

Synthesis and Application of NH₂-MIL-125 (Ti) for Adsorption Heat Transformation System

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Adsorption Heat Transformation (AHT) system, using heat released and absorbed by physical adsorption and desorption of guest molecules, is considered as a viable alternative to traditional air conditioning systems. In AHT systems, the high water uptake and lower regeneration temperature of adsorbents at working conditions are critically important to improve the working efficiency of air conditioning. Until now, zeolites and silica gels have been commercially used for AHT systems, but there are still several challenging issues. Metal-Organic Frameworks (MOFs) are the emerging adsorbents with well-ordered network structures assembled by coordination bonds between metal ions and organic ligands. The AHT system operated by MOFs has not been developed yet because of its low water stability and high production cost, even though they have high water uptake based on large surface area and functionality. Herein, we present the synthesis of NH₂-MIL-125 with high surface area and water capacity for an Adsorption Heat Transformation (AHT) system. Details of the work will be presented.