Aqueous-Phase Synthesis with Shape-Controlled Process of ZnO and Application

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Shape controlled process of nanostructure has been studied for decades because not only it's a topic that contains various fascinating scientific issues, but also it's a technique that has many attractive advantage. Usually the intrinsic properties of materials are heavily depended on their morphology, as a results, shape controlled process is a technique that allows to tune the physical, chemical properties. For this reason, ZnO has been used in various fields due to these characteristics from the past to the present. For example, tuning ZnO to have one dimension morphology such as nanowire, we can enhance the electron mobility of ZnO. In this trend, ZnO has been controlled to many different shapes, depending on the mechanical method or chemical etching, mainly by acid etching. However Mechanical methods involve complex processes and relatively harsh conditions, also acid etching is difficult to wash acid and control the etching rate, so it is hard to etch as much as desired and in specific shape. Therefore, we propose a new method to control ZnO in various shapes with easy washing process, relatively easy control of etching rate by using transition metal.