

Crack-free multiporous film spin-coated by supramolecular Metal Organic Polyhedras.

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A significant advancement in the preparation of MOFs thin films has been achieved in the past decades. However, there is a challenge to obtain the crack-less film using nano-crystalline Metal-Organic Frameworks. In the report, we prepared a cross-linked Metal-Organic Polyhedras with acyl chloride and successfully performed a thin crack-less porous film. Because nano-sized supramolecular MOPs (2nm) have the advantage of being well dispersed in methanol, we conducted solution process and fabricate a thin film by spin coating. The multiporous structure and morphology were characterized to confirm the meso-micro pores for supramolecular MOPs. Finally, among various sensing materials, we found that Supramolecular MOPs have high efficiency for Formaldehyde adsorption and removal due to their good features such as multiporous porosity. Moreover, Supramolecular thin film also shows great advantages in constructing chemical sensors with high formaldehyde sensing performance by Quartz-Cryatal Microbalance (QCM).