Studi Sifat Listrik Bahan Perovskit SrFeO3 dan LaFeO3 pada Temperatur Tinggi = Study of Electrical Properties of SrFeO3 and LaFeO3Perovskite Materials at High Temperature

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Abstrak

[ABSTRAK
Telah dilakukan penelitian sifat listrik bahan perovskit SrFeO3 dan LaFeO3 pada temperatur tinggi pada kisaran temperatur ruang hingga 250 0C. Sampel disinter 950 0C selama 6 jam. Hasil karakterisasi XRD menunjukkan SrFeO3 memilik fase tunggal dan memiliki struktur kristal kubik dengan space grup pm3m dan grainsize 20 nm, dan LaFeO3 memiliki struktur kristal orthorombik dengan space grup Pbnm dan grainsize 22 nm. Data impedansi disajikan dalam bentuk nyquist plot dan bode plot yang digunakan untuk mengidentifikasi parameter rangkaian ekivalen. Sifat listrik bahan SrFeO3 dan LaFeO3 dapat dideskripsikan dengan rangkaian R, RC paralel maupun kombinasi dari keduanya yang menunjukan adanya kontribusi grain dan grain boundary. Energi aktivasi diperoleh dari hubungan konduktivitas dc sebagai fungsi temperatur. Energi aktivasi sampel SrFeO3 dan LaFeO3 adalah 0,1817 eV dan 0,0158 eV.
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ABSTRACT
The electrical properties of SrFeO3 and LaFeO3 perovskite materials are investigated at high temperatures from room temperature to 250 0C. Samples are sintered at 950 0C for 6 hours. XRD characterization show SrFeO3 has a single phase and having cubic structure with pm3m space group and grainzise 20 nm. LaFeO3 having orthorombic structure with Pbnm space group and grainsize 22 nm. Impedance data are presented in the nyquist plot and bode plot which is used to identify an equivalent circuit. The electrical properties of SrFeO3 and LaFeO3 perovskite materials can described by R, RC parallel or both combination that seem a grain and grain boundary. The value of the activation energy which is evaluated from dc conductivity as a function of temperature. The activation energy of SrFeO3 and LaFeO3 is 0.1817 eV and 0.0158 eV., The electrical properties of SrFeO3 and LaFeO3 perovskite materials are
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