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Isothermal Liquid Crystal Phase Transitions Using the Photostationary State of Arylazopyrazoles

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The development of photoresponsive functional materials remains a relevant topic in research.[1] To achieve the best possible photoresponses, new photoswitch designs are constantly evolving to yield excellent $E \rightarrow Z$ and $Z \rightarrow E$ conversions and long thermal half-life times. Arylazopyrazoles stand out as promising candidates to address these challenges.[2] While researchers generally focus on excitation wavelengths that yield the highest amounts of *E* or *Z* isomers, intermediate photostationary states (PSSs) may also serve a different function. Unprecedentedly, the different PSSs of arylazopyrazoles were utilized to induce isothermal phase transitions in liquid crystals (LCs, Figure 1).[3] The liquid crystalline host (blue) is doped with photoswitches (green). The extent of disorder is determined by the amount of *Z* isomers (red), which yield smectic, nematic, or isotropic phases, depending on the PSS. The photoresponse can be further tuned by introducing a hydrogen-bond (HB) donor.

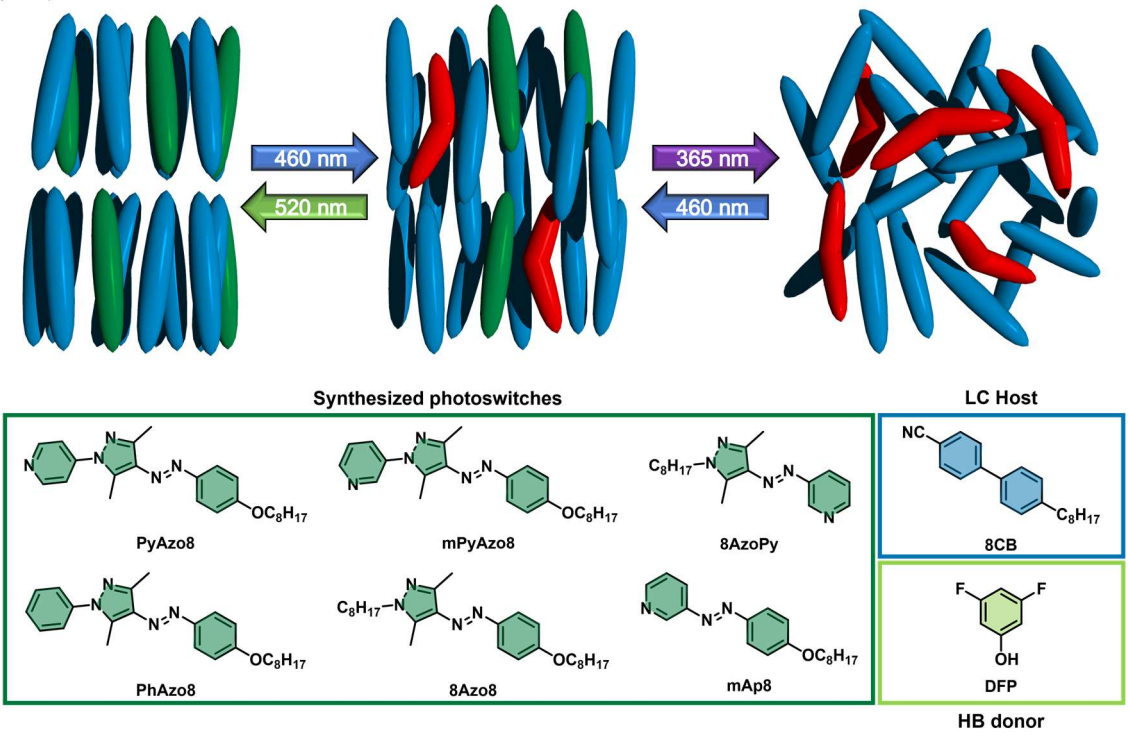

Figure 1. Concept of isothermal switching between LC phases using different photostationary states of photoswitches.[3]

References

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