Study on Active Sites of Methanol Reforming Catalyst Based on Heterostructure Cu nanodot/ZnO nanowire

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Cu/ZnO catalysts for methanol reforming have been extensively studied because of the hydrogen production in relatively low temperature environment. Due to complex surface phenomena of these catalysts, further understanding is still required to enhance the methanol reforming performance despite numerous efforts to elucidate the synergetic mechanism between ZnO and Cu. Furthermore, the nature and location of the active sites for Cu/ZnO are still subject to a heated debate. To date, the commercial catalysts are composed of porous particles which has complex and diverse crystalline. Therefore, it is difficult to recognize which crystalline surface of these catalysts acts as the active site. Although there have been numerous attempts to study the growth mechanism of Cu on different ZnO crystalline surfaces, direct crystallographic evaluations of the catalyst performance haven't been reported yet to the best of our knowledge. In this work, the methanol reforming performance was investigated using Cu nanodot deposited on the ZnO nanowires which have specific crystal face such as ±(011 □0).