Poster Presentation

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Anion-induced transition from supramolecular metallogel to metal organic frameworks

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Low molecular weight gels1 have attracted significant amount of scientific attention owing to its extensive domain of applications such as catalytic properties, self-healing,2 moldability, and load-bearing properties,3 among others. On the other hand, metal organic frameworks (MOFs) form a separate class of materials for different potential applications including storage, separation, catalysis, sensing, optoelectronics, and so on. However, only handful reports are available in literature where attempts were made to utilize gel to directly transform it into MOFs through external stimuli. Therefore, an easy to perform simpler approach with processability is highly essential. Herein, we have introduced a simpler route towards the synthesis of MOFs directly from gel. We have synthesized metallohydrogel ZAIL within seconds following a synthetic procedure where mixing aqueous solution of isoleucine-based ligand and zinc acetate salt at room temperature affords the aforementioned gel. Further, we have explored the gel characteristic properties such as viscosity, self-healing, load-bearing and thermally reversible gel-to-sol and sol-to-gel. We have synthesized six different MOFs through introduction of different anion to the metastable gel phase. In addition, we have derived two different pathways to transform gel directly to MOFs i.e. layering method and sprinkling of sodium or potassium salt directly over the metallohydrogel.

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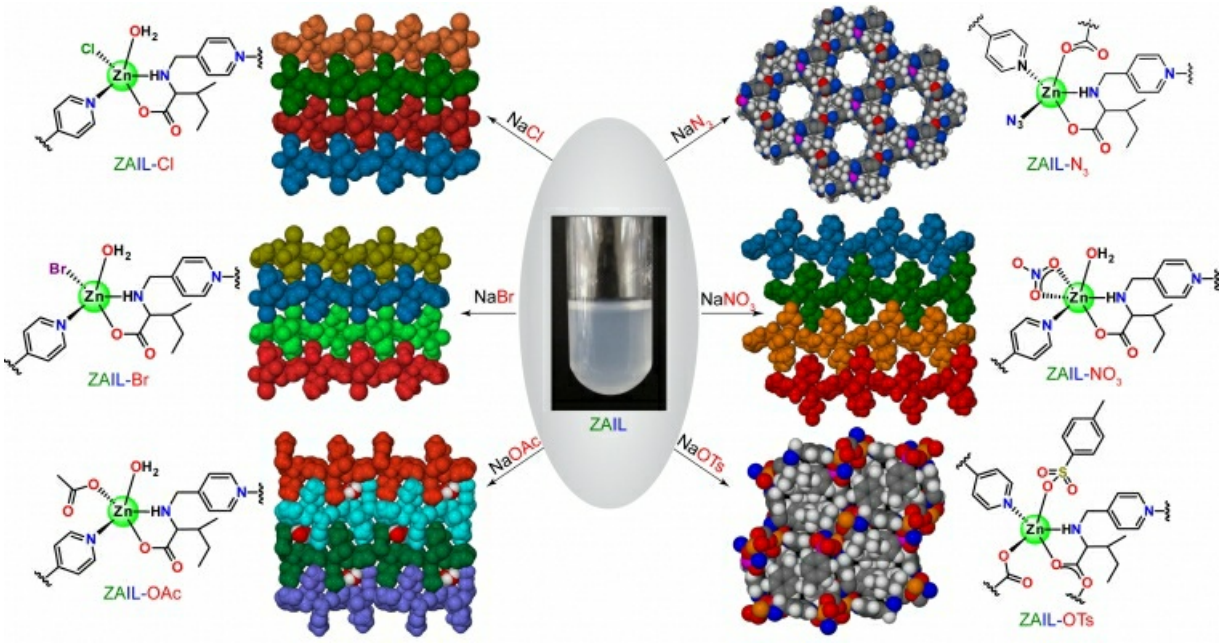

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