

SIXTEENTH ANNUAL CONFERENCE

YUCOMAT 2014

Hunguest Hotel Sun Resort Herceg Novi, Montenegro,
September 1-5, 2014
<http://www.mrs-serbia.org.rs>

Programme and The Book of Abstracts

Organised by:
Materials Research Society of Serbia

Endorsed by:
**Federation of European Material Societies
and
Materials Research Society**

Title: THE SIXTEENTH ANNUAL CONFERENCE
YUCOMAT 2014
Programme and The Book of Abstracts

Publisher: Materials Research Society of Serbia
Knez Mihailova 35/IV, 11000 Belgrade, Serbia
Phone: +381 11 2185-437; Fax: + 381 11 2185-263
<http://www.mrs-serbia.org.rs>

Editors: Prof. Dr. Dragan P. Uskoković and Prof. Dr. Velimir Radmilović

Technical editor: Aleksandra Stojičić

Cover page: Aleksandra Stojičić and Milica Ševkušić
Back cover photo: Author: Rudolf Getel
Source: Flickr (www.flickr.com/photos/rudolfgetel/4280176487)
Licence: CC BY 2.0

Copyright © 2014 Materials Research Society of Serbia

Acknowledgments: This conference is held in honour of Prof. Dragan Uskoković's 70th birthday.



Printed in: Biro Konto
Sutorina bb, Igalo – Herceg Novi, Montenegro
Phones: +382-31-670123, 670025, E-mail: bkonto@t-com.me
Circulation: 220 copies. The end of printing: August 2014

O.S.A.3

Li₂FeSiO₄ CATHODE MATERIAL: THE STRUCTURE AND ELECTROCHEMICAL PERFORMANCES

Dragana Jugović¹, M. Milović¹, M. Mitrić², V.N. Ivanovski²,
M. Avdeev³, B. Jokić⁴, R. Dominko⁵, D. Uskoković¹

¹*Institute of Technical Sciences of SASA, Belgrade, Serbia*, ²*Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia*, ³*Bragg Institute, Australian Nuclear Science and Technology Organisation, Locked Bag 2001, Kirrawee DC, NSW, Australia*, ⁴*Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia*, ⁵*Laboratory for Materials Electrochemistry, National Institute of Chemistry, Ljubljana, Slovenia*

Monoclinic Li₂FeSiO₄ that crystallizes in *P2₁/n* space group was investigated as a potential cathode material for lithium-ion batteries. A combined X-ray diffraction and Mössbauer spectroscopy study was used for the structural investigation. It was found that the crystal structure is prone to an “antisite” defect, the one in which the Fe ion and the Li ion exchange places. This finding was also confirmed by the Mössbauer spectroscopy. In order to obtain composites of Li₂FeSiO₄ and carbon, several synthesis techniques that use different carbon sources were involved. Electrochemical performances were investigated through galvanostatic charge/discharge tests. Discharge curve profile did not reflect a two-phase intercalation reaction (no obvious voltage plateau) due to the low conductivity at room temperature.

O.S.A.4

RHEED STUDY OF THE EARLY STAGES OF OXIDE FILM FORMATION AND QUANTIFICATION OF THE GROWTH KINETICS

Anatole N. Khodan¹, M.V. Sorokin¹, D.-G. Crete²

¹*National Research Center "Kurchatov Institute", Moscow, Russian Federation*,
²*Unite Mixte de Physique C.N.R.S./THALES, Palaiseau, France*

RHEED was applied for in situ study of homoepitaxial SrTiO₃ (STO) film growth with the aim to find accordance between estimations following from theoretical growth models and real film parameters measured by AFM, XRD and RHEED. Pulsed Laser Deposition (PLD) with constant pulse rate up to 5 Hz was used and relaxation kinetics of the deposited particles was estimated from RHEED intensity changes caused by the surface layer ordering. The proposed data treatment allowed us to estimate the relaxation rate in the deposited surface layer and the overall relaxation of the structure of homoepitaxial thin film. It has been shown that growth at temperatures above 650 °C is characterized by presence of surface phase. It mean, that experimental estimations of a kinetic processes at the surface are attributing first of all to the surface phase properties, whereas a growing film structure is formed deeper, under film-surface layer interface and determined by the conditions of phase stability. This structural transition occurs at depth, which exceeds the number of not completely filled monolayers. In this connection, the evolution of the theory of Smooth Multilayer Growth (SML) seems promising enough.