Supplementary Information for

Geometrical effect of CuO nanostructures on catalytic benzene combustion

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The calculation of the specific activities of the dominantly exposed crystal planes

The specific activities of the dominantly exposed planes are calculated from the average surface area percentages (%) of the dominantly exposed facets and the areal specific activity (mmol s^{-1} m^{-2}) of each catalyst. The average surface area percentages of the CuO nanocrystals are calculated based on the geometric appearances of the CuO nanostructures revealed in the (HR)TEM images. The dominant exposed planes of the nanorods are determined to be (001) and (200) ones; and the average surface area percentage is 50% for each plane (the contribution of the small side planes can be negligible). The dominant exposed plane of the nanobelts is (001) one; and the average surface area percentage is assumed to be 100% (the contribution of the very thin side planes is also negligible). The dominant exposed plane of the nanoplatelets is $(01\bar{1})$ one; and the average surface area percentage is similarly assumed to be 100% (the contribution of the very thin side planes is also negligible). The dominant exposed planes of the nanocuboids are verified to be (111) and $(01\bar{1})$ ones, and the average surface area percentage is approximately 33.3% and 66.7%, respectively (assuming the contribution of the tiny side planes is insignificant).

Control of the reaction feed

First, the benzene saturator was put inside a water bath at constant temperature, thus the partial pressure of benzene is constant at a specific bath temperature; moreover, the flow of carrier gas is controlled by mass flow controllers, therefore, the flow rate of carrier gas is also constant at a certain set-point regardless the possible variation in pressure at different reaction temperatures. In such a way, the benzene concentration in the reaction feed should be experimentally identical for the precise comparison of the activities of four CuO nanostructures.