

Accepted Manuscript

Research paper

A New Bottom-up Synthesis of MnBi Particles with High Magnetic Performance

Shoufa Liu, Jinpeng Wang, Feng Dong

PII: S0009-2614(17)31056-4

DOI: <https://doi.org/10.1016/j.cplett.2017.11.039>

Reference: CPLETT 35253

To appear in: *Chemical Physics Letters*

Received Date: 29 September 2017

Accepted Date: 19 November 2017

Please cite this article as: S. Liu, J. Wang, F. Dong, A New Bottom-up Synthesis of MnBi Particles with High Magnetic Performance, *Chemical Physics Letters* (2017), doi: <https://doi.org/10.1016/j.cplett.2017.11.039>

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.



A New Bottom-up Synthesis of MnBi Particles with High Magnetic Performance

Shoufa Liu^{a*}, Jinpeng Wang^b, Feng Dong^c

^aSchool of Mechanical Engineering, Xijing University, Xi'an, China

^bSchool of Mechanical & Electrical Engineering, Northwestern Polytechnical University, Xi'an, China

^cXi'an Thermal Power Research Institute, Xi'an, China

Abstract:

Mn and Bi nanoparticles were synthesized by a wet chemistry reduction process. The as-synthesized Mn and Bi nanoparticles were mixed in hexane with the molar ratio of 1 to 1, and annealed at 250 °C in an inert gas environment. In four parallel experiments, the annealing time was controlled to be 2, 4, 6, and 8 hours. The impacts of annealing time on product morphology, crystallization, and magnetic properties were investigated. The results showed that within 6 hours annealing, an increased annealing time resulted in more sintering among the particles in the products, enhanced crystallization, and improved magnetic properties. When the annealing time exceeded 6 hours, further annealing did not bring much difference in morphology, crystallization, and magnetic properties, indicating a thermally stable state of the product.

Keywords: Nanoparticles; Magnetic materials; Nanocrystalline material; X-ray techniques; Manganese Bismuth.

*Corresponding author: shoufaliu02@gmail.com (S. Liu).

Download English Version:

<https://daneshyari.com/en/article/7838576>

Download Persian Version:

<https://daneshyari.com/article/7838576>

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