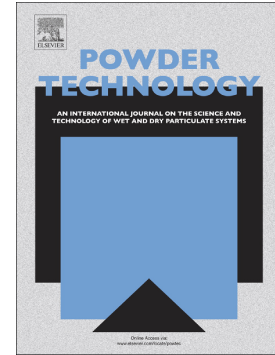


Accepted Manuscript

Enhanced low-frequency microwave absorbing property of SCFs@TiO₂ composite

Hongjing Wu, Shaohua Qu, Kejun Lin, Yuchang Qing, Liuding Wang, Yuancheng Fan, Quanhong Fu, Fuli Zhang



PII: S0032-5910(18)30287-0
DOI: doi:[10.1016/j.powtec.2018.04.015](https://doi.org/10.1016/j.powtec.2018.04.015)
Reference: PTEC 13316
To appear in: *Powder Technology*
Received date: 12 December 2017
Revised date: 6 April 2018
Accepted date: 10 April 2018

Please cite this article as: Hongjing Wu, Shaohua Qu, Kejun Lin, Yuchang Qing, Liuding Wang, Yuancheng Fan, Quanhong Fu, Fuli Zhang , Enhanced low-frequency microwave absorbing property of SCFs@TiO₂ composite. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Ptec(2017), doi:[10.1016/j.powtec.2018.04.015](https://doi.org/10.1016/j.powtec.2018.04.015)

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.

Enhanced low-frequency microwave absorbing property of SCFs@TiO₂ composite

Hongjing Wu^{1,*}, Shaohua Qu¹, Kejun Lin¹, Yuchang Qing², Liuding Wang¹,

Yuancheng Fan¹, Quanhong Fu¹, Fuli Zhang¹

¹ *Department of Applied Physics, Northwestern Polytechnical University, Xi'an,
710072, P. R. China;*

² *State Key Laboratory of Solidification Processing, School of Materials Science and
Engineering, Northwestern Polytechnical University, Xi'an, 710072, P. R. China;*

Corresponding author: wuhongjing@mail.nwpu.edu.cn/wuhongjing@nwpu.edu.cn.

Abstract It has been rarely reported that the microwave absorption materials can exhibit excellent low-frequency EM wave absorbing properties. In this paper, we synthesized steady short carbon fibers (SCFs)@TiO₂ composites by using simple one-pot hydrothermal process. The conductive short carbon fibers could be separated by TiO₂ nanoparticles from each other and reduced the conductivity of composite materials as a whole, meeting the requirements of impedance matching. With the introduction of SCFs content, SCFs@TiO₂ composites showed improved $\tan\delta_E$ values at low frequencies, implying the enhanced microwave attenuation ability at low and medium frequency. We unexpectedly found that the SCFs@TiO₂ composites exhibited very strong absorbing peaks (*i.e.*, -46.3 dB) at low frequencies with relatively thin matching thickness. Interestingly, when the thickness of the SCFs@TiO₂ composite was only 1.0 mm, the absorbing bandwidth with a RL value less than -10 dB was over 14.3-16.7 GHz (*i.e.*, absorbing frequency bandwidth is 2.4 GHz).

Download English Version:

<https://daneshyari.com/en/article/6674650>

Download Persian Version:

<https://daneshyari.com/article/6674650>

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