

**SSP 2004**

# SSP 2004

*Proceedings of the 8th International Conference on  
Solid State Physics (SSP 2004), Workshop  
“Mössbauer Spectroscopy of Locally Heterogeneous Systems”,  
held in Almaty, Kazakhstan, 23–26 August 2004*

*Edited by*

K. K. KADYRZHANOV

*Institute of Nuclear Physics, Almaty, Kazakhstan*

and

V. S. RUSAKOV

*Lomonosov Moscow State University, Moscow, Russia*

Reprinted from *Hyperfine Interactions*  
Volume 164, Nos. 1–4 (2005)

 Springer

**A C.I.P. Catalogue record for this book is available from the Library of Congress.**

ISBN 3-540-36793-4

---

Published by Springer  
P.O. Box 990, 3300 AZ Dordrecht, The Netherlands

Sold and distributed in North, Central and South America  
by Springer  
101 Philip Drive, Norwell, MA 02061, U.S.A.

In all other countries, sold and distributed  
by Springer  
P.O. Box 990, 3300 AZ Dordrecht, The Netherlands

*Printed on acid-free paper*

All Rights Reserved

© 2006 Springer

No part of the material protected by this copyright notice  
may be reproduced or utilized in any form or by any means,  
electronic or mechanical, including photocopying,  
recording or by any information storage and retrieval  
system, without written permission from the copyright owner.

# Table of Contents

Preface	1–2
M. E. ELZAIN, A. A. YOUSIF, A. D. AL RAWAS, A. M. GISMELSEED, H. WIDATALLAH, K. BOUZIANI and I. AL-OMARI / The Electronic and Magnetic Properties of FCC Iron Clusters in FCC 4D Metals	3–15
N. S. GAJBHIYE, R. S. NINGTHOUJAM and S. BHATTACHARYYA / Magnetic Properties of Co and Ni Substituted $\epsilon$ -Fe <sub>3</sub> N Nanoparticles	17–26
A. GRUSKOVÁ, J. LIPKA, M. PÁPANOVÁ, J. SLÁMA, I. TÓTH, D. KEVICKÁ, G. MENDOZA, J. C. CORRAL and J. ŠUBRT / La-Zn Substituted Hexaferrites Prepared by Chemical Method	27–33
O. SCHNEEWEISS, R. ZBORIL, N. PIZUROVA and M. MASHLAN / Preparation and Properties of Iron and Iron Oxide Nanocrystals in MgO Matrix	35–40
M. MIGLIERINI / How can Mössbauer Spectrometry Contribute to the Characterization of Nanocrystalline Alloys?	41–49
E. P. YELSAKOV and G. A. DOROFEEV / Nanostructure and Phases Formation under Mechanical Alloying of Binary Powder Mixtures of Fe and sp-element (M); M = C,B,Al,Si,Ge,Sn	51–65
N. U. ALDIYAROV, K. K. KADYRZHANOV, E. M. YAKUSHEV and V. S. ZHDANOV / Improvements in Depth Selective Electron Mössbauer Spectroscopy	67–72
A. K. ZHUBAEV, K. K. KADYRZHANOV, V. S. RUSAKOV and T. E. TURKEBAEV / Thermal Induced Processes in Laminar System of Stainless Steel – Beryllium	73–85
V. S. RUSAKOV and K. K. KADYRZHANOV / Mössbauer Spectroscopy of Locally Inhomogeneous Systems	87–97
V. S. RUSAKOV, V. S. URUSOV, R. V. KOVALCHUK, YU. K. KABALOV and S. V. YUDINCEV / Mössbauer Study of Ferrite-garnets as Matrixes for Disposal of Highly Radioactive Waste Products	99–104
I. P. SUZDALEV and YU. V. MAKSIMOV / Magnetic Phase Transitions in Nanoclusters and Nanostructures	105–109