

# Accepted Manuscript

Structural order, magnetic and intrinsic dielectric properties of magnetoelectric  $\text{La}_2\text{CoMnO}_6$

Rosivaldo X. Silva, Alan S. de Menezes, Rafael M. Almeida, Roberto L. Moreira, R. Paniago, Xavi Marti, Helena Reichlova, Miroslav Maryško, Marcos Vinicius S. Rezende, Carlos William A. Paschoal

PII: S0925-8388(15)31654-6

DOI: [10.1016/j.jallcom.2015.11.097](https://doi.org/10.1016/j.jallcom.2015.11.097)

Reference: JALCOM 35952

To appear in: *Journal of Alloys and Compounds*

Received Date: 27 August 2015

Revised Date: 6 November 2015

Accepted Date: 17 November 2015

Please cite this article as: R.X. Silva, A.S. de Menezes, R.M. Almeida, R.L. Moreira, R. Paniago, X. Marti, H. Reichlova, M. Maryško, M.V.S. Rezende, C.W.A. Paschoal, Structural order, magnetic and intrinsic dielectric properties of magnetoelectric  $\text{La}_2\text{CoMnO}_6$ , *Journal of Alloys and Compounds* (2015), doi: 10.1016/j.jallcom.2015.11.097.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



# Structural order, magnetic and intrinsic dielectric properties of magnetoelectric $\text{La}_2\text{CoMnO}_6$

Rosivaldo X. Silva<sup>1,2,3</sup>, Alan S. de Menezes<sup>1</sup>, Rafael M. Almeida<sup>3,4</sup>, Roberto L. Moreira<sup>3</sup>, R. Paniago<sup>3</sup>, Xavi Marti<sup>5</sup>, Helena Reichlova<sup>5</sup>, Miroslav Maryško<sup>5</sup>, Marcos Vinicius S. Rezende<sup>6</sup> and Carlos William A. Paschoal<sup>7,\*</sup>

<sup>1</sup> Departamento de Física, Universidade Federal do Maranhão, Campos VII, 65400-000, Codó-MA, Brazil

<sup>2</sup> Departamento de Física, Universidade Federal do Maranhão, Campus do Bacanga, 65085-580, São Luis-MA, Brazil

<sup>3</sup> Departamento de Física, Universidade Federal de Minas Gerais, ICEx, 31270-901 Belo Horizonte-MG, Brazil

<sup>4</sup> Instituto Federal de Educação, Ciência e Tecnologia do Maranhão, Campus Imperatriz, 65919-050, Imperatriz-MA, Brazil

<sup>5</sup> Institute of Physics ASCR, v.v.i., Cukrovarnická 10, 162 53 Praha 6, Czech Republic

<sup>6</sup> Departamento de Física, Universidade Federal de Sergipe, 49500-000, Itabaiana-SE, Brazil

<sup>7</sup> Departamento de Física, Universidade Federal do Ceará, Campus do Pici, 65455-900, Fortaleza-CE, Brazil

## Abstract

Rare-earth manganites with a double perovskite structure play an important role in the field of multiferroics and magnetoelectrics as they encompass remarkable dielectric properties, semiconductivity and ferromagnetism near room temperature. In this family,  $\text{La}_2\text{CoMnO}_6$  is one of the most investigated compounds partially due to its ferromagnetic Curie temperature reaching up to 235 K. Since their magnetic and dielectric properties are strongly influenced by the B-site ordering of Co and Mn ions, understanding and mitigating the sources of structural disorder becomes a crucial task in order to produce functional materials. In this paper, we present a series of  $\text{La}_2\text{CoMnO}_6$  ceramics covering a broad spectrum of B-site orderings obtained by employing different calcination temperatures and synthesis conditions. Consequently, the magnetic and intrinsic dielectric properties, which depend on the ordering, change accordingly. Next, we show that the intrinsic dielectric constant of  $\text{La}_2\text{CoMnO}_6$  is weakly dependent on the calcination temperature and we argue that the early observed colossal dielectric constant is of an extrinsic origin. Finally, we report reduced dielectric losses upon changing the calcination temperatures thus enabling a tool for enhancing the unloaded quality factor as demanded by dielectric resonator at microwave frequencies applications.

Download English Version:

<https://daneshyari.com/en/article/1607084>

Download Persian Version:

<https://daneshyari.com/article/1607084>

[Daneshyari.com](https://daneshyari.com)