

MS35-P16 | A LAMELLAR STRUCTURE EXHIBITING NANO-MORPHOLOGICAL REVERSIBILITY, DISASSEMBLY-AND-SELF-ASSEMBLY CRYSTALLIZATION INTO NOVEL COORDINATION POLYMERS

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A hybrid organic-inorganic two-dimensional layer structure with functional carboxylic acid ($-\text{COOH}$) groups protruding on both sides of zincophosphate sheets is prepared for the first time. The interior $-\text{COOH}$ groups allow the hybrid sheets to stack tightly via strong hydrogen bonds to form a sturdy supramolecular network characteristic of extraordinary thermal stability. The supramolecular solid could exhibit tunable wettability via a facile mechano-chemical reaction, which is enabled by the $-\text{COOH}$ groups exposed on the solid surface. We also observed an intriguing reversible lamella-to-nanorod transformation presumably initiated and prompted by surface and interior $-\text{COOH}$ groups collectively. To investigate the reactivity of such a solid toward organic bases, we immersed the supramolecular network in solutions of bipyridyl alkanes and observed from the solutions two novel zinc coordination polymer compounds crystallized, demonstrating a unique disassembly-and-self-assembly process.