

Bimetallic PdZn Catalysts for the Steam Reforming of Methanol

Frontiers in Catalysis Science and Engineering
Seminar Series

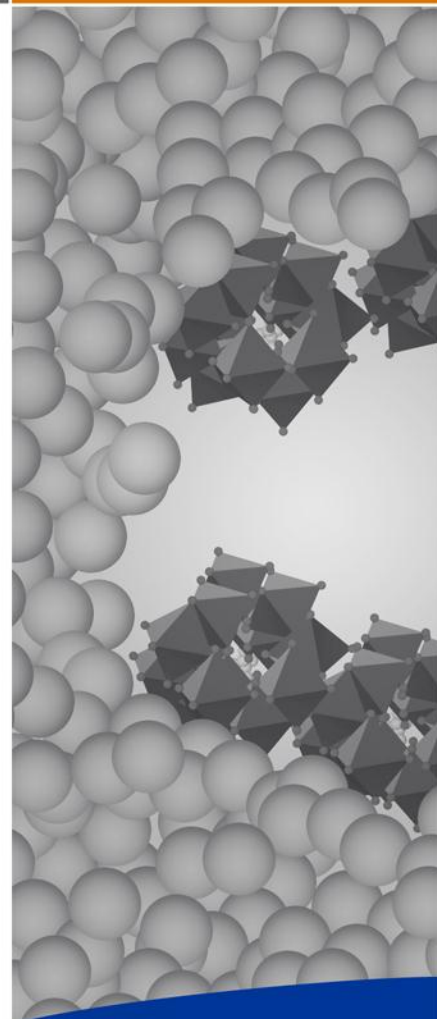
Presented by...

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Abstract

While Cu is known to be highly active and selective towards the steam reforming of methanol, group VIII metals, such as Pd, favor methanol decomposition to CO and H₂. Iwasa *et al.* (Catalysis Letters, 1993. **19**(2-3): p. 211.) were the first to report that Pd becomes highly active for reforming and selective towards CO₂ when supported on ZnO and reduced at temperatures above 300°C. This was attributed to bulk PdZn alloy which was formed by the spill-over of atomic hydrogen from the Pd metal to the ZnO, leading to facile reduction of the ZnO and migration of Zn to the metallic surface. The extent of alloy formation increased at higher reduction temperatures, but the overall conversion was unaffected by the increase in crystallite size of the PdZn phase (see figure below). The apparent lack of correlation between reactivity and the surface area of the PdZn phase (which decreases as crystallite size increases) suggests that the PdZn may not be the only catalytically active phase, and we suspect that the ZnO may also play an important role in this reaction. We will present a systematic study of methanol reforming reactivity on model bimetallic alloy powders and powder catalysts that contain ZnO of well defined morphology, to shed light on the nature of the active phase in methanol reforming catalysts based on Pd.



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1:30 PM