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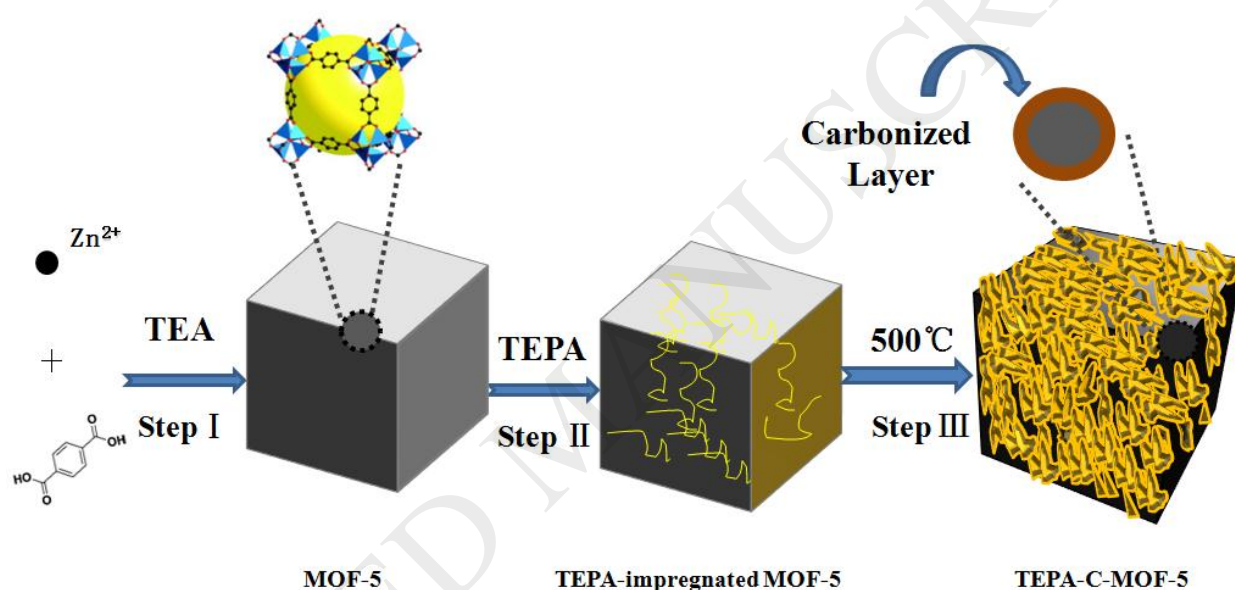
Novel Amino-functionalized Carbon Material Derived from Metal Organic Framework: A Characteristic Adsorbent for U(VI) Removal from Aqueous Environment

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Graphical abstract



Abstract

The introduction of functional groups into metal-organic frameworks (MOFs) is becoming a hot research topic. In this work, a novel amino-functionalized carbon material derived from MOF-5 has been synthesized successfully via a facile and fast method of short-term high temperature treatment. The resulting material of the amino-functionalized MOF-5 (TEPA-C-MOF-5) exhibits high adsorption capacity (550mg/g) for uranium and the adsorbent can reach the adsorption equilibrium at a relatively low pH (3.5). Moreover, the formation of surface carbonized layer under short-term high temperature can improve the stability in water or humidity. Compared with UiO-66 (Zr-based MOF), it is founded that only MOF-5 (Zn-based MOF) can be introduced into amino group by this method.

Keywords:

U(VI), MOF-5, Amino-functionalized, Surface Carbonization, Water-stable

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