

Author's Accepted Manuscript

Surface Modification-Based Three-Phase
Nanocomposites with Low Percolation Threshold
for Optimized Dielectric Constant and Loss

Weiyang Li, Zhongqian Song, Jing Qian, Huiying
Chu, Xianyou Wu, Zhongyang Tan, Wei Nie



www.elsevier.com/locate/ceri

PII: S0272-8842(17)32768-2
DOI: <https://doi.org/10.1016/j.ceramint.2017.12.072>
Reference: CER116952

To appear in: *Ceramics International*

Received date: 11 October 2017
Revised date: 9 December 2017
Accepted date: 11 December 2017

Cite this article as: Weiyang Li, Zhongqian Song, Jing Qian, Huiying Chu, Xianyou Wu, Zhongyang Tan and Wei Nie, Surface Modification-Based Three-Phase Nanocomposites with Low Percolation Threshold for Optimized Dielectric Constant and Loss, *Ceramics International*, <https://doi.org/10.1016/j.ceramint.2017.12.072>

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 galley proof before it is published in its final citable 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.

Surface Modification-Based Three-Phase Nanocomposites with Low Percolation Threshold for Optimized Dielectric Constant and Loss

Weiyan Li ^{a, b}, Zhongqian Song ^a, Jing Qian ^{a, b}, Huiying Chu ^{a, b}, Xianyou Wu ^{a, b},
Zhongyang Tan ^a, Wei Nie ^{a, b*}

^aLab of Polymer Composites Engineering, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun 130022, China

^bUniversity of Science and Technology of China, Hefei, 230026, China

*Corresponding Author. Tel: +86-431-8526 2580. wnie@ciac.ac.cn

Abstract

Integration of the excellent attributes of high dielectric constant and low dielectric loss in flexible polymer-based nanocomposites has attracted increased research attention because of their extensive applications in modern electronic and electric industry. In this study, to obtain the optimized dielectric constant and loss, the fabrication and properties of a three-phase nanocomposites, including poly(vinylidene fluoride) (PVDF) and two nanofillers, namely, surface-modified multi-wall carbon nanotubes (mCNTs) and barium titanate nanoparticles (mBTs), are investigated in detail. The mCNTs and mBTs were obtained via the hydrolysis of 3-aminopropyltriethoxysilane (AMEO) and condensation reactions between the AMEO and nanofillers. The three-phase nanocomposites are fabricated by a phase-separation and hot-pressing process. The mCNTs and mBTs can be uniformly dispersed within the PVDF polymer matrix because of the enhanced hydrogen bonding interaction and compatibility with the polymer matrix. The percolation

Download English Version:

<https://daneshyari.com/en/article/7888156>

Download Persian Version:

<https://daneshyari.com/article/7888156>

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