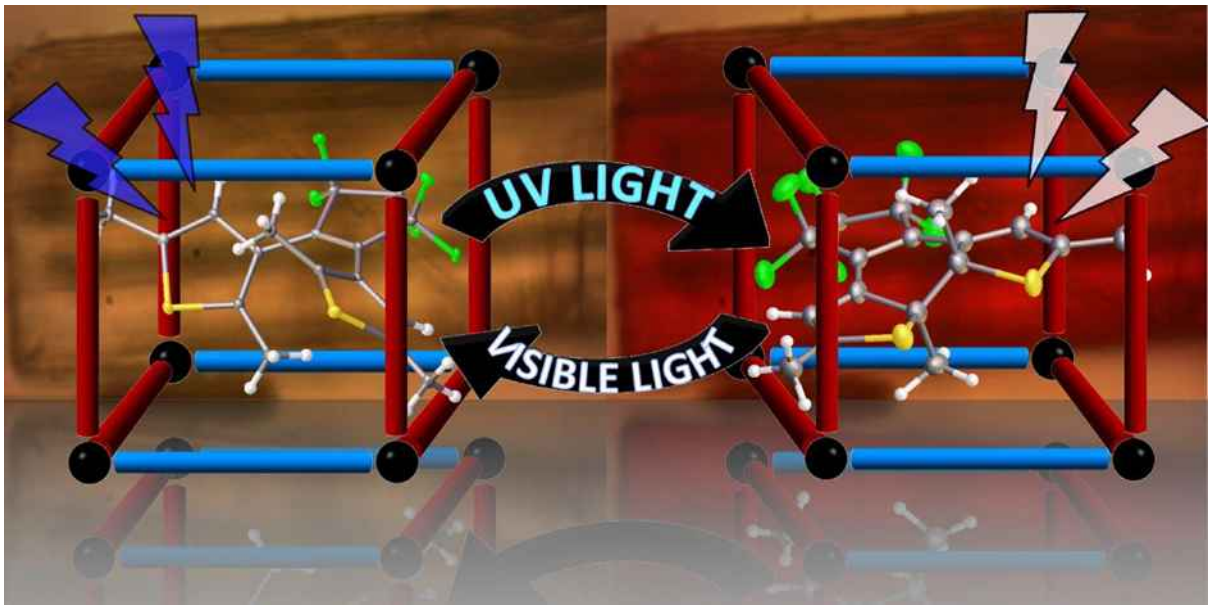
Metal-organic Frameworks (MOFs) remain an extremely active area of research given the wide variety of potential applications and the enormous diversity of structures that can be created from their constituent building blocks. While MOFs are typically employed as passive materials, next-generation materials will exhibit structural and/or electronic changes in response to applied external stimuli including light, charge, and pH. Herein we present recent results in which advanced photochromic diarylethenes are combined with MOFs through covalent and non-covalent methods to create photo-responsive permanently porous crystalline materials. This presentation will describe the design, synthesis, and characterization of next-generation photo-switchable diarylethene based ligands which are subsequently used to photo-responsive MOFs. These UBMOF crystals are, by design, isostructural with previously reported non-photoresponsive frameworks which enables a systematic comparison of their physical and chemical properties. While the photoswitching of the isolated ligand in solution is fully reversible, the cycloreversion reaction is suppressed in the UBMOF single crystalline phase. Spectroscopic evidence for thermally induced cycloreversion will be presented, as well as a detailed analysis addressing the limits of X-ray diffraction techniques applied to these systems.

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