



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

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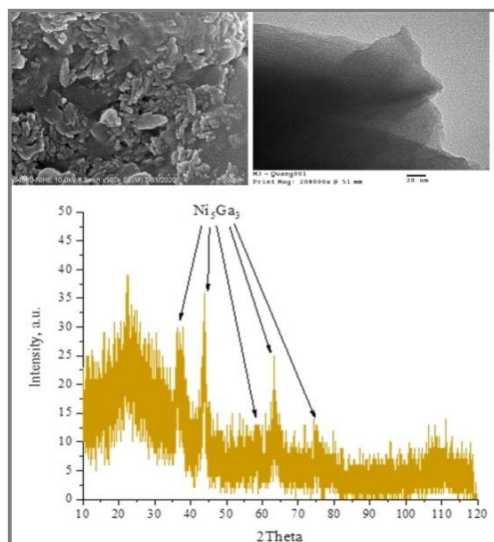
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### ABSTRACT

Advanced NiGaCu supported on ordered mesoporous silicon oxide (NiGaCu/MSO) catalyst with high activity and selectivity in conversion of CO<sub>2</sub> to CH<sub>3</sub>OH 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 Ni<sub>5</sub>Ga<sub>3</sub> active phase being partially isomorphic substituted by Cu site. The catalyst was highly suitable for the conversion of CO<sub>2</sub> to CH<sub>3</sub>OH at relatively low pressure at 35 bar with high activity and selectivity. The conversion of CO<sub>2</sub> to CH<sub>3</sub>OH 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.