

Table of Contents

Preface

Chapter 1: Functional Materials

Binary and Ternary Optical Crystals ZnSe:Fe^{2+} and ZnMgSe:Fe^{2+} for Mid-IR Applications S.V. Naydenov, O.K. Kapustnyk, I.M. Pritula, D.S. Sofronov, I.S. Terzin and N.O. Kovalenko	3
The Impact of Silver Nanoparticles on Small Intestine Cells and Oocytes Follicular Environment Cells in Female Mice A. Lytvynenko, O. Blashkiv and V. Sribna	13
Photoluminescent Registration of New Substances Based on Fullerite C_{60} Obtained by Chemical Interaction with H_2 and N_2 Molecules V. Zoryansky, P. Zinoviev and Y. Semerenko	19
Polycrystalline Thermoelectric Materials with Observed Anisotropy F. Mihok, V. Puchý, J. Szabo, B. Ballóková, R. Džunda and K. Saksal	29
Gas Pressure Infiltration of Porous $\text{Ni-Al}_2\text{O}_3\text{-Al}$ Compacts with Molten Aluminium A. Opálek, S. Kúdela Jr., M. Štěpánek, N. Beronská and K. Iždinský	35

Chapter 2: Ceramics

Effect of Sintering Temperature on Copper Metallization of 3D-Printed Alumina L.I.M. Ballesteros, K.T. Simfroso, R.N.M. Delda, G.A. Catalan, D.D.A. Florante and V.M. Sarmiento	45
High-Hardness Transparent Silicon Nitride Ceramic H.P. Weng, K.H. Chuang, M.H. Chang and K.C. Chiu	53

Chapter 3: Materials and Equipment for Electro- and Photocatalysis

Transition Metal Phosphide-Based Membrane Electrode Assembly for Cost-Effective Production of H_2 C. Bera, A. Gubóová, M. Strečková and A. Kovalčíková	63
Recycling of Zinc-Based Industrial Waste into Nanostructured Material for Potential Wastewater Treatment Applications E. Mudra, I. Shepa, K. Nemesh, J. Piroskova, J. Klimko, P. Hviscova and O. Petrus	71

Chapter 4: Engineering Measurements

The Importance of Dislocations in the Work Hardening of Low-Carbon Steel during Cold Plastic Deformation T. Brlić, M. Matvija, S. Rešković and M. Lisnichuk	81
Application of Industrial Computed Tomography (ICT) in Dentistry on 3D Printed Co-Cr Dental Bridge A. Brlić, S. Čimić, J. Kos, I. Salarić, I. Keser and T. Brlić	89

Chapter 5: Green Concrete

Sustainable Concrete with Recycled Glass and Oyster Shell as Partial Cement Replacements: A Study on Performance and Environmental Impact A. Calderón, J. Pariona and C.E. Acosta Augusto	99
Effect of Recycled Glass Powder and Nano-Silica on the Strength and Permeability of Concrete D.H. Brad, R.A. Henrry and C.A. Eyzaguirre Acosta	111