

Studi spektroskopi impedansi Ba (Fe,Ti) O₃ = Study on impedance spectroscopy of Ba (Fe,Ti) O₃

Made Gita Somianingsih, author

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Abstrak

[ABSTRAK

Pada penelitian ini, sifat listrik material Ba(Fe,Ti)O₃ diuji dengan spektroskopi impedansi. Pembuatan material perovskite Ba(Fe,Ti)O₃ dilakukan menggunakan metode solid state reaction. Hasil XRD menunjukkan bahwa semua sampel adalah single fasa. Penambahan Fe pada BaTiO₃ menyebabkan perubahan struktur kristal dari tetragonal (space group P4/mmm) menjadi hexagonal (space group P63/mmc). Penambahan Fe pada BaTiO₃ menyebabkan peningkatan grain size yang dikonfirmasi dengan menggunakan Scanning Electron Microscope (SEM). Sifat listrik (impedansi sebagai fungsi frekuensi) pada material Ba(Fe,Ti)O₃ menunjukkan adanya kontribusi grain dan grain boundary. Hasil Differential Scanning Calorimetric (DSC) menunjukkan bahwa penambahan Fe pada BaTiO₃ menyebabkan peningkatan temperatur Curie dari suhu ~1200C pada BaTiO₃ menjadi suhu ~1700C-1750C pada Ba(Fe,Ti)O₃.; A study on impedance spectroscopy of Ba(Fe,Ti)O₃ has been done. In this research, electrical behavior were analysed by using impedance spectroscopy method. Ba(Fe,Ti)O₃ prepared by solid state reaction method. XRD characterization shows that all sampel are single phase. <hr>

ABSTRACT

With Fe addition, the crystal structure change from tetragonal (without Fe) (space group P4/mmm) to hexagonal (space group P63/mmc). The grain size increase with increasing of Fe contained in BaTiO₃ which is confirmed by Scanning Electron Microscope (SEM). Electrical behavior (impedance as a function of frequency) of Ba(Fe,Ti)O₃ shows grain and grain boundary contribution. Differential Scanning Calorimetric (DSC) shows that with Fe addition, the Curie temperature increases from ~ 1200C in BaTiO₃ to ~1700C-1750C in Ba(Fe,Ti)O₃., A study on impedance spectroscopy of Ba(Fe,Ti)O₃ has been done. In this research, electrical behavior were analysed by using impedance spectroscopy method. Ba(Fe,Ti)O₃ prepared by solid state reaction method. XRD characterization shows that all sampel are single phase. With Fe addition, the crystal structure change from tetragonal (without Fe) (space group P4/mmm) to hexagonal (space group P63/mmc). The grain size increase with increasing of Fe contained in BaTiO₃ which is confirmed by Scanning Electron Microscope (SEM). Electrical behavior (impedance as a function of frequency) of Ba(Fe,Ti)O₃

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