

Shape effects for stability on cuprous oxide particles during aqueous phase photo reaction

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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 ( $\text{Cu}_2\text{O}$ ) is a candidate semiconductor but  $\text{Cu}_2\text{O}$  has some problems. In aqueous solution,  $\text{Cu}_2\text{O}$  is able to convert to cupric oxide ( $\text{CuO}$ ). And under photoirradiation, this corrosion can occur easily. And there are different surface structures on different  $\text{Cu}_2\text{O}$  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.  $\text{Cu}_2\text{O}$  (100) face structure has lowest stability in aqueous solution. In photo reaction, edges of particle are degraded for all structures.