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Feature Article

Oxygen vacancy-rich mesoporous silica KCC-1 for CO₂ methanation



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ABSTRACT

Mesoporous silica KCC-1 was successfully synthesized by microemulsion system coupled with microwave-assisted hydrothermal method. Mesoporous silica KCC-1 exhibited spherical morphology surrounded with dendritic fiber with the particle size of 200–400 nm and BET surface area of 773 m²/g. Mesoporous silica KCC-1 has significantly higher number of basicity and oxygen vacancy than those of MCM-41 and SiO₂ which directly correlated with the catalytic performance of the catalyst. The activity of mesoporous silica KCC-1 in CO₂ methanation is five-fold higher than MCM-41 with the yield of CH₄ reached 38.9% at 723 K.

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