

## Accepted Manuscript

Title: Microwave-induced shape-memory effect of silicon carbide/poly(vinyl alcohol) composite

Author: Haiyan Du Zhen Song Jingjing Wang Zhenhai Liang  
Yinghua Shen Feng You



PII: S0924-4247(15)00014-X  
DOI: <http://dx.doi.org/doi:10.1016/j.sna.2015.01.012>  
Reference: SNA 9029

To appear in: *Sensors and Actuators A*

Received date: 31-10-2014  
Revised date: 10-1-2015  
Accepted date: 11-1-2015

Please cite this article as: H. Du, Z. Song, J. Wang, Z. Liang, Y. Shen, F. You, Microwave-induced shape-memory effect of silicon carbide/poly(vinyl alcohol) composite, *Sensors and Actuators: A Physical* (2015), <http://dx.doi.org/10.1016/j.sna.2015.01.012>

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.

## Microwave-induced shape-memory effect of silicon carbide/poly(vinyl alcohol) composite

Haiyan Du<sup>1\*</sup>, Zhen Song<sup>1</sup>, Jingjing Wang<sup>1</sup>, Zhenhai Liang<sup>1</sup>, Yinghua Shen<sup>1</sup>, and Feng You<sup>2</sup>

<sup>1</sup>College of Chemistry and Chemical Engineering, Taiyuan University of Technology, Taiyuan 030024, China

<sup>2</sup>Department of Polymer Science and Engineering, School of Material and Engineering, Wuhan Institute of Technology, 430073

\* Corresponding author. E-mail: [duhaiyan428@163.com](mailto:duhaiyan428@163.com)

### Abstract

Microwave (MW) induced shape-memory composites based on poly(vinyl alcohol) (SM-PVA) are prepared by introducing silicon carbide (SiC, a strong MW absorbing material) into polymer matrix. Silane coupling agent 3-triethoxysilylpropylamine is used to modify inorganic particles in order to improve SiC dispersion in PVA matrix. Fourier transform infrared reveals the successful surface modification of SiC. Bending test is carried out to quantitatively characterize shape-memory effect, which is affected by SiC content and the applied MW output power. Apart from the expected good MW-induced shape memory effect, SM-PVA composites also have good mechanical properties. On the basis of the wide medical applications of PVA and MW, the present studied composites have great potential applications in the field where fast shape recovery but indirect heating is required.

**Keywords:** Microwave-induced, Shape-memory composite, Poly(vinyl alcohol), Silicon carbide

Download English Version:

<https://daneshyari.com/en/article/7135896>

Download Persian Version:

<https://daneshyari.com/article/7135896>

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