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Mesoporous alumina: A comprehensive review on synthesis strategies, structure, and applications as support for enhanced H_2 generation via CO_2-CH_4 reforming

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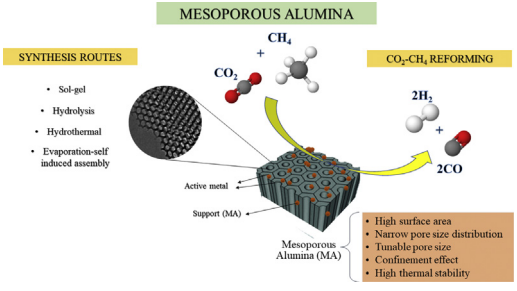
HIGHLIGHTS

- The synthesis strategy for generating mesoporous alumina (MA) was reviewed.
- Discussion related to the vital factors impacting the structure of MA.
- This review focuses on MA applications and performances in CO_2-CH_4 reforming.
- Summary of future perspectives of MA employment in CO_2-CH_4 reforming.

GRAPHICAL ABSTRACT



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ABSTRACT

Lately, the generation of hydrogen out from carbon dioxide (CO_2) - methane (CH_4) reforming has been touted as a feasible option for reducing two of the most harmful greenhouse gases (CO_2 and CH_4) in the atmosphere. However, this technology typically suffered from catalyst deactivation triggered by sintering and coke deposition. Therefore,

Abbreviation: CTAB, Cetyltrimethylammonium bromide; EISA, Evaporation self-induced assembly; SAHA, Self-assembly hydrothermal-assisted; SIWI, Sequential incipient wetness impregnation.

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