

Heterojunction of Pores Created by Combining Different MOFs in Granola-Type Granules for Enhanced Formaldehyde Removal Under Ambient Conditions

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MOFs have introduced the heterogeneity in their homogeneous matrix to create the new functions that cannot be realized alone. In this study, we chemically combined two different MOFs (UiO-66 and HKUST-1) in granola-type granules (termed as HKUST-1 \wedge UiO-66) to create a heterojunction of pores in nanocrystalline particles. The structure, morphology, elemental composition and pore environment were characterized to confirm that two types of pores are in conjunction all over the HKUST-1 \wedge UiO-66 granules. We found that the HKUST-1 \wedge UiO-66 granules showed enhanced CO₂ sorption capacity than its constituents due to the complexity and the heterojunction of pores inside. Moreover, the HKUST-1 \wedge UiO-66 granules present 4 and 2 times higher formaldehyde removal capacity than those of the HKUST-1 and UiO-66 samples, respectively.