

Table of Contents

Preface

Structure – Transport Correlations in Mono-Valent Na⁺ Doped La_{1-x}Na_xMnO₃ Manganites S. Kansara, D.D. Pandya, B. Nimavat, C.M. Thakar, P.S. Solanki, S. Rayprol, M.R. Gonal, N.A. Shah and D.G. Kuberkar	1
DVT Grown GeSe Single Crystals and their Thermal Parameters in N₂ R.R. Patel, G.K. Solanki, N.N. Gosai and R.B. Patel	8
Structural and Thermal Properties of Cu Doped Nanocrystalline Tin Selenide N.N. Gosai, G.K. Solanki, K.D. Patel and K.S. Hingarajiya	15
Half-Metallic Ferromagnetism in MgS by Doping with <i>Sp</i>-Element: A First-Principles Calculations M. Yogeswari, R. Umamaheswari and G. Kalpana	22
Growth and Optical Characterization of DVT Grown SnSe_{0.5}Te_{0.5} Single Crystals R.B. Patel, G.K. Solanki, V.M. Patel, N.N. Gosai, R.R. Patel and Y.G. Mansur	29
Growth, Structural and High Pressure Study of GeS_{0.25}Se_{0.75} and GeS_{0.75}Se_{0.25} Single Crystals G.K. Solanki, D.B. Patel, S. Unadkat, N.N. Gosai and Y.G. Mansur	37
Electronic Structure and Ground State Properties of A₄[Ag₄O₄] (A=Na, K and Rb): A First-Principles Study R. Umamaheswari, M. Yogeswari and G. Kalpana	43
Structural and Vibrational Properties of FeO Using First-Principles N.K. Bhatt, A.B. Patel, A.Y. Vahora, P.R. Vyas, B.Y. Thakore and A.R. Jani	49
Structural and Optical Characterization of Tungsten Diselenide Crystals Grown by DVT Technique P.R. Patel, J.R. Rathod, H.S. Patel, K.D. Patel and V.M. Pathak	53
Structural, Electronic and Elastic Properties of Palladium Nitride N. Acharya, B. Fatima, S.S. Chouhan and S.P. Sanyal	58
Swift Heavy Ion Irradiation Studies on the Transport in La_{0.8-x}Pr_{0.2}Sr_xMnO₃ Manganite Films A. Ravalia, M. Vagadia, P. Trivedi, M.J. Keshvani, U. Khachar, B.T. Savalia, P.S. Solanki, K. Asokan and D.G. Kuberkar	63
Comparison of Certain Local Pseudopotentials and a New Proposal S.J. Patel, A.Y. Vahora, B.Y. Thakore and A.R. Jani	70
Enhanced Dielectric Permittivity of Nh₄H₂PO₄/Polyvinyl Alcohol Composites at Low Percolation Threshold J. Uddin and B.K. Chaudhuri	74
Electrical Resistivity of Liquid Al-Mg Binary Alloys M. Joshi, M. Kumar, P.N. Gajjar, B.Y. Thakore and A.R. Jani	76
Structural and Electrical Properties of ZnTe Thin Films Deposited at Various Substrate Temperatures J.R. Gandhi, K.D. Patel and G.K. Solanki	80
Fabrication and Application of Thin Film Semiconductor Sensors for the Detection of Volatile Organic Compounds V.S. Vaishnav, S.G. Patel and J.N. Panchal	85
Effect of Temperature on Structural and Optical Properties of Chemically Deposited Tin Sulfide Thin Films Suitable for Photovoltaic Structures T.H. Patel	93
Molecular Structure, Vibrational Spectroscopy and Homo, Lumo Studies of 4-methyl-N-(2-methylphenyl) Benzene Sulfonamide Using DFT Method K. Sarojini, H. Krishnan, C.C. Kanagam and S. Muthu	101
MoSe₂/Polypyrrole Solar Cell S.P. Shukla, H.S. Patel, K.D. Patel and V.M. Pathak	112
Synthesis, Structural, Optical, and Magnetic Properties of Fe Doped TiO₂ along with Different Concentration K.S. Siddhapara and D.V. Shah	118

Characterization of Gd₂O₃ Nano Clusters S. Paul, A. Gangopadhyay and A. Sarkar	127
Theoretical Investigation of Electrical Transport Property of Co-Cr Liquid Binary Alloy P.B. Thakor, Y.A. Sonvane, J.J. Patel and A.R. Jani	132
Theoretical Investigation of Atomic Transport Properties of 4d Transition Metals in Liquid Phase P.B. Thakor, Y.A. Sonvane and A.R. Jani	136
Concentration Depended Thermodynamic Properties of Fe-Co Liquid Binary Alloy Y.A. Sonvane, J.J. Patel, P.B. Thakor, P.N. Gajjar and A.R. Jani	143
Concentration Dependent Physical Properties of SiSn Solid Solution A.R. Jivani and A.R. Jani	150
Temperature Dependence Electron-Impurity Scattering Rate in Doped Bilayer Graphene D.K. Patel, K.N. Vyas and A.C. Sharma	154
Thickness Dependent Structural and Optical Properties of Cadmium Selenide Thin Films M.S. Jani, H.S. Patel, J.R. Rathod, K.D. Patel, V.M. Pathak and R. Srivastava	159
Formulation of Dielectric Behaviour of Composite Material A. Banerjee, A. Sarkar and A. Sarkar	168
Vickers Micro-Hardness Studies of Amino Acids (L-Histidine, L-Threonine and DL-Methionine) Doped KDP Crystals D.J. Dave, K.D. Parikh and M.J. Joshi	172
Enhancement of Thermopower due to Deficiency of Sb in FeSb₂ A. Sanchela, V. Kushwaha, A.D. Thakur and C.V. Tomy	179
Mn-Doped ZnO Micro and Nanocrystals: Synthesis, Characterization and Properties R.K. Sharma, S. Patel and K.C. Pargaian	182
Magnetic Compton Scattering Study of Ni₂Mn_{1.4}Sn_{0.6} Shape Memory Alloy A. Dashora, H.S. Mund, J. Sahariya, K.R. Priolkar, N. Lobo, M. Itou, Y. Sakurai and B.L. Ahuja	189
Dielectric and Electrical Properties of Binary Mixtures of Anisole and Some Primary Alcohols in the Frequency Range 20 Hz to 2 MHz H.A. Chaube and V.A. Rana	194
Surface Studies of PVT Grown CdS Crystals E.A. Kadash, A.A. Al Hattami, H.S. Patel, J.R. Rathod, K.S. Hingarajiya, K.D. Patel, V.M. Pathak and R. Srivastava	202
Dielectric Properties of W-Type BaCa₂Fe₁₆O₂₇ Hexaferrite Prepared Using a Stearic Acid Gel Route C.C. Chauhan and R.B. Jotania	210
Refractive Index Engineering of Ar⁺ Implanted CR-39 Polymer N. Shekhawat, A. Sharma, S. Aggarwal and K.G.M. Nair	214
Tailoring Structural Properties of Polyethylene Terephthalate (PET) by 200 keV Ar⁺ Implantation M. Chawla, R. Rubi, R. Kumar, A. Sharma, S. Aggarwal, P. Kumar and D. Kanjilal	221
Conductivity Studies on Filler Free and Filler Doped PVA-PEO Based Blend Polymer Electrolytes P. Joge, D.K. Kanchan, P. Sharma and N. Gondaliya	227
Experimental Investigation on Core Shell Nanocomposite of Cr_{1-x}V_xS₂ A. Gangopadhyay, A. Sarkar and A. Sarkar	233
Optical Absorption Study of Molybdenum Diselenide and Polyaniline and their Use in Hybrid Solar Cells H.S. Patel, J.R. Rathod, K.D. Patel, V.M. Pathak and R. Srivastava	239
Structural and Optical Characterization of Zinc Telluride Thin Films J.R. Rathod, H.S. Patel, K.D. Patel and V.M. Pathak	254
Electrical Property of Transparent Thin Films TiO₂ and Sr-Doped TiO₂ Developed by Spin Coating M.H. Mangrola, A.S. Pillai, B.H. Parmar and V.G. Joshi	263
Study on CdSe Nanoparticles Synthesized by Chemical Method M.P. Deshpande, N. Garg, S.V. Bhatt, B. Soni and S.H. Chaki	267
Effect of Independently Tunable Electron Layer Density on Wigner Crystallization in Electron-Hole Quantum Bilayers L.K. Saini and M.G. Nayak	283

Surface Micro Topographical and Dielectric Studies of Cholesterol Crystals P.M. Vyas and M. Joshi	289
Investigations on Tin Selenide Thin Film Based Schottky Barrier Diodes by I-V-T Method K.K. Patel, K.D. Patel, M. Patel, K.S. Hingarajiya and V.M. Pathak	297
First-Principles Calculations of the Structural, Electronic, Optical and Mechanical Properties of CdS, CdSe and CdTe S. Sharma and A.S. Verma	302
Preparation and Characterization of N-CdS Thin Films and its Schottky Barrier K.D. Patel, K.S. Hingarajiya, M.M. Patel, V.M. Pathak and R. Srivastava	307
Characterization of SnSePb_{0.1} Thin Films Deposited by Flash Evaporation Technique V.N. Pathak, P. Mistry, M. Patel, K.S. Hingarajiya, G.K. Solaki, V.M. Pathak and K.D. Patel	311
A Study of Molecular Interaction in Binary Mixtures of 1-Propanol with N,N-Dimethylformamide at Different Temperatures A.N. Prajapati, V.A. Rana, A.D. Vyas and D.H. Gadani	317
Study of MoSe₂ Crystal as a Photoelectrochemical Solar Cell D. Sahay, R. Parmar, R.K. Shah and R.J. Pathak	326
Study of Photoelectrochemical Solar Cell Using WSe₂ Crystal R. Parmar, D. Sahay, R.J. Pathak and R.K. Shah	330
Preparation and Characterization of Polymer Blends of Ethyl Cellulose and its Composites E. Nivrtirao and B. Sannakki	336
Synthesis, Structural and Optical Characterization of PVA Capped Cadmium Sulphide Nanocrystalline Films by Chemical Bath Deposition Method L.S. Devi, K.N. Devi, B.I. Sharma and H.N. Sarma	341
Transport Properties of Ru₁Sr₂Gd_{2-x}Ce_xCu₂O₁₀ Compounds A. Roy, T.A. Jamadar and A.K. Ghosh	347
A First Principles Study of Thermal Properties of Yb-Pnictides (YbX, X= N, P and As) Compounds H.R. Soni and P.K. Jha	353