Document details

‹ Back to results | 1 of 1

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AIP Conference Proceedings
Volume 2151, 29 August 2019, Article number 020032
9th International Conference on Nanoscience and Nanotechnology 2018, NANO-SciTech 2018;
Selangor; Malaysia; 26 February 2018 through 1 March 2018; Code 151180

Structural and electrical properties of ZnO and SiO_2 doped ZnO powder for varistor application (Conference Paper)

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Abstract

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Pure zinc oxide (ZnO) and silica (SiO_2) doped ZnO nanopowders have been prepared using solid state method. SiO_2 were doped into ZnO at different weight percentage 1 and 3 wt.%. The structural and electrical properties of ZnO and SiO_2 doped ZnO powder have been characterized using X-Ray Diffraction (XRD), Scanning Electron Microscope (SEM) and electro source meter. From the results, the XRD pattern were compatible with ZnO phase structure. Based on the SEM images, the grain size of ZnO varistor is increased when doped with SiO_2. The obtained value of nonlinear coefficient (α) of undoped ZnO sample is low compared to SiO_2 doped ZnO varistor . The, α value is increased as the content of SiO_2 doped increases. The maximum value of α is at 3 wt.% of SiO_2 doped ZnO which is 1.734 that might be can enhanced the performance of varistor . Thus, the properties of ZnO varistor can be improved when doped with SiO_2. © 2019 Author(s).

SciVal Topic Prominence

Topic: Varistors | Zinc oxide | Varistor ceramics

Prominence percentile: 87.864

Funding details

Funding sponsor	Funding number	Acronym
Universiti Teknologi MARA		UiTM

Funding text

This studied was supported by Universiti Teknologi MARA (UiTM). We also would like to thank to Universiti Putra Malaysia for their facilities.

ISSN: 0094243X
ISBN: 978-073541896-7
Source Type: Conference Proceeding
DOI: 10.1063/1.5124662
Document Type: Conference Paper
Volume Editors: Mahood M.R.,Soga T.,Nagaoka S.,Jafar S.M.

Original language: English **Publisher:** American Institute of Physics Inc.

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