Zirconium-Based Metal Organic Framework (Zr-MOF) Material with High Hydrostability for Hydrogen Storage Applications

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ABSTRACT

Material-based solutions, such as metal organic frameworks (MOFs), continue to attract an increasing attention as viable options for hydrogen storage applications. MOFs are widely regarded as promising materials for hydrogen storage due to their high surface areas, porosities, and tunability of the pores and functionality [1]. However, practical use of known MOFs is hindered by their low structural resistance toward atmospheric moisture [2]. Furthermore, for hydrogen storage applications the structural stability of MOFs upon adsorption of water is a fundamental issue as industrial gas sources usually contain traces of water.

In this work, Zr-based MOF was synthesized, compacted and evaluated as adsorbent for hydrogen storage applications. The results showed that the obtained Zr-MOF has excellent hydrostability, high porosity and surface area, making it particularly suitable for practical hydrogen storage applications.

***Keywords*:** Zr-based MOF, Hydrostability, Hydrogen adsorption, Powder material shaping

References

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