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Title: Arylazo-3,5-dimethylisoxazoles: Azoheteroarene Photoswitches Exhibiting High Z-Isomer Stability, Solid-State Photochromism, and Reversible Light-Induced Phase Transition

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Abstract: Reversibly photoswitchable phenylazo-3,5-dimethylisoxazole and 37 aryl-substituted derivatives were synthesized. Excellent photoswitching ability of these compounds in solution and the solid state was demonstrated. Through kinetics studies by means of NMR spectroscopy, high Z-isomer stability was demonstrated. Interestingly, the majority of the derivatives showed light-induced contrasting color changes in solution and the solid state. Besides, many of the derivatives exhibit partial phase transition upon UV irradiation. The highlight of this class of photoswitches is the reversible light-induced phase transition between solid and liquid phases in the parent compound, which can be used in patterned crystallization. These results show that this new class of azoheteroarene based photoswitches has opportunities to be useful in various domains.

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