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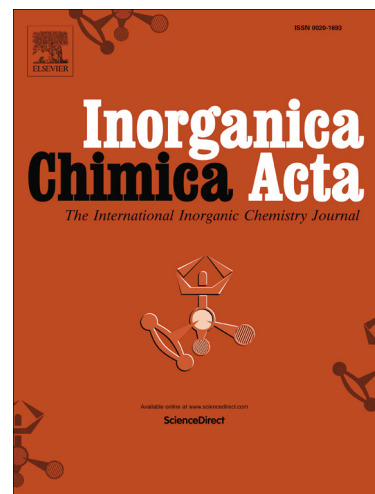
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Modulating Iodine Adsorption in Nanoporous Metal-Organic Framework via Cation Exchange Process

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An anionic Zn(II) Metal-Organic Framework, [HDMA]₂[Zn₂(BDC)₃(DMA)₂].6DMF (HDMA⁺: dimethylammonium, BDC²⁻: 1,4-benzenedicarboxylate, DMA: dimethylamine, DMF: N,N'-dimethylformamide), was served as a host for encapsulating I₂. For comparison of the ad/desorption rates of iodide, the ion exchange process with organic cations have been done. Loading of the exchanged compounds were successfully done by suspending them in a solution of I₂ in cyclohexane. Powder X-ray diffraction experiments and IR analysis showed that the exchanged crystalline lattices after adsorption and desorption of iodide remained the same. The delivery of I₂ from the compounds performed in ethanol, were determined by UV/vis spectroscopy. Comparison of iodide adsorption and desorption rates in the exchanged compounds showed that presence of different organic cations have effective role in increasing iodine adsorption.

Keywords: Metal-organic framework; Cation exchange; Post-synthetic modification; Iodine adsorption.

1. Introduction

The researches of iodine for use in the life sciences, marine atmosphere, materials science and nuclear industries have become a developing active area of research. So, the study of

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