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(57) Abstract :

This invention relates to a method for synthesizing metal-organic frameworks (MOFs) with tunable pore sizes for gas separation applications. MOFs are porous materials that consist of metal ions or clusters connected by organic ligands. They have high surface areas and tunable pore sizes, making them attractive for gas separation. The proposed method involves selecting an appropriate combination of metal ions and organic ligands, and controlling the synthesis conditions to obtain MOFs with a desired pore size. The pore size can be tuned by adjusting the length and/or flexibility of the organic ligands, or by introducing guest molecules into the MOF structure. The resulting MOFs have high gas separation performance and can be used in a variety of applications such as natural gas purification, hydrogen storage, and carbon capture.

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