

A highly stable indium based metal organic framework for efficient arsenic removal from water

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A new porous indium metal organic framework namely (AUBM-1) was successfully synthesized via a solvothermal reaction of pyromellitic acid and indium chloride. Single crystal X-ray analysis revealed the formation of a 3D framework with a pts topology. The resulting MOF structure showed high chemical stability at different pH values. Thus, the activated indium MOF was applied for As removal from water for the first time and showed a high arsenate uptake capacity of 103.1 mg g⁻¹ at neutral pH, which is higher than the commercial adsorbents (usually less than 100 mg g⁻¹ at neutral pH). Finally, the kinetics and thermodynamic studies revealed that the As adsorption was an endothermic process and followed a pseudo-second-order kinetic model.