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E. Burzo, I. Balasz, M. Valeanu, D.P. Kozlenko, S.E. Kichanov, A.V. Rutkauskas, B.N. Savenko

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## Magnetic and Transport Properties of $\text{Ca}_{1.5}\text{La}_{0.5}\text{FeMo}_{1-x}\text{W}_x\text{O}_6$ Perovskites

E.Burzo<sup>1)</sup>, I. Balasz<sup>1)</sup>, M.Valeanu<sup>2)</sup>, D.P.Kozlenko<sup>3)</sup>, S.E.Kichanov<sup>3)</sup>, A.V.Rutkauskas<sup>3)</sup>,

B.N.Savenko<sup>3)</sup>

<sup>1)</sup> Faculty of Physics, Babes-Bolyai University Cluj-Napoca 400084 Romania

<sup>2)</sup> National Institute Materials Physics, PO Box MG 7, 077125, Magurele, Romania

<sup>3)</sup> Joint Institute for Nuclear Research, 141980 Dubna Moscow Reg., Russia

### Abstract

The  $\text{Ca}_{1.5}\text{La}_{0.5}\text{FeMo}_{1-x}\text{W}_x\text{O}_6$  double perovskites with  $x \leq 0.3$  crystallize in a monoclinic structure having space group  $\text{P2}_1/\text{n}$ . The degree of crystallographic ordering is increased as the tungsten content is higher. As a result, there is an increase of both saturation magnetizations and Curie temperatures. The magnetic susceptibilities follow temperature dependences typical for a ferrimagnetic system. The valence states of iron and molybdenum ions as well their distributions in the lattice sites were determined. These data were correlated with magnetic and transport properties.

### 1. Introduction

The  $\text{A}_2\text{BB}'\text{O}_6$  ( $\text{A} = \text{Sr}, \text{Ca}, \text{Ba}$ ) double perovskites were extensively investigated since of their possible applications in magneto-electronics. Their crystal structures consist of regular arrangement of corner-sharing  $\text{BO}_6$  and  $\text{B}'\text{O}_6$  octahedra alternating along the three directions of the crystal [1]. Particular attention has been given to perovskites where iron is located at B and molybdenum at B' sites. The half metallic behaviour has been reached under the assumption of a perfect ordered crystalline structure. The antisite disorder in  $\text{A}_2\text{FeMoO}_6$ ,

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