Dorthe Lybye - DTU Orbit (05/10/2019)

Dorthe Lybye

Organisations

Department of Mechanical Engineering
07/11/2003 → 11/05/2015 Former
dorly@risoe.dtu.dk
VIP

Research outputs:

Effects of A/B-ratio in strontium doped lanthanum cobaltite

General information
Publication status: Published
Organisations: Electroceramics, Fuel Cells and Solid State Chemistry Division, Risø National Laboratory for Sustainable Energy, Department of Mechanical Engineering, Electrochemistry
Contributors: Søgaard, M., Lybye, D., Hendriksen, P. V., Jacobsen, T., Mogensen, M. B.
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Publication date: 2008

Host publication information
Title of host publication: Ionic and mixed conducting ceramics V
Publisher: The Electrochemical Society
Editors: Ramanarayanan, T., Mogensen, M. B., Yokokawa, H.
ISBN (Print): 978-1-56677-625-7
(Proceedings volume; No. PV 2004-25).
Source: orbit
Source ID: 231927
Research output: Chapter in Book/Report/Conference proceeding » Article in proceedings – Annual report year: 2008 » Research

Relations between structure and electrical properties in perovskites

General information
Publication status: Published
Organisations: Department of Mechanical Engineering
Contributors: Lybye, D.
Publication date: 2005
Peer-reviewed: No
Source: orbit
Source ID: 308053
Research output: Contribution to conference » Conference abstract for conference – Annual report year: 2005 » Research

Correlation between thermal vibration and conductivity in La$_{0.9}$Sr$_{0.1}$B$_{0.9}$Mg$_{0.1}$O$_{3-\delta}$, B=Al, Ga and Sc

In order to obtain a better understanding of the oxide ion conductivity in perovskites, the structure of La$_{0.9}$Sr$_{0.1}$B$_{0.9}$Mg$_{0.1}$O$_{3-\delta}$, B=Al, Ga and Sc, have been investigated by time-of-flight powder neutron diffraction at room temperature, 270, 470, 750, 850 and 950 degreesC. For all compounds, at all temperatures, structural and anisotropic thermal parameters were refined by full profile Rietveld methods to weighted profile R values less than 0.063. The changes in difference nuclear densities, Deltarho, due to changes in temperature are illustrated by difference density maps around the atoms. The observed difference densities are described mainly by zeroth- and second-order spherical harmonics (quadrupolar functions), the nature of which vary with atomic site. The difference density maps provide a direct picture of the average in space and time of changes in atomic thermal vibrations. These observations are less biased by the least-squares method than refined parameters. The largest vibrational changes are found for the oxide ions. The magnitude of vibrational changes corresponds well with the magnitude of the conductivity. The oxide ion site in La$_{0.9}$Sr$_{0.1}$Ga$_{0.9}$Mg$_{0.1}$O$_{3-\delta}$ has the highest vibrational change and the highest conductivity. (C) 2004 Elsevier B.V All rights reserved.

General information
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