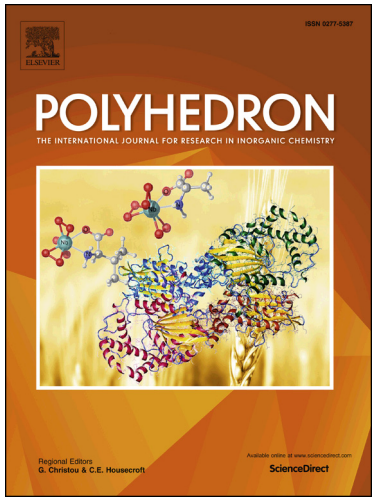

Advances of Metal-organic Frameworks for Gas Sensing

Ying Li, An-Shan Xiao, Bing Zou, Hong-Xing Zhang, Ke-Le Yan, Yu Lin

PII: S0277-5387(18)30422-4
DOI: https://doi.org/10.1016/j.poly.2018.07.028
Reference: POLY 13293

To appear in: *Polyhedron*

Received Date: 1 April 2018
Accepted Date: 16 July 2018

Please cite this article as: Y. Li, A-S. Xiao, B. Zou, H-X. Zhang, K-L. Yan, Y. Lin, Advances of Metal-organic Frameworks for Gas Sensing, *Polyhedron* (2018), doi: https://doi.org/10.1016/j.poly.2018.07.028

Advances of Metal-organic Frameworks for Gas Sensing

Ying Li *, An-Shan Xiao, Bing Zou, Hong-Xing Zhang, Ke-Le Yan, Yu Lin

State Key Laboratory of Safety and Control for Chemicals, SINOPEC Research Institute of Safety Engineering, Shandong Qingdao 266101, P. R. China

* Correspondent: Ying Li

E-mail: liying.chemistry@outlook.com

Phone: +86-0532-83786441

Abstracts

Gas sensing is of crucial importance to environmental monitoring, control of chemical processes, agricultural, and medical applications. Particularly, the detection of harmful and toxic gases such as H_2S, NH_3, CO, and volatile organic chemcials (VOCs) released from various industries is very necessary to avoid serious threat to human health. Sensing materials which can concentrate and adsorb gases onto the surface of the sensors, and then generate a signal for detection play a vital role in the sensing identification of gases. Among various sensing materials, metal-organic frameworks (MOFs) which consist of metal cations and organic ligands by self-assembly process have great advantages in constructing chemical sensors with high sensing selectivity and sensitivity due to their good features such as high surface area, porosity and tunable pore sizes. This review intends to provide an update on recent progress in MOFs for gas sensing. It firstly summarizes the signal transduction manners of MOFs in sensing and detection of gases, including optical (vapochromism, luminescence, interferometry, localized surface plasmon resonance (LSPR)), mechanical (quartz crystal microbalance (QCM), surface acoustic wave sensors (SAWS),