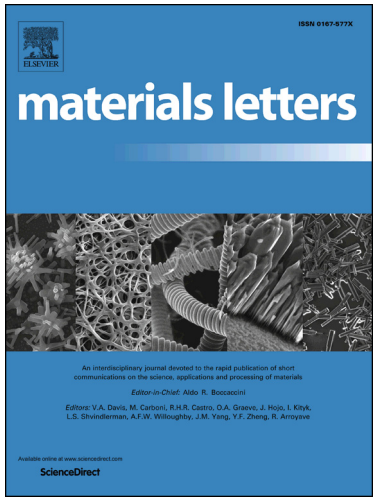


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# Controlled synthesis of micro/nanoscale Mg-MOF-74 materials and their adsorption property

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## ABSTRACT

Micro/nanoscale Mg-MOF-74 materials with different morphologies and sizes have been fabricated in the presence of polyvinylpyrrolidone (PVP) by adjusting the amount of aqueous ammonia and reaction temperature. The obtained samples were characterized by powder X-ray diffraction (PXRD), thermogravimetric analysis (TGA), scanning electron microscopy (SEM), and it was found that the Mg-MOF-74 particles show morphology and size dependent adsorption properties. The selectivity factors of the Mg-MOF-74 particles at 273 K were calculated based on the experimental single-component isotherms by ideal adsorbed solution theory (IAST). The results indicate that the Mg-MOF-74 particles have intrinsic high selectivity for adsorption of $CO_2$ over $CH_4$ and $N_2$.

***Keywords*:** Mg-MOF-74, Microstructure, Porous materials, Gas adsorption