Poster

A six-membered ring molecular sieve achieved by 3D-3D topotactic transformation

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Zeolite molecular sieves with at least eight-membered rings are widely applied in industrial applications, while zeolite crystals with six-membered rings are normally regarded as useless products due to the occupancy of the organic templates and/or inorganic cation in the micropores that could not be removed. Herein, we showed that a novel six-membered ring molecular sieve (ZJM-9) with fully open micropores could be achieved by a unique 3D-3D topotactic transformation. The structure of nano-sized ZJM-9 was determined based on the 3D electron diffraction (3D ED) data, and confirmed by Cs-corrected scanning transmission electron microscopy (STEM) images and powder X-ray diffraction (PXRD) data. The aluminophosphate ZJM-9 gives promising characteristics for water sorption due to its complete open micropores.

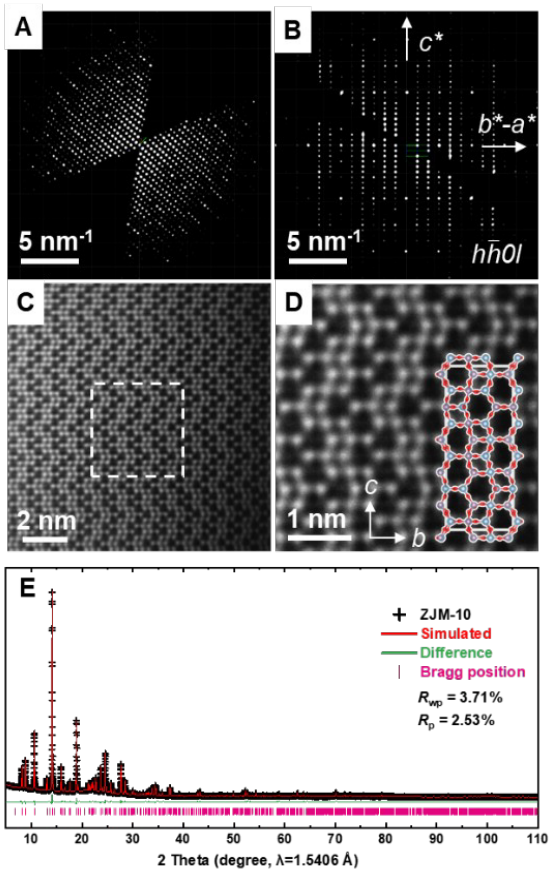

Figure 1. Electron microscopy and X-ray diffraction studies of ZJM-9.

[1] Shi, J., Hu, J., Wu, Q., Chen, W., Dong, Z., Zheng, A., Ma, Y., Meng, X. & Xiao, F. (2023). *J. Am. Chem. Soc.*, **145**, 7712.

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