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Volume 81, July 2018, Pages 127-138Heterogeneous SnO₂/ZnO nanoparticulate film : Facile synthesis and humidity sensing capability (Article)Ismail, A.S.^a, Mamat, M.H.^{ab} [✉](#), Malek, M.F.^{ab}, Yusoff, M.M.^{ac}, Mohamed, R.^{ad}, Sin, N.D.M.^a, Suriani, A.B.^e, Rusop, M.^{ab} [👤](#)^aNANO-ElecTronic Centre (NET), Faculty of Electrical Engineering, Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia^bNANO-SciTech Centre (NST), Institute of Science (IOS), Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia^cKulliyah of Engineering, International Islamic University Malaysia (IIUM), Kuala Lumpur, Malaysia[View additional affiliations](#) [v](#)

Abstract

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Highly sensitive and extremely thin tin oxide/zinc oxide (SnO₂/ZnO) heterojunction films were prepared via a two-step solution-based method for humidity-sensing application. The average diameters of the ZnO and SnO₂ nanoparticles were 26 and 6 nm, respectively. The deposition of SnO₂ for 3 min reduced film resistance from 6.74 MΩ to 0.40 MΩ. Remarkably, the humidity-sensing performance of the heterojunction sensors was critically dependent on deposition time, and sensors subjected to 3 min deposition exhibited the highest sensitivity (90.56) to humidity, which was significantly higher than that of bare ZnO. This study indicates that the use of SnO₂/ZnO heterojunction has a great potential in humidity sensing applications. © 2018 Elsevier Ltd

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This work was supported by the GIP Grant (600-IRMI/MYRA 5/3/GIP (002/2017)). The authors also would like to thank the Institute of Research Management and Innovation (IRMI) of UiTM and the Ministry of Higher Education of Malaysia for their financial support of this research.

ISSN: 13698001

Source Type: Journal

Original language: English

DOI: 10.1016/j.mssp.2018.03.022

Document Type: Article

Publisher: Elsevier Ltd

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