



Investigation on Conversion of Carbon Dioxide to Methanol over NIGACU/MSO Catalyst

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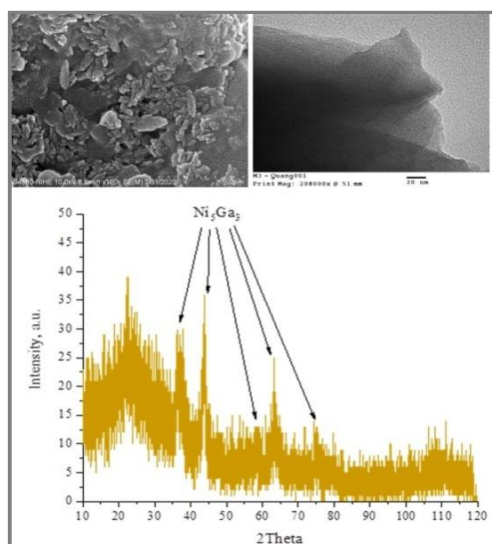
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ABSTRACT

Advanced NiGaCu supported on ordered mesoporous silicon oxide (NiGaCu/MSO) catalyst with high activity and selectivity in conversion of CO₂ to CH₃OH was prepared and characterized by SAXRD, WAXRD, SEM, TEM and BET. The characterizations showed that the catalyst possessed ordered mesoporous structure, focus porewidth distribution high specific surface area and Ni₅Ga₃ active phase being partially isomorphic substituted by Cu site. The catalyst was highly suitable for the conversion of CO₂ to CH₃OH at relatively low pressure at 35 bar with high activity and selectivity. The conversion of CO₂ to CH₃OH was fully investigated for optimizing the process's parameters. GC coupled with TCD and FID were used for determining the gas composition of the feedstock and generated products in the process.

Graphical Abstract



SAXRD pattern of NiGaCu/MSO catalyst.

Keywords: Mesoporous materials, Carbon dioxide to methanol, Mesoporous silica, Cu based catalyst, Ni-Ga based catalyst.