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## Characterizations of ZnO nanorods and ZnO/ZnS core/shell nanorods on copper grids

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Zinc oxide is a n-type semiconductor which has wide and a direct band gap of 3.37eV with large exciton binding energy of 60meV. In addition, ZnO is also accessible material, which has many applications, such as transducers, gas sensors, and optical devices. However, zinc oxide has large band gap, which contributes to the efficiency of photovoltaic devices. Thus, we incorporate ZnS into ZnO structures because zinc sulfide is able to modulate band gap. In this study, we electroplate the ZnO seed layer to cover on the copper grid as the first step. Secondly, we adopt the hydrothermal method to grow the ZnO nanorods, and then prepare the solution of zinc sulfide to do the hydrothermal method for the second time. In order to characterize the material properties, several analytical methods such as FESEM, TEM, PL and so forth have been conducted. The TEM images indicate that ZnO nanorods are completely covered by ZnS layer. The Photoluminescence (PL) analysis illustrates that this nanocomposite materials contain good optical property. In this research, to conduct the TEM analyze directly, we attempt to fabricate ZnO/ZnS core/shell nanostructure on the copper grid. This paper provides a simple three-step process to synthesize ZnO/ZnS core/shell nanostructure and also affords a possibility to apply to optical sensor, solar cell, gas sensor and so on.

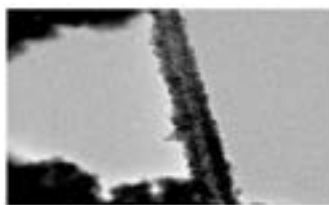


Figure 1. An electron TEM image, showing the ZnO/ZnS core/shell nanorods on copper grids.

### Biography

Yu-Shan Lee is a graduate student at National Chi Nan University from Taiwan and her research focus is on nano-materials. She has researched methods of growing nanorods on different substrates since she was a collage student. Owing to improvements of material properties of nanostructures novel fabrication of nanostructures may advance device technology, such as sensor, panel, semiconductor and so on. In addition, she would like to acknowledge more academic researches by attending this conference. It is possible to inspire her to do more in depth investigation.

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