

Electrospun MOF nanofibers as hydrogen storage media

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Abstract

In this study, Zr-MOF and Cr-MOF were chosen as representatives of the developed MOFs in our laboratory and were incorporated into electrospun nanofibers. The obtained MOF nanofibers composites were evaluated as hydrogen storage media. The results showed that the incorporation of vacuum degassing was able to create visible porosity in and/or on the PAN nanofibers and the MOF nanocrystals inside the polymeric nanofibers were fully accessible by N₂ and H₂ gases. With 20 wt.% loading of MOF nanocrystals, the composites were able to achieve over 50% of the H₂ uptake capacity of individual MOF nanocrystals. In addition, the composites also showed good thermal stabilities.