

Stimuli-responsive Fluorescent Organogelating Materials

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The fundamental and essential issue in materials chemistry is to understand the electronic interactions and self-assembly in the molecular solids which plays a crucial role in determining the ultimate optoelectronic properties. The design and synthesis of solid-state luminophoric materials have received tremendous attention in both scientific research and practical aspects owing to their potential applications in the field of optical and optoelectronic devices. In this presentation, I will discuss a series of structurally simple organogelating molecules with complicated photophysical and physical properties. High-contrast piezo-fluorochromic behaviors have been identified with various external stimuli such as grinding, annealing, and solvent fuming. The experimental and theoretical investigations revealed that their twisted conjugated skeleton is the key factor for showcasing the responsive property because of the restricted face-to-face coplanar arrangement and strong intermolecular interactions. The responsive behaviors are attributed to the different structural packing patterns under various external stimuli. The present findings would open a way for the development of novel organic luminescent solids that can be switched on and off by external stimuli.

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References:

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