

Accepted Manuscript

Band gap engineering of ZnMnO diluted magnetic semiconductor by alloying with ZnS.

Z.A. Yunusov, Sh.U. Yuldashev, Y.H. Kwon, D.Y. Kim, S.J. Lee, H.C. Jeon, H. Jung, A. Kim, T.W. Kang

PII: S0304-8853(17)32536-2

DOI: <http://dx.doi.org/10.1016/j.jmmm.2017.09.043>

Reference: MAGMA 63172

To appear in: *Journal of Magnetism and Magnetic Materials*

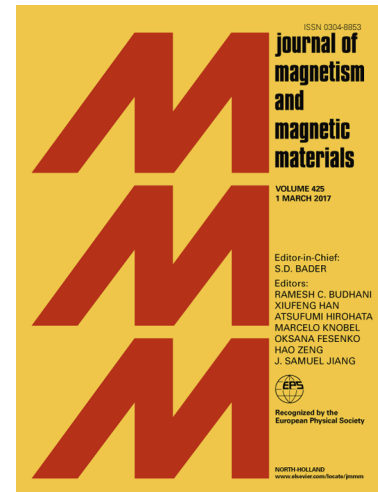
Received Date: 16 August 2017

Revised Date: 16 September 2017

Accepted Date: 18 September 2017

Please cite this article as: Z.A. Yunusov, Sh.U. Yuldashev, Y.H. Kwon, D.Y. Kim, S.J. Lee, H.C. Jeon, H. Jung, A. Kim, T.W. Kang, Band gap engineering of ZnMnO diluted magnetic semiconductor by alloying with ZnS., *Journal of Magnetism and Magnetic Materials* (2017), doi: <http://dx.doi.org/10.1016/j.jmmm.2017.09.043>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Band gap engineering of ZnMnO diluted magnetic semiconductor by alloying with ZnS.

Z. A. Yunusov^{*a}, Sh. U. Yuldashev^a, Y. H. Kwon^b, D. Y. Kim^b, S. J. Lee^a, H. C. Jeon^b, H.

Jung^c, A. Kim^c and T. W. Kang^a

^a*Nano-Information Technology Academy (NITA), Dongguk University, Seoul 100-715, Republic of Korea*

^b*Quantum-Functional Semiconductor Research Center, Dongguk University, Seoul 100-715, Republic of Korea*

^c*Department of Chemistry, Dongguk University, Seoul, 100-715, Republic of Korea*

Abstract

In this paper we report the results on the fabrication of diluted magnetic semiconductors $Zn_{1-x}Mn_xO_{1-y}S_y$ thin films with manganese $x = 0.05$ and sulfur $0 \leq y \leq 0.15$ compositions, respectively, by using ultrasonic spray pyrolysis method. The influence of the sulfur concentration on the band gap energy, structural and magnetic properties have been studied by using optical transmission, X-ray diffraction and superconducting quantum interference device (SQUID) measurements, respectively. The morphology and composition of samples were studied by using Scanning Electron Microscope (SEM) and X-ray photoelectron spectroscopy (XPS). With increasing of the sulfur concentration the band gap energy of composition decreases, while the magnetization increases proportional to the sulfur concentration.

Keywords: Diluted magnetic semiconductors (DMS), ZnO, ZnS alloy, room temperature ferromagnetism.

*Corresponding author: ziyodbekyun@gmail.com

Fax: +82 2 2278 4519; Tel: +82 2 2260 3205

Download English Version:

<https://daneshyari.com/en/article/5489993>

Download Persian Version:

<https://daneshyari.com/article/5489993>

[Daneshyari.com](https://daneshyari.com)