

Synthesis of Nanosheet CHA Zeolites and Zeotypes for Catalytic Applications

'One-pot' synthesized CHA nanosheets with higher surface area and shorter diffusion paths for improved petrochemical catalysis.

Researchers at Purdue University have developed microporous chabazite zeolites for improved catalytic performance. Chabazite (CHA) zeolites are used for reactions such as methane dehydroaromatization (DHA), selective catalytic reduction (SCR) of nitrogen oxides in diesel aftertreatment, and conversion of methane-to-olefins (MTO). The small pores of CHA zeolites prove to limit diffusion of products. Purdue researchers have synthesized CHA zeolites with small crystal size to maximize external surface area and provide shorter diffusion paths. The researchers synthesized the nanosheet-CHA zeolites using amorphous precursors and a surfactant during hydrothermal synthesis in a 'one-pot' method.

Advantages:

- 'One-pot' synthesis
- Provides improved conversion, reaction rate, selectivity, and catalyst lifetime

Applications:

- Petrochemicals production

TRL: 4

Intellectual Property:

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PCT-Gov. Funding, 2024-07-25, WO

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Chemicals & Advanced
Materials/Specialty &
Performance Chemicals
Semiconductors/Packaging &
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Materials Science &
Nanotechnology/Nanomaterials
& Nanostructures

Further information

Will Buchanan

wdbuchanan@prf.org

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