Poster Presentation

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Supramolecular Gel to Metal Organic Framework Transformation

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The remarkable effect of anions on the transition from supramolecular gel to crystalline phases posesss various application in various field.[1] An amino acid-based metallohydrogel was transformed into different metal-organic frameworks using halide anions. The metallogel and the resulting metal-organic frameworks (MOFs) were thoroughly characterized. The results demonstrated a controlled access over binding of particular anion to selectively form a particular MOF. Within this context, gel-based materials have been used as a matrix for the controlled growth of important pharmaceutical crystals.[2] Herein, we report a highly efficient synthesis of different MOFs through the introduction of selective anion(s) into a common metastable gel phase. Cadmium sulfide (CdS) quantum dots (<10 nm in size) have now great potential for use as diagnostic and imaging agents in biomedicine and as semiconductors in the electronics industry, since they have strong photoluminescence and tunable optical capabilities. Thus synthesis of CdS quantum dots in various medium with tunable size is important for various catalytic processes. Our group has shown that CdS quantum dots can be synthesized in situ in gel matrix without any capping agent. Size of the CdS QDs in gel matrix is easily tunable and possesses various color change with different size. Therefore, ordering of nanoparticles in gel matrix as well various properties of such system are less studied and need to explore. Similar size stabilization of CdS quantum dots can be achieved by means of a unique room-temperature conversion of the CdS incubated gel to CdS incubated MOF crystals.

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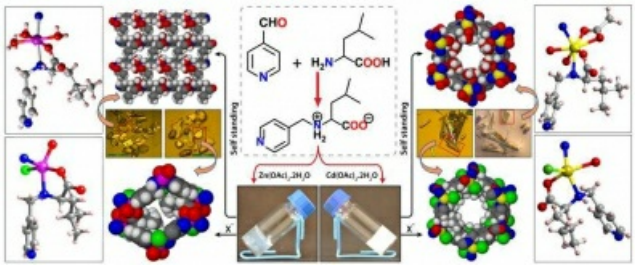
[2] Meazza, L.; Foster, J. A.; Fucke, K.; Metrangolo, P.; Resnati, G. & Steed, J. W. (2013). Nat. Chem., 5, 42.



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