

Synergistic syngas production: Needleless electrospinning synthesis of Co/CeO₂-La₂O₃ catalyst for efficient dry reforming of methane

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ABSTRACT

The prime cause for catalyst deactivation during dry reforming of methane (DRM) has been attributed to the deposition of carbon. Nanofibrous (NF) catalysts are attractive candidates that offer high catalytic activity and stability in DRM. A comparative study between electrospun and impregnated Co/CeO₂-La₂O₃ catalysts in the DRM reaction was carried out to evaluate the merits of the NF catalyst. Application of the electrospun catalyst yielded the highest activity in DRM and showed a substantial improvement in resistance to carbon formation. The unique structure of the NF electrospun catalyst, the robust metal-support interaction, and the increased surface area could more effectively suppress deactivation of the catalyst during an 8-h DRM reaction than the impregnated catalyst.

KEYWORDS

Catalysts; Cobalt; Needleless electrospinning; Reforming; Syngas

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