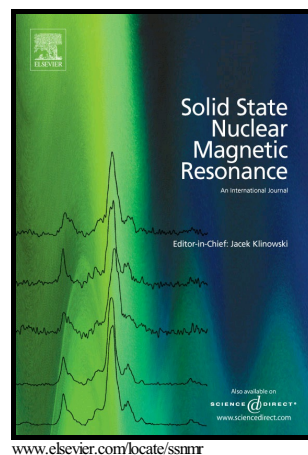


## Author's Accepted Manuscript

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# Methanol Carbonylation over Copper-Modified Mordenite Zeolite: A Solid-State NMR Study

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## Abstract

The carbonylation of methanol with carbon monoxide to generate methyl acetate over Cu-H-MOR and H-MOR zeolites is studied using solid-state NMR spectroscopy. It is found that the catalytic activity of Cu-H-MOR zeolite is much higher than that of H-MOR zeolite. The presence of Cu<sup>+</sup> species enables the stabilization of dimethyl ether, which efficiently suppresses the hydrocarbon formation during carbonylation process over Cu-H-MOR zeolite. In addition, the carbon monoxide adsorbed on Cu<sup>+</sup> site is not an active species to produce either methyl acetate or acetic acid.

## Graphical Abstract

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