

Stability tendency of different shaped cuprous oxide particles during photoreaction in aqueous system

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In the most of photocatalyst, ultraviolet light is needed to excite carriers because they have large band gap energy. So, there are many efforts for reducing band gap energy corresponded at visible light because the visible light has the energy-rich portion of the solar spectrum. So, cuprous oxide (Cu_2O) is a candidate semiconductor but Cu_2O has some problems. In aqueous solution, Cu_2O is able to convert to cupric oxide (CuO). And under photoirradiation, this corrosion can occur easily. And there are different surface Cu/O ratios on different Cu_2O shape. This difference makes different surface energy in aqueous system and it affects surface stability. We synthesized different shaped cuprous oxide particles (cubic, octahedral, rhombic dodecahedral structure). And corrosion of each shaped cuprous oxide examined with and without photoreaction in aqueous solution. Cu_2O (100) face structure has lowest stability in aqueous solution. In photo reaction, all structure is degraded without structure relation.