

## Comment

The active site for methanol synthesis on a Cu/ZnO/SiO<sub>2</sub> catalyst

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This note rectifies serious omissions from the references included in a recent paper by Fujitani et al. concerned with methanol synthesis over Cu/SiO<sub>2</sub> containing ZnO.

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A recent report concerning the active site for methanol synthesis in Cu/SiO<sub>2</sub> catalysts containing ZnO partly involved FT-IR study of adsorbed formate species on Cu/SiO<sub>2</sub> with and without the addition of ZnO [1]. A significant conclusion from the IR spectra was that a formate species bridged across a Cu–Zn site was formed and was important in the methanol synthesis reaction. However, Fujitani et al. [1] have failed to refer to the results of a detailed FT-IR study of Cu/SiO<sub>2</sub> catalysts which were reported in sixteen papers [2–12], of which seven were specifically concerned with the effects of ZnO [8–12], and five specifically figured a bridging formate across a mixed Cu–Zn site [8–10]. It was also previously concluded that “interfacial formate species could play a significant role in the synthesis mechanism” [10]. The conclusions of Fujitani et al. [1] are novel in that they propose that a Cu–Zn surface alloy provides bridging sites which are important in the methanol synthesis reaction, but we believe they should be considered in conjunction with the results and conclusions of earlier overlapping and more detailed (at least in terms of FT-IR) studies.

## References

- [1] T. Fujitani, T. Matsuda, Y. Kushida, S. Ogihara, T. Uchijima and J. Nakamura, *Catal. Lett.* 49 (1997) 175.
- [2] G.J. Millar, C.H. Rochester and K.C. Waugh, *J. Chem. Soc. Faraday Trans.* 87 (1991) 1467, 1491, 2785, 2795.
- [3] G.J. Millar, C.H. Rochester, C. Howe and K.C. Waugh, *Mol. Phys.* 76 (1991) 833.
- [4] G.J. Millar, C.H. Rochester and K.C. Waugh, *J. Chem. Soc. Faraday Trans.* 88 (1992) 1477.
- [5] G.J. Millar, C.H. Rochester and K.C. Waugh, *J. Catal.* 142 (1993) 263.
- [6] G.J. Millar, C.H. Rochester and K.C. Waugh, *J. Catal.* 155 (1995) 52.
- [7] G.J. Millar, C.H. Rochester and K.C. Waugh, *Topics Catal.* 3 (1996) 103.
- [8] G.J. Millar, C.H. Rochester and K.C. Waugh, *J. Chem. Soc. Faraday Trans.* 88 (1992) 1033, 2257, 3497.
- [9] G.J. Millar, C.H. Rochester, S. Bailey and K.C. Waugh, *J. Chem. Soc.* 88 (1992) 2085.
- [10] J.E. Bailie, C.H. Rochester and G.J. Millar, *Catal. Lett.* 31 (1995) 333.
- [11] G.J. Millar, C.H. Rochester and K.C. Waugh, *Catal. Lett.* 14 (1992) 289.
- [12] G.J. Millar, C.H. Rochester, S. Bailey and K.C. Waugh, *J. Chem. Soc. Faraday Trans.* 89 (1993) 1109.