

Aqueous-phase synthesis of single crystal ZnO nanobolts

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This study is about a aqueous-phase synthesis of single-crystal ZnO nanobolts. ZnO nanobolts is synthesized by reacting Zn(NO<sub>3</sub>)<sub>2</sub> with octylamine at relatively low temperature and atmospheric pressure condition. The synthesized ZnO nanobolts have a hierarchical structure consisting of two well-defined hexagonal nanorods of different sizes. We confirmed through the growth behavior study that this unique morphology is formed by aggregation behavior between ZnO particle and oriented attachment. Also we investigated the influence of reaction temperature and Octylamine concentration on the synthesis, demonstrating that these experimental factors were critical in terms of the size, morphology, and aggregation of ZnO nanobolts.