

Flexible PAN/UTSA-16 MOF Nanofiber adsorbents for selective CO₂ adsorption

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The CO₂ removal from air/gas is being crucial issue as it is most responsible greenhouse gas for global warming. There are many techniques developed for CO₂ capture including physical adsorption, chemical adsorption, cryogenic distillation and membrane adsorption. In this work we established flexible PAN/MOF fibers for CO₂ capture with high CO₂ adsorption capacity and high CO₂/N₂ selectivity. Two MOFs with different percentage were used for making of PAN/MOF nanofiber membrane by using crystallization. CO₂ and N₂ adsorption isotherms were measured by using volumetric apparatus (Belsorp mini II) at the pressure of 0–1 bar and temperature 298K. The as-prepared PAN/MOF fibers showed excellent CO₂ adsorption capacity and showed high selectivity compared to the pure MOFs used. the stability of MOF/PAN fiber were confirmed by comparing CO₂ adsorption capacity before exposing and after exposing to humid air and acid gases.