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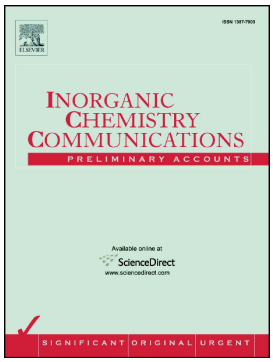

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A copper based metal-organic framework: synthesis, modification and VOCs adsorption

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Abstract

A new copper (II) metal-organic framework **Cu-MOF** based on the ligand of 5-aminoisophthalic acid (AIPA) has been synthesized. Single-crystal X-ray structural analysis confirmed the formation of this compound, namely $[Cu(AIPA)\cdot DMF]_n$. The crystal structure exhibits a 2D sheet, which generate a 3D framework through non-classical hydrogen bond interactions. TGA, IR and VT-PXRD have been carried out to characterize the compound's thermal stability and purity. The as-synthesized sample was activated by removal of the coordination DMF solvent to afford porous framework **Cu-MOF (1)** without degradation of the original crystallinity. As the model of volatile organic compounds (VOCs), formaldehyde capture studies have shown that **Cu-MOF (1)** exhibits a versatile behavior for toxic gas accumulation.

Keywords: molecular adsorption; MOFs; modification; formaldehyde

During the past decades, lots of efforts have been focused on constructing diversity of metal-organic frameworks (MOFs) because of their potential application in the field of photoluminescence sensing [1], gas sorption [2], separation [3], catalytic properties [4,5] and