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Data Article

Effect of Ba and Pb dual doping on the thermoelectric properties of BiCuSeO ceramics

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ARTICLE INFO

Article history:

Received 29 January 2018

Received in revised form

22 February 2018

Accepted 28 September 2018

Available online 3 October 2018

ABSTRACT

Besides the thermoelectric properties, mechanically robust is also very important for applications in TEGs. Up to now, no studies have been reported to investigate the mechanical properties of BiCuSeO oxyse-lenides. In this work, the results of hardness test of pristine and Ba/Pb doped BiCuSeO are presented here. These data may help to further evaluate the mechanical properties of BiCuSeO based ceramics.

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Specifications table

Subject area	Physics
More specific subject area	BiCuSeO based thermoelectric materials
Type of data	Text file, figure
How data was acquired	hardness-testing device (HV-10008, China)
Data format	Raw data
Experimental factors	Brief description of any pretreatment of samples
Experimental features	Brief experimental description
Data source location	Wuhan, China
Data accessibility	The data is with this article, not in public repository.

DOI of original article: <https://doi.org/10.1016/j.matlet.2018.01.074>

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<https://doi.org/10.1016/j.dib.2018.09.088>

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Value of the data

- Mechanical properties, like hardness, have a great influence on the processability of thermoelectric materials, so it is necessary to explain it.
- There has been no previous literature to study the hardness of BiCuSeO, so it is necessary to investigate.
- Upon Ba/Pb doping, the change of hardness is obvious, so it is necessary to explain.

1. Data

These data show the Vickers hardness of pristine BiCuSeO and the dispersion strengthening [1] effect of Ba/Pb co-doping upon it (Fig. 1).

Fig. 1. Vickers hardness of the BCSO samples: samples 0–5 stand for $x=y=0, 0.01, 0.02, 0.04, 0.06, 0.08$, respectively; sample 6 stands for $x=0, y=0.08$; sample 7 stands for $x=0.08, y=0$.

2. Experimental design, materials and methods

All the specimens were polished with two parallel planes and the plane close to the central part was utilized for Vickers hardness (HV) measurement, which were conducted on HV-10008 with a load of 25 g and a loading time of 15 s. Every sample was tested with 5 data points, and the average HV was used for characterizing mechanical properties. The results are very intuitive numerical values.

Transparency document. Supporting information

Transparency data associated with this article can be found in the online version at <https://doi.org/10.1016/j.dib.2018.09.088>.

Reference

- [1] M.J. Alinger, G.R. Odette, D.T. Hoelzer, On the role of alloy composition and processing parameters in nanocluster formation and dispersion strengthening in nanostructured ferritic alloys, *Acta Mater.* 57 (2009) 392–406.