

## Dynamical changes in Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> catalysts

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A combination of various transient and steady-state kinetic experiments was used to provide evidence for dynamical changes in a Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> catalyst of industrial interest. From these it can be deduced that the reversible structural alterations strongly depend on the reaction conditions as well as on the pretreatment. The pretreatment was found to induce changes in the morphology of the metallic Cu particles to some extent, and surface alloying under more severe reducing conditions.

**KEY WORDS:** Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> catalyst; methanol synthesis; dynamic behavior; temperature-programmed desorption of H<sub>2</sub>; N<sub>2</sub>O reactive frontal chromatography.