

Advances in Fundamental Materials Research

Optimizing Toxic Chemical Removal through Defect-Induced UiO-66NH₂ Metal-Organic Framework

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Over the past several years, it has been well-established that defects can be systematically introduced into metal-organic frameworks (MOFs). Within the UiO-66-type metal-organic frameworks, this becomes especially important, as the relatively small pore apertures can be widened, increasing diffusion and access to active sites within the material. In this study, three UiO-66-NH₂ MOFs were synthesized with varying degrees of defects. The materials were characterized to understand what types of defects were present, and the effects of defects on the removal of several gaseous and liquid toxic chemicals, including chemical warfare agents, were determined. The study showed that there may be an optimal number of defects when considering broad reactivity.

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