Urea-functionalized MOFs

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Abstract

Recently, metal-organic frameworks (MOFs) were introduced as promising candidates for applications in diverse areas. Compared to other porous materials, MOFs have given chemists the opportunity to tune the topology, pore size and functionality by rational selection of organic linkers and inorganic metal centers. Owing to this feature, MOFs containing functional groups, such as urea, amide, imine, and other groups are currently in the spotlight due to their potential applications in different areas including molecular sensing and catalysis. It has been shown that incorporating supramolecular recognition units into the MOF backbone has enabled the docking of specific guests and is advantageous to create specific responses.

Based on this strategy, we are designing a series of MOFs based on organic linkers containing urea functional group. It has been revealed that the match of the complementary binding sites of receptor and substrates allows the formation of tight hydrogen bonding and may account for the sensitivity of these frameworks to the respective substrates. The results that will be presented in crystallography 2020 provide some support for the approach taken by the chemists to broaden the applicability of MOFs through rational functionalization of the linking units.

Biography

Alireza Azhdari Tehrani has completed his PhD at the age of 29 years from Shahid Behehti University, Tehran, Iran and he and subsequently join Professor Marsali's research group at Tarbiat Modares University as post-doctoral researcher. He has over 40 publications that have been cited over 500 times, and his publication H-index is 14.