

Abstract

The present invention provides a zirconium-based metal-organic framework material and a preparation method therefor and the use thereof, and an adsorption separation device and method. The zirconium-based metal-organic framework material has a chemical structural
5 formula of $[C_{18}H_6O_{16}Zr_3]_n$, and comprises zirconium and an organic ligand forming a coordination bond with zirconium, wherein the organic ligand is diphenylethyne-3,3',5,5'-tetracarboxylic acid. The molecular structure of the zirconium-based metal-organic framework material of the present invention is a three-position network structure having a one-dimensional channel; and in the present invention, the size of the one-dimensional channel is accurately
10 controlled by changing the aspect ratio of the organic ligand, such that the zirconium-based metal-organic framework material efficiently separates a hexane isomer by means of a kinetic effect.

(FIG.2)