

Characteristics and preparation of ZnS/p-Si heterojunction solar cells

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In this study, we studied characteristics of zinc sulfide (ZnS) silicon-based solar cells. The effects of ZnS films on the formability, absorption, transparent and solar cell device efficiency were investigated. The ZnS films were coated on the roughened p-Si substrate at different deposition time using chemical bath deposition (CBD) method. The results showed that the efficiency of the ZnS/Si heterojunction solar cell were 1.773 %. We achieved a low cost CBD process to develop new heterojunction solar cells. The characteristics of the ZnS films and surface roughness effect were also discussed.

**Keywords:** ZnS, Chemical bath deposition, Roughness, Heterojunction solar cell.

**Acknowledgments**

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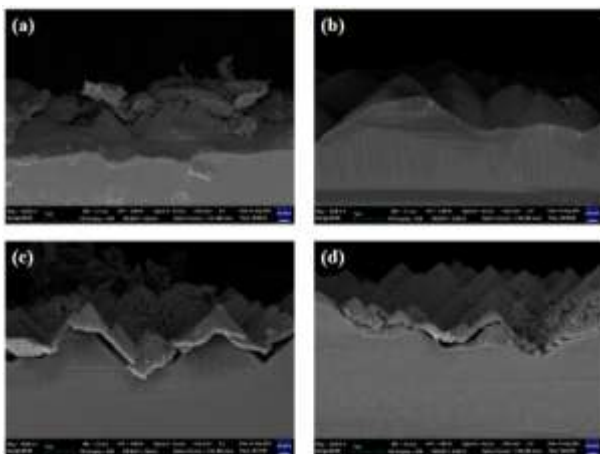


Figure 1 SEM images of ZnS prepared at different time on roughened p-Si substrates (a)10 min (b)20 min (c)30 min (d)40 min

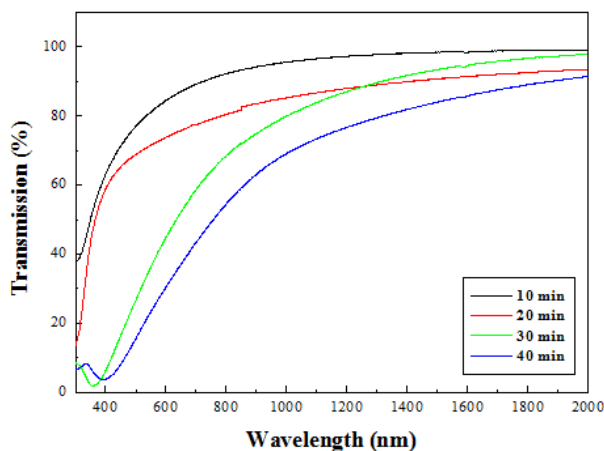


Figure 2 Transmission of ZnS films

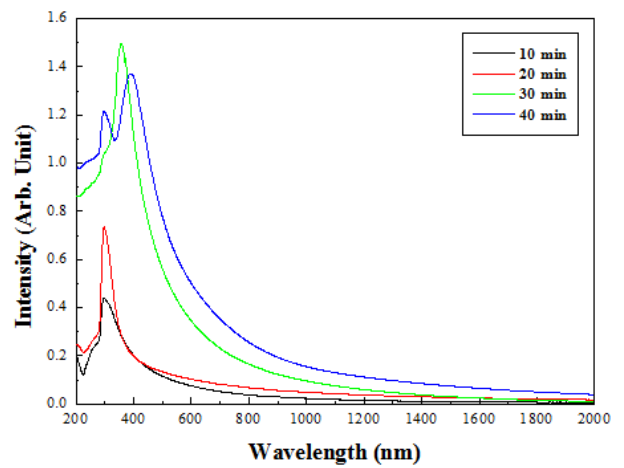


Figure 3 Absorbance vs. wavelength plot of ZnS

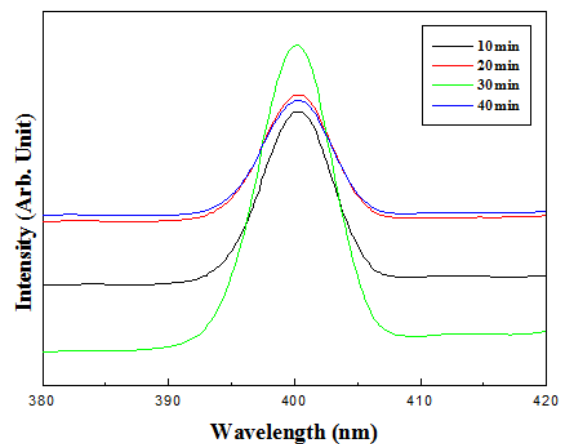


Figure 4 Photoluminescence spectra of ZnS films