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Authors: Aydın R*ü*şen, Mehmet Ali Topçu, Adem Sarilmaz, Faruk Özel

PII: S0025-5408(17)31817-2
DOI: https://doi.org/10.1016/j.materresbull.2017.11.026
Reference: MRB 9684

To appear in: *MRB*

Received date: 28-4-2017
Revised date: 18-10-2017
Accepted date: 12-11-2017

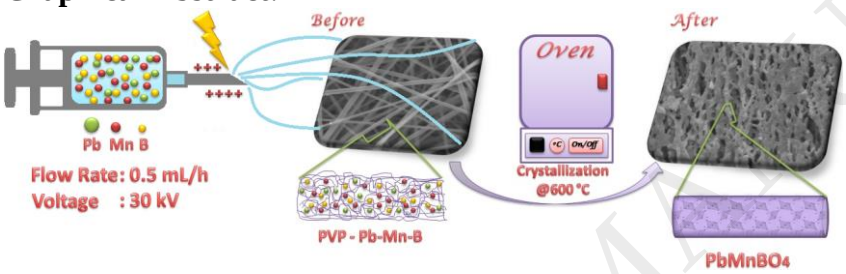
Please cite this article as: Aydın R*ü*şen, Mehmet Ali Topçu, Adem Sarilmaz, Faruk Özel, Fabrication and Characterization of Electrospun Single-Crystal Lead Manganese Borate Nanofibers, Materials Research Bulletin https://doi.org/10.1016/j.materresbull.2017.11.026

Fabrication and Characterization of Electrospun Single-Crystal Lead Manganese Borate Nanofibers

Aydın RÜŞEN*, Mehmet Ali TOPÇU, Adem SARILMAZ, Faruk ÖZEL*

[1]Karamanoglu Mehmetbey University, Department of Metallurgical and Materials Engineering, 70200, Karaman, Turkey

Graphical Abstract:



Highlights:

- Single crystal PbMnBO4 nanofibers were successfully fabricated by electrospinning process.
- The PbMnBO4 nanofibers synthesized for the first time and unprecedented in the literature.
- Characterization of $PbMnBO_4$ nanofibers in mineralogical, optical and thermal properties was revealed.
- The nanofibers exhibit single crystalline features with an average size between 120 and 250 nm.
- These nanofibers can be used in optic or photonic fields as a flexible sensor due to its nonlinear and ferromagnetic properties.

Abstract

Anhydrous borate compounds are important materials in optical applications as nonlinear optical materials (NLO), due to the presence of structural B_xO_y subunits. Herein, lead manganese borate ($PbMnBO_4$) nanofibers have been firstly fabricated via a facile approach using a simple and inexpensive electrospinning technique. All of the synthesized samples were analyzed with X-Ray Diffractometer (XRD), Transmission Electron Microscope (TEM),