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Synthesis, Catalytic Application and uses of Functional Pillar Metal-Organic Frameworks

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Abstract

Among continuing investigations in solid state chemistry, MOFs are the class of promising materials which attracted tremendous amount of attention in the past two decades. MOFs are regarded as a subclass of coordination polymers (CP) which are constructed by self-assembly of metal ions or metal clusters linked together by organic ligands containing multiple binding sites oriented with specific angularity generating structures with permanent porosity, high specific surface area and tunable topology that can be used in different fields such as gas adsorption[1], separation [2], catalysis [3], sensing [4] and drug delivery [5]. Modifying pillar moieties as a third building blocks of pillar-layered MOFs, together with metal nodes and oxygen donor linkers can enhance controlling structure assembly and led to specific properties into obtained structures. The structure of pillar can be easily modified which cause better designing of desired structural topology and pore environment. Although the past decade has witnessed remarkable advances in this vibrant research area, pillar-layered MOF have never been reviewed as an independent research area until now. In this presentation some new pillar MOFs will be reported and discussed from catalytic applications views.

Biography

Ali Morsali has completed his PhD in Inorganic Chemistry with Dr. Ali Reza Mahjoub in 1999-2003,Tarbiat Modares University (TMU), Tehran, Iran. He is the professor of Tarbiat Modares University, IRAN. He has over 500 publications that have been cited over 13000 times, and his publication H-index is 50 and has been serving as an editorial board member of some journals.

Recent publication data:

1. Yu, J., et al., CO2 Capture and Separations Using MOFs: Computational and Experimental Studies. Chemical Reviews, 2017. 117(14): p. 9674-9754.
2. Khan, N.A. and S.H. Jhung, Adsorptive removal and separation of chemicals with metal-organic frameworks: Contribution of π-complexation. Journal of hazardous materials, 2017. 325: p. 198-213.
3. Zhu, L., et al., Metal–Organic Frameworks for Heterogeneous Basic Catalysis. Chemical Reviews, 2017. 117(12): p. 8129-8176.
4. F. Rouhani, F. Rafizadeh, A. morsali, Highly Electroconductive Metal–Organic Framework: Tunable by Metal Ion Sorption Quantity,J. Am. Chem. Soc. 2019 (141) 11173-11182
5. Wu, M.-X. and Y.-W. Yang, Metal–Organic Framework (MOF)-Based Drug/Cargo Delivery and Cancer Therapy. Advanced Materials, 2017. 29(23): p. 1606134-n/a.

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