# STIMULI-RESPONSIVE H-BONDED SUPRAMOLECULAR SYSTEMS

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Stimuli-responsive supramolecular systems have emerged as promising materials for adaptive and reconfigurable systems due to their dynamic and reversible non-covalent interactions [1]. However, designing smart hydrogen-bonded materials that exhibit controlled and predictable switching behavior under external stimuli remains challenging.

In our report, we design and investigate a series of H-bonded supramolecular systems constructed from ureidopyrimidinone (UPy) or 1,8-naphthyridine-2,7-diamine (DAN) motifs incorporated with stimuli-responsive functional groups. These systems dynamically reorganize their structures in response to light, temperature, or pH changes. NMR, UV–VIS spectroscopy, and viscosity measurements were employed to establish structure–property relationships and confirm quasi-reversible switching behavior.

These findings demonstrate the potential of hydrogen bond driven supramolecular architectures in advanced applications including smart coatings, self-healing materials or drug delivery systems. The rational design principles presented here provide a framework for engineering next-generation adaptive materials with programmable and reversible functionalities.

[1] M. Oggioni et al., "Photoacid-Induced Supramolecular Network Disassembly: A Systems Approach to Stimuli-Responsive Polymers," Angewandte Chemie International Edition, vol. 64, no. 30, Jun. 2025, doi: https://doi.org/10.1002/anie.202506981.