CURRICULUM VITAE OF PROF.(DR.) MOHD. IKRAM



I. PERSONAL

a) Name: MOHD. IKRAM
b) Date of Birth: 02.05.1968.
c) Marital Status: Married (have one daughter and one son).
d) Nationality: Indian.
e) Mailing Address: Professor, Department of Physics, National Institute of Technology, Hazratbal, Srinagar-190006, (Kashmir)- INDIA.
E-mail: ikram@nitsri.net
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Mobile no.: +91-8717000375

II.WEBSITES:

1. Home Page: Link
2. ORCID: https://orcid.org/0000-0002-3022-9290
3. SCOPUS: 7005882429
4. Google Scholar: https://scholar.google.co.in/citations?hl=en&view_op=list_works&gmla=AJsN-F5HXgwBGUG3IHO-UiWOv_bnFPR3ZQ1bY0KglzT9cbSWZno1kp3fqKoN-_A5TEQIDv0uBp-ERN0k4s2wS_f19Rfok9ZZ-zwmFvYO9eXhmGx0BqIunK8&user=NXh6XVcAAAAJ
5. Research Gate: https://www.researchgate.net/profile/M-Ikram
6. Publons: AAT-7080-2020

III. ACADEMIC QUALIFICATIONS:

Exams. Passed	Board/ University	Year	Division	Subjects
1. Ph. D.	Aligarh Muslim University, Aligarh	1996		Condense Matter Physics.
2. M.Phil.	Indian Institute of Technology, Roorkee.	1992		Material Science.
3. M. Sc.	Meerut University,	1989	1	Physics.

4. B. Sc.	Meerut University,	1987	11	Phys., Chem., Maths.
5. Intermediate	U. P. Board	1984	1	Phys., Chem., Maths., Hindi & English
6. High School	U. P. Board	1982	1	Science, Bio., Maths., Hindi & English.

IV. FIELD OF SPECIALIZATION: Experimental Condense Matter Physics/Material Science.

V. PROFESSIONAL EXPERIENCE:

Position	Period From	To	Employer	Nature of Work
a)Professor	09.10.2018	--- Continued----	National Institute of Technology, Srinagar.	Teaching & Research.
b. HOD, Physics,	31.08.2015	1.11. 2018	NIT Srinagar	Teaching, Research & Admin.
c) Associate Professor in Physics	01.07.2012	08.10.2018	National Institute of Technology, Srinagar.	Teaching & Research.
d) Assistant Professor/ Reader in Physics	09.10.2009	30.06.2012	National Institute of Technology, Srinagar.	Teaching & Research.
e) Sr. Lecturer in Physics	01.07.2004	30.06.2009	National Institute of Technology, Srinagar.	Teaching &Research.
f) Lecturer in Physics	13.05.2000	30.06.2004	National Institute of Technology, Srinagar.	Teaching & Research
g) Lecturer in Physics	7.10.98	17.05.99	Aligarh Muslim University, Aligarh.	Teaching &Research.
h) Lecturer in Physics	16.01.98	16.02.98	Womens's College Aligarh Muslim University, Aligarh.	Teaching & Research.
i) Research associate in Physics	26.02.97	31.03.98	University Grants Commission (DSA) Aligarh Muslim University Aligarh.	Teaching &Research.
i) Project Assistant	23.03.96	25.02.97	University Grants Commission (DSA) Aligarh Muslim, University Aligarh.	Teaching &Research
j) Junior Research Fellow	26.07.94	22.03.96	Deptt. of Phys. Aligarh Muslim, University Aligarh.	Teaching &Research

VI. RESEARCH PUBLICATIONS:

(a) International Journals: (100).
(b) Communicated : (04).
(c) In proceedings: (22).
(d) Abstracts Published in National /International Conferences/ Symposia/Seminars etc.: (57)
(List enclosed)

VII. REFRESHER/ORIENTATIOIN COURSE ETC.:

1. Attended orientation course w.e.f. 26.11.1998 to 24.12.1998 at A.M.U., Aligarh, 1998.
2. Attended Ph. D. Programme course in "Ions Beams in Superconductors and Data Acquisition System" at Nuclear Science Center, New Delhi, 1999 (INDIA).
3. Attended "Accelerator User Workshop w.e.f. 06th July-07th July, 2007 at Interuniversity Accelerator Center (IUAC), Aruna Asaf Ali Marg, New Delhi-10067.
4. Attended refresher course w.e.f. 03/01/2008 to 23/01/2008 on "Statistical Mechanics and Solid state Physics" in the Department of Physics, University of Pune, pune (M.S.).
5. Attended QIP short-term course w.e.f. 18/02/2008 to 22/02/2008 on "Nanostructured Materials: Research and Development Status" in the Department of Physics, IIT, Roorkee (U.K.).
6. Attended two days short term course on "Research Methodology in Nano Sciences W.e.f.09-12-2011 to 10-12-2011 held at UGC-Academic Staff College University of Kashmir-190006.
7. Participated in the Accelerator User Workshop and presented the proposal held at IUAC, New Delhi on 6th July 2012.

VIII. CITATION OF RESEARCH PAPERS IN NATIONAL/INTERNATIONAL JOURNALS:

No. of citation: 1650.
h-index: 23.
i10-index: 50.

IX. RESEARCH EXPERIENCE AT VARIOUS INSTITUTE/ UNIVERSITIES:

1. Research training programme In "Ion Beam in Superconductors and Data Acquisition system at Nuclear Science center", New Delhi.
2. INSA- Visiting fellow in for two months Jan-Feb 2003 in the association of Prof. Rajnikant in the X-ray laboratory, Department of Physics, University of Jammu, Jammu Tawi-180006 .
3. Research Collaborative work w.e.f. July 21, 2003 to July, 30, 2003 in the association of Prof. Rajnikant, Department of Physics, X-ray laboratory, University of Jammu, Jammu Tawi-180006.
4. Research Collaborative work w.e.f. Dec 5, 2003 to March 3, 2004 in the association of Prof. A.M. Rossi, CBPF, Brazil under The TWAS scheme.
7. Research Collaborative work w.e.f. Jan 5, 2005 to April 1, 2005 in the association of Prof. A.M. Rossi, CBPF, Brazil under The TWAS scheme.
8. Visiting fellow at the NCL Pune in association of Prof. S.B. Ogale through Indian Academy of Sciences, Bangalore during June-July 2008.
9. Visiting fellow in association of Prof. C.N.R. Rao, JNCASR, Bangalore during Jan-Feb 2009.
10. Research Collaborative Work Jan-Feb 2010 in the Department of Physics University of Pune.
11. Visiting fellow in association of Prof. C.N.R. Rao, JNCASR, Bangalore during Jan-Feb 2012
12. Visiting fellow in association of Prof. C.N.R. Rao, JNCASR, Bangalore during Jan-Feb 2013.
13. Visiting fellow in association of Prof. C.N.R. Rao, JNCASR, Bangalore during Jan-Feb 2014.

X. PAPERS PRESENTED (ORAL) IN THE ENCES/SEMINARS/SYMPOSIA/WORKSHOP ETC., BUT NOT INCLUDE IN THE LIST OF PUBLISHED PAPERS IN REFEREED JOURNALS: 13.

S.No.	Title of papers	Name of The conference/Seminar/ Symposia/ Workshop.	Place	Date
1.	**Studies of $PrFe_{1-x}Ni_xO_3$ (where x=0.0, 0.1.0.2, 0.3.0.4 and 0.6) System.**	**Functional Oxide Material Workshop.**	**IUAC, New Delhi.**	**Sept. 25-26, 2006.**

2.	**Transport Studies of Ni doped Gadolinium Orthoferrite.**	**National Conference on "Applied Physics and Material Science.**	**Department of Physics M. D. University Rohtak-124001, Haryana.**	**Feb. 5-6 2015.**
3.	**Structural and dialectic properties of $EuFe_{1-x}Mn_xO_3$ (x=0.0,0.3,0.5) Ceramics.**	**National Conference on "Microscopy & Advances in Material Science (NCMAMS-2015),.**	**Department of Physics & Electronics University Of Jammu.**	**March 2-4 , 2015.**
4.	**Structural, Optical & Di-electrical Studies of Sr Doped $LaVO_4$.**	**UGC Sponsored National Seminar on Electronic Devices, Systems and Information Security (SEEDS-2015).**	**Department of Electronics & Instrumentation Technology University of Kashmir, Srinagar.**	**March 16-17 , 2015.**
5.	**Structural & Di-electrical Studies $RFeO_3$ (R = Pr, Eu & Ho).**	**2015 International Conference on Advances in Computers, Commutation and Electronics Engineering (COMMUNE-2015).**	**Department of Electronics & Instrumentation Technology University of Kashmir, Srinagar.**	**March 16-18, 2015.**
6.	**Effect of Swift Heavy Ion Irradiation on Structural, Morphological and Magnetic Properties of $Prfe_{1-X}Mn_xo_3$ ($X \leq 0.5$) Thin Films.**	**5th International Conference On "Recent Trends in Applied Physical, Chemical Sciences, Mathematical/Statistical and Environmental Dynamics" (PCME-2015).**	**Krishi Sanskriti" Jawaharlal Nehru University, New Delhi.**	**May, 2-3 2015.**
7.	**Colossal Dielectric Constant in Ni Doped Nd Orthoferrite Ceramics.**	**National Conference On "Solid State Chemistry and Allied Areas"(ISCAS-2015).**	**Bhaskaracharya College of Applied Scien ces University of Delhi, Delhi-110007.**	**May 8-10, 2015.**
8.	**Structural, dielectric and Magnetic Properties of $HoFe_{1-x}Ni_xO_{3-}$ ($0 \leq x \leq 0.5$)**	**National Conference On "Advances in Materials and materials Processing (AMMP-15).**	**Department of Metallurgy and Materials Engineering, NIT Srinagar.**	**May 22-23, 2015.**
9.	**Effect of Swift Heavy Ion Irradiation on Structural, Morphological and Magnetic Properties of $HoFe_{1-x}Ni_xO_{3-}$ ($0 \leq x \leq 0.5$) Thin Films**	**National Interdisciplinary Science Conference-2015 on "Recent Research Trends in Chemical & Environmental Science (NISCON-2015).**	**Sri Pratap College University of Kashmir, Srinagar.**	**August 18-19, 2015.**

10.	**Effect of SHI Irradiation on the Structural, Morphological, Electrical and Magnetic Properties of Ca Doped $LaMnO_3$ Thin films Grown on Si (100) Substrate.**	**International Conference on Multifunctional Materials for future Applications (ICMFA 2015).**	**Department of Chemistry, IIT (Banaras Hindu University) Varanasi.**	**Oct.27 – 29, 2015.**
11	**Studies of Ortho-Perovskite Compounds Before and After Their SHI Irradiation**	**First International Conference on Advanced Materials for Power Engineering (ICAMPE-2015)**	**Department of Chemical Sciences, Mahatama Gandhi University, Kottyam, Kerala.**	**Dec.11 –13, 2015**
12.	**Structural, Transport, Magnetic and Near-Edge X-ray Absorption Fine-Structure Studies of $SmFe_{1-x}Ni_xO_3$, ($0 \leq x \leq 0.5$) Perovskite.**	**Second International Conference on Materials Science and Technology (ICMST2016).**	**Department of Physics, St. Thomas College Pala, Kerala.**	**June 5 – 8 , 2016.**
13.	**Studies of Ni Doped $HoFeO_3$ Pervoskite Thin Films Deposited on $LaAlO_3$ Substrate before and after Swift Heavy Ions Irradiation.**	**International Conference on Multifunctional Materials for Device Application-2016 (ICMDA-2016)**	**Department of Physics, National Institute of Technology Patna, Bihar.**	**26-28, October 2016**

XI. CONFERENCES/SEMINARS/SYMPOSIA/WORKSHOP ETC. ATTENDED: **13.**

S.No.	Name of The conference/Seminar/ Symposia/ Workshop.	Place	Date
1.	**Physics of materials (SPM'04).**	**Department of Physics, University of Jammu, Jammu Tawi.**	**Nov. 24-25 ,2004.**
2.	**Workshop on "Nanotechnology: Present & Future Horizon".**	**Department of Chemistry, NIT, Hazratbal, Srinagar, Kashmir**	**Sept. 8, 2007.**

3.	**International workshop on" Nanotechnology & Advance Functional Materials".**	**NCL, Pune.**	**July 9-11, 2009.**
4.	**Workshop on "Role of Mathematics in Science, engineering and Technology**	**Department of Mathematics, NIT, Srinagar, Kashmir-**	**March 26, 2012**
5.	**Workshop on "Promoting Innovations in Individuals, Start ups and Micro, Small & Medium Enterprises (PRISM) and Technopreneurship Promotion Programme(TePP) Sensitization".**	**USICS, University of Kashmir, Srinagar & Department of Mechanical Engineering, NIT Srinagar, Kashmir.**	**October 12, 2012.**
6.	**National Mission on Education Through Information Communication Technology (NME-ICT) Awareness Workshop.**	**NIT Srinagar, Kashmir.**	**June 18, 2013.**
7.	**TEQIP Workshop on "Structure and Characterization of Materials.**	**IIT Kanpur**	**December 22-26 2014.**
8.	**TEQIP Workshop on "Materials and Metallurgical Curriculum.**	**Organized by IIT Kanpur at NIT Srinagar.**	**October 08-09 2015.**
9.	**One week National Level Workshop on "Connecting People to Nature (CPTN-2017).**	**Organized by Department Chemical Engineering NIT Srinagar, Kashmir.**	**September 25-29, 2017.**
10.	**National Level Faculty Development Programme on "Recent Trend in Material Physics.**	**Organized by Karpagam Academy of Higher Education, Coimbatore, Tamil Nadu.**	**June 22- 28 2021.**
11.	**Faculty development program on emerging trends in science and technology.**	**Organized by Easwari Engineering College and Department of Physics, Chennai.**	**July 01- 06, 2021.**
12.	**School on Microscopic Characterization Techniques**	**Organized by Inter-University Accelerator Centre, New**	**November, 9-12, 2021**

		Delhi	
13.	**International Conference on H_2&CO_2.**	**S & T Digital**	**17-19' 2022.**

XII. SUBJECTS TAUGHT:

(a) At Graduate Level:

Solid State Electronic Devices, Electromagnetic Wave and Fields, Mechanics, Modern Physics, Metallography, Material Science, Advance Materials Technique, Electrical Engineering Materials.

(b) At Post Graduate Level:

Quantum Mechanics, Atomic and Molecular Physics, Thermometric Properties and Devices, Advance Condensed Matter Physics.

XIII. ABROAD VISIT: 02

1. w.e.f. Dec 5, 2003 to March 3, 2004 CBPF, Brazil under the TWAS scheme.
2. w.e.f. Jan 5, 2005 to April 1, 2005 CBPF, Brazil under the TWAS scheme

XIV. MEMBERSHIPS:

1. Nominated as member for the selection committee of the research scholars at IUAC, New Delhi For three years (w.e.f.2010-2012).
2. Nominated as member of the PAC of Physics, Astrophysics and Laser w.e.f. 2022 to 2025.
3. Nominated as member of User's Committee, UGC-CSR Indore, w.e.f. 2025 to 2027.

XV. ORGANIZED CONFERRENCE/WORKSHOP/SYMPOSIUM/SEMINAR ETC.,

1. National Conference on Recent Trends in Material Science Research (RTMSR-2012, Sept 3-5 at NIT Srinagar Kashmir as a co-convener.

2. Synergistic Training Program Utilization the scientific and Technological Infrastructure (STUTI) programme in the Department of Physics, NIT Srinagar in association, Department of Physics, Banasthali Vidyapith Rajashthan during 20 - 26 May 2022 as a convener.

XVI. RESEARCH PROJECT:

S. No.	Name of Agency	Title of project	Total Amount	Period of support	Completed/on-going
1.	**IUAC, New Delhi.**	**Effect SHI irradiation on magnetic and electrical properties of $RFe_{1-x}Ni_xO_3$(R=Pr,Nd, Sm and Gd) thin films.**	**~ 2.5 lacs**	**2007-2011**	**Completed**
2.	**CSIR, New Delhi.**	**Studies of the Electrical &Magnetic Properties of Transition Metal Oxide (TMO) Systems.**	**~12.0 Lacs**	**2010-2013**	**Completed**

3.	**IUAC, New Delhi.**	**Synthesis, Characterization of Some Rare Earth Transition Metal Oxide Systems (RETMO) and Their Irradiation Study.**	**~5.91 Lacs**	**2012-2015**	**Completed**
4.	**UGC-DAE - Consortium for Scientific Research Indore.**	**Effect of Synchrotron Radiation on the Photoemission Spectroscopy (PES) Studies of Double Perovskite.**	**~ 7.80 lacs**	**2015-2021**	**Completed**
5.	**CSIR, New Delhi.**	**Structural, Magnetic, Optical and Dielectric Properties of Double Layer Perovskite Oxides.**	**~13.0 Lacs**	**2018-2021**	**Completed**

XVII. (a)NUMBER OF PH.D. GUIDED **[12]**

Sr. No.	Name of the Scholars.	Title of the Ph.D. Thesis	Year of Award of the Degree.
1.	**Mr. Feroz Ahmad Mir**	**Effect Swift Heavy Ion Irradiation on Electrical, Magnetic, and Optical Properties of $RFe_{1-x}Ni_xO_3$ Thin Films.**	**2011**
2.	**Mrs. Abida Bashir**	**Structural, Magnetic and Electrical Transport Studies of Transition Metal Oxide System.**	**2011**
3.	**Mr. Khalid Sultan**	**Synthesis, Characterization of Some Rare Earth Transition Metal Oxide Systems and Their Irradiation Study.**	**2015**
4.	**Mr. Sajad Ahmad Mir**	**Structural, Magnetic and Electrical Properties of som Rare Earth Based Ferrites and their Irradiation Stud**	**2016.**
5.	**Mrs. Mir Zubida Habib**	**Study of Structural, Dielectric and Magnetic Properties of Holmium Based Rare Earth Transition Metal Oxide Systems.**	**2016.**
6.	**Mr. Shah Aarif Ul Islam**	**Doping induced modification Studies of Rare Earth based Double Perovskite La_2NiMnO_6.**	**2020.**
7.	**Mr. Mushtaq Ahmad Magray.**	**Impact of Doping and Oxygen Vacancies on Structural, Magnetic and Electrical Transport Properties of Rare Earth Based Double Perovskite La_2CoMnO_6 System.**	**2021.**

8.	**Mr. Gowher Hameed Rather.**	**Probing the Electric, Magnetic and Magnetoelectric Properties in Multiferroic Composites of $BaTiO_3/CoFe_2O_4$.**	**2022.**
9.	**Mrs. Nazima Nazir**	**Investigation of Structural, Magnetic, and Transport behavior of Rare-Earth Based Double Perovskite, Gd_2NiMnO_6.**	**2022.**
10.	**Mr. Gulzar Ahmad Lone**	**Investigation of Structural, Dielectric and Magnetic Behavior of Transition Metal Doped Spinel Cobalt Ferrite $CoFe_2O_4$.**	**2024.**
11.	**Mr. Showkat Ahmad**	**Investigating the Electric, Magnetic, and Magnetoelectric Properties of 0-3 Particulate Multiferroic Composites Based on $BaTiO_3$ and $CoFe_2O_4$.**	**2025.**
12.	**Mr. Aaqib Rashid**	**Structure, Transport, Magnetic and Optical Properties of Transition Metal-doped Triple Perovskite.**	**2026.**

(b) : NUMBER OF PH.D. UNDER SUPERVISION [**07]**

Sr. No.	**Name of the Scholars.**	**Title of the Ph.D. Thesis**	**Year of Registration.**
1.	**Mr. Harish Khan**	**Effect of SHI irradiation on Triple Pervoskite Oxides.**	**2022.**
2.	**Ms. Shaistha Yousuf**	**Multiferroic materials.**	**2022.**
3.	**Ms. Muntha Majeed**	**Triple Pervoskite Oxides.**	**2022.**
4.	**Ms.Aasha Rani**	**Multiferroic materials.**	**2022.**
5.	**Ms. Ubaida Jan**	**Synthesis, characterization and application of functional multiferroic composites based on hexaferrites for Renewable Energy Harvesting.**	**2024.**
6.	**Mr. Hilal Ahmad Dar**	**Design and Development of Transition Metal Spinel Ferrite/rGO Hybrid Nanocomposites for Advanced Supercapacitors and Alkali-Ion Hybrid Energy Storage Systems.**	**2025.**
7.	**Mr Dawood Mubarak**	**Double Pervoskite Oxides.**	**2025.**

(c): NUMBER OF M.Sc. PROJECT SUPERVISED: **18.**

Sr. No.	**Name of the Students.**	**Dissertation Topics**	**Years.**

1.	**Mr. Manoj Kumar**	**Structural, Morphological and Optical Studies of Mn Doped Zn Ferrite Synthesized by Solid State Reaction Method.**	**2019.**
2.	**Miss. Neha**	**Development of a Flash-Lamp Pumped Passively Q-Switched Nd-YAG Laser.**	**2020.**
3.	**Mr. Reyaz Ahmad**	**Structural and Optical Studies of Gd doped Heterogeneous Double Perovskite Compound ($Ca_2GdNiMnO_6$) synthesized by Solid-State Reaction Method.**	**2021.**
4.	**Mr. Shakir Hussain Dar**	**Synthesis and Characterization of La doped Ca_2NiMnO_6 by Solid State Reaction Method.**	**2021.**
5.	**Mr. Aasim Rashid khanday**	**Studies of the structural morphological and optical properties of Gd doped $LiBaPO_4$.**	**2022.**
6.	**Mr. Aadil hassan**	**Tailoring the structural, Morphological and optical Properties of Nd doped $LiBaPO_4$.**	**2022.**
7.	**Mr.Adil Mehraj**	**Synthesis and Characterization of Mn^{+2} Doped $LiBaPO_4$.**	**2022.**
8.	**Mr. Asif Ahmad Mir**	**Photo Catalytic Degradation Of Methylene Blue Dye by Zinc Oxide, Synthesis by Auto-Combustion Method.**	**2023.**
9.	**Mr. Sujeet Kumar**	**Investigation on the Structural, Morphological and Magnetic Properties of $Ca_{1-x}Eu_xFe_{12-y}Ti_yO_{19}$ Hexaferrites System.**	**2023.**
10.	**Mr. Sanjeev**	**Influence of Gd and Ni doped on the Structural, Morphological and Magnetic Properties of Calcium Hexaferrites.**	**2023.**
11.	**Mr.Sajad Bhat**	**Synthesis and characterization of Nd doped $BaTiO_3$ by Solid State Reaction Method.**	**2024.**
12.	**Ms. Rifat Nazir**	**Synthesis, Characterization and Photocatalytic activity of $ZnAl_2O_4$ Spinal Aluminate.**	**2024.**
13.	**Ms. Seerat Afreen**	**Synthesis, Structural and Photocatalytic application of Cobalt based Spinel Aluminate**	**2024.**
14.	**Mr.Shah Majaz Nabi**	**Structural, Photocatalytic and Optical Properties of Zn doped $BaTiO_3$.**	**2024.**
15.	**Mr. Yasir Ahmad Sheikh**	**Investigate the Structural, Morpholigocal , Optical and Magnetic Properties of Nd Doped $LaMnO_3$ Pervcoskite.**	**2025.**
16.	**Mr Syed Ahraf**	**Synthesis, Characterization and Photocatalytic**	**2025.**

		activity of VO_2	
17.	**Mr. Musheer ul Haq**	**Insights into The Physical Properties of Co-doped $Ni_{1-X}Ba_XCr_{1-Y}Co_YO_3$ Perovskite.**	**2026**
18.	**Mr. Junaid Bashir**	**Investigate the Structural, Morphological, and Optical Properties of Dy Doped $LaMnO_3$ Perovskite.**	**2026**

XVIII. NUMBER OF M.PHIL. GUIDED [**04]**

Sr. No.	Name of the Scholars.	Title of the M.Phil. Thesis	Year of Award of the Degree.
1.	**Mr. Hilal Ahmad**	**ESR Spectroscopy [Studies of Lead Phosphate Vanadate Apatites $Pb_{10}(PO_4)_{6-x}(VO_4)_x(OH)_2$ (X≤ 6)].**	**2008**
2.	**Mr. Manzoor Ahmad**	**Studies of Hydroxy Apaptites Bioceramic Materials Phophate and Vanadate Lead Apatites[Pb_{10-x} Ca_x $VO_4)_{0.}$ $(PO_4)_5$ $(OH)_2$**	**2009**
3.	**Mr. Bashir Ahmad Malik**	**Growth, Characteristics of Some Transition Metal Doped $LiHSO_4$ Single Crystal.**	**2011**
4.	**Mr. Sartaj Ali**	**Sol-Gel Synthesis and Characterizations of Fe-Doped Titanium Dioxide (TiO_2) Nanoparticles (NPs).**	**2011**

XIX. NUMBER OF Ph.D. THESIS EXAMINED **[38]:**

Sr. No.	Name of the Candidates	Title of the Ph.D. Thesis	Institution	Year
1.	**Mr. Ikpal Singh.**	**Practical Limitations of Some Novel Circuits Using Operational Amplifier and Current Mode Device.**	**Department of Physics, HNB Garhwal University Srinagar (Garhwal) Uttrakhand.**	**2010**
2.	**Mr. Mukesh Kumar.**	**Study of the Structural and Electronic Properties of Some Organic-Inorganic Cd and Hg Based Hybrid Materials.**	**Department of Physics, Banasthali University, P.O. Banasthali Vidyapith- 304022 Rajasthan.**	**2013**
3.	**Mr. Md. Mahfoozul Haque.**	**Quantum Spin Model in Condensed Matter Physics and its Application to Some magnetic Materials.**	**Department of Physics, JMI, New Delhi.**	**2015**
4.	**Ms. Rashmi Yadav.**	**Computational Modeling and Simulation of III-V Semiconductors Based Lasing Nano Hetro Structures.**	**Department of Physics, Banasthali University, P.O. Banasthali Vidyapith- 304022 Rajasthan.**	**2015**

5.	**Ms.Meha Sharma.**	**Modeling and Simulation of III-V Semiconductors Based Lasing Hetro Structures**.	**Department of Physics ,Banasthali University, P.O. Banasthali Vidyapith- 304022 Rajasthan.**	**2015**
6.	**Mr. Ankush Kuma Bediyal.**	**Effect of Swift Heavy Ion Irradiation on Oxide Nanophosphors: Luminescence and Related Studies.**	**School of Physics, Faculty of Science, Shri Mata Devi University, Kakryal, Katra-182320.**	**2016**
7.	**Mr. Sanjay Kumar H. Sham kumar.**	**Synthesis, Characterization and Domain Studies of Doped $KNbO_3$ Single Crystals.**	**Department of Physics, Laxminarayan Institute of Technology Premises, Rashtrasant Tukadoji Maharaj Nagpur University, Amravati Road, Nagpur (MS) -440033.**	**2016**
8.	**Ms. Meha Sharma.**	**Modeling and Simulation of III-V Semiconductors Based Lasing Hetrostructure.**	**Department of Physics, Banasthali University, P.O. Banasthali Vidyapith- 304022 Rajasthan.**	**2016**
9.	**Mr. Harsh Kumar Nirmal.**	**Simulation and Analysis of Optical Resonance of Type-1 and Typre-11 Nano-scale Hetro Structures.**	**Department of Physics, Banasthali University, P.O. Banasthali Vidyapith- 304022 Rajasthan.**	**2017**
10.	**Ms Namrata Vijay Pardnyakar.**	**Effect of Dopants on Dielectric Optical and Domain Studies of Ferroelectric Ba5Ti2O7Cl4.**	**Department of Physics, Rashtrasant Tukadoji Maharaj,Nagpur University, Nagpur-440033.**	**2018**
11.	**Mr. Kuldeep Kumar.**	**Structural & Optical Relationship in [MX4]2-[R]2- based Inorganic-organic Hybrid Functional Materials.**	**Department of Physics, Banasthali University, P.O. Banasthali Vidyapith- 304022 Rajasthan.**	**2019**
12.	**Mr. Tahir Murtaja.**	**Synthesis, Characterization and Properties of Composite Multiferroics.**	**Department of Physics, JMI, New Delhi.**	**2019**
13.	**Ms. Sumara Khursheed.**	**Synthesis and Characterization of Rare Earth Ions Doped Phosphor-Polymer Nanocomposites: Luminescence and Related Studies"**	**School of Physics, Faculty of Science, Shri Mata Devi University, Kakryal, Katra-182320.**	**2019**

14.	**Ms. Mayuri Sharma.**	**Understanding the Origin of Ferromagnetism in TM doped Oxide based Nanostructures and Thin Films**	**Department of Physics, Banasthali University, P.O. Banasthali Vidyapith- 304022 Rajasthan.**	**2020**
15.	**Mr. T.M. Pradeep.**	**Studies on the Effect of High Energy Radiation on NPN Silicon Transistors and Silicon Solar cells.**	**Department of Electronics, University of Mysore.**	**2020**
16.	**Mrs. H.M. Gayitri.**	**Investigation on Opto-Electrical, Thermal and Morphological Behaviors of Nanostructured Filler Embedded Polymer Nanocomposites.**	**Department of Electronics, University of Mysore.**	**2020**
17.	**Mr. Khursheed Ahmad Parrey.**	**Study of Perovskite Semiconductor Materials for Photo-Energy Conversion.**	**Department of Physics, JMI, New Delhi.**	**2020**
18.	**Ms. Suman.**	**Synthesis & Characterization of ZnO/Polymer Nano Composites.**	**Department of Physics, Faculty of Science, Punjab University, Chandigarh- 160014.**	**2021**
19.	**Md. Riyaj.**	**Computational Analysis of Optical Responses of Type-I And Type-II Nano-Scale Heterostructures for Optoelectronic Applications.**	**Department of Electronics and Communication Engineering, of the Manipal University Jaipur, Jaipur.**	**2021**
20.	**Ms. A. Jenifer.**	**Synthesis and Characterization of Nanocomposites of Hydroxyapatite With Metal Complexes.**	**Department of Physics, Bharathidasan University, Tamil Nadu.**	**2021**
21.	**Mr. K. Karthikeyan.**	**Synthesis of Some Aromatic Compounds and Metal Oxide Nano Particles: Characterization and DFT Study.**	**Department of Physics, Bharathidasan University, Tamil Nadu.**	**2021**
22.	**M. Sankar.**	**Characteristic Study on Multi Metal Doped Cadmium Sulfide Nanoparticles for Photocatalytic Applications.**	**Department of Physics, Bharathidasan University, Tamil Nadu.**	**2021**
23.	**Ms. Nahida Hassan.**	**Magnetic, Dielectric and Magneto Dielectric Properties of Ferroelectric Ferrimagnetic Based Multiferroics.**	**P.G. Department of Physics, University of Kashmir, Srinagar-190006.**	**2022**
24.	***Ms*. Minakshi.**	**Development of Low Band Gap Polymer Based Composites for Optoelectronics Applications.**	**Department of Physics, Banasthali University, P.O. Banasthali Vidyapith- 304022 Rajasthan.**	**2022**

25.	***Mr.* Jayprakash Vijay**.	**Structural and Optical Gain Analysis of nanoscale Heterostructures using compound Semiconductors.**	**Department of Electronics and Communication Engineering, of the Manipal University Jaipur.**	**2022**
26.	**Mr. S. Kumaravelan**	**Structural, Optical and Morphological Analysis of Ions (Al, Co and Zn) Doped SnO_2 Thin Films for Photocatalytic Application.**	**Department of Physics, Bharathidasan University, Tamil Nadu.**	**2023**
27.	**Ms. Kiran Rathi**	**Theoretical Analysis of Quantum Dots Based Photodetectors.**	**Department of Physics, Banasthali University, P.O. Banasthali Vidyapith- 304022 Rajasthan.**	**2023**
28.	Mr. **Ishfaq Ahmad Parray.**	**Rare Earth/Metal Doped Magnesium Ferrite for theApplication of Hydroelectric Cell.**	**Department of Applied Physics, AMU Aligrah**	**2023**
29.	**Ms. Debashrita Mahana**	**Synthesis and Characterization of Cu0 Thin Films for Gas and Photo Sensing Applications.**	**CSIR-National Physical Laboratory New Delhi-110012, India.**	**2023**
30.	**Mr. S. KUMARAVELAN**	**Structural, Optical and Morphological Analysis of Pure and Metal Ions (Al, Co and Zn) Doped SnO_2 Thin Films for Photocatalytic Application.**	**BHARATHIDASAN UNIVERSITY, PALKALAIPERUR, TIRUCHIRAPPALLI-62 0 024, TAMIL NADU.**	**2023**
31.	**Ms. G. Karapakalyanai**	**Vibrational Spectroscopic Studies and Density Functional Theory Calculations of Some Compounds Having Biological Importance.**	**Manonmaniam Sundaranar University Tirunelvel, TAMIL NADU.**	**2024**
32.	**Ms. Vimala Dhayal.**	**Novel Biopolymer/Go Nanocomposites : Preparation and Characterizations**	**Department of Physics, Banasthali University, P.O. Banasthali Vidyapith- 304022 Rajasthan.**	**2024**
33.	**Mr. R. V. KABILAN**	**Combined Theoretical and Experimental Investigation On P-Nitrophenol Derivatives for OLED Applications.**	**BHARATHIDASAN UNIVERSITY, PALKALAIPERUR, TIRUCHIRAPPALLI-62 0 024, TAMIL NADU.**	**2024**
34.	**Ms. V.S. KUNJUMOL**	**Spectroscopic, Computational, Docking and Cytotoxicity Investigations on Selected Benzimidazole Derivatives as Anti-Breast Cancer Agents.**	**Kalasalingam Academy of Research and Education Krishnankoil - 626 126,**	**2025**

			Tamilnadu.	
35.	**Ms. Neha Lalotra**	**sis and Characterization of Some Inorganic ophosphors Containing a Tetrahedrally Coordinated Functional Group**	**School of Physics, Faculty of Science, Shri Mata Devi University, Kakryal, Katra-182320.**	**2025**
36	**Mr. Sajad Ahmad Bhat**	**Rare-Earth Activated Orthovanadate Phosphors: Structural and uminescence Studies with Comparative Insights into Bi^{3+} Co-Doping**	**School of Physics, Faculty of Science, Shri Mata Devi University, Kakryal, Katra-182320.**	**2026**
37	**Mr. Ram Sundar Maurya**	**velopment of Perovskite Oxide for Energy Harvesting Application**	Department of Physics, Banasthali University, P.O. Banasthali Vidyapith- 304022 Rajasthan.	2026
38.	**Mr. Abhishek Kumar Sahu**	**Electrochemical Study of Undoped and Transition Metal Ion-doped Barium Hydroxide Electrode for Supercapacitor Applications**	Department of Physics, MN National Institute of Technology, Allahabad	2026

XX. NUMBER OF INVIITED TALKS **[06]:**

S.No.	**Title**	**Name of the event/ organizer/Institute.**	**Name of the Institute/University/year**	**Whether international (Outside Country)/International (Within Country)/National/State/ University.**
1.	**Invited lecture on Investigation of Transition Metal Oxide.**	**One day Seminar On "Process Metallurgy and Materials".**	**Department of Metallurgy and Materials Engineering, NIT Srinagar on 14th Nov., 2014.**	**National**
3.	**Invited lecture on Synthesis Characterization of Single and double Layer Pervoskite Structure.**	**One day Seminar On "New Horizons of Engineering Materials".**	**Department of Metallurgy and Materials Engineering, NIT Srinagar on 12th November 2015.**	**National**
3.	**Invited lecture on Study of Doping Incorporated Physical Modifications in Complex Perovskite Oxides Systems.**	**Invited lecture on the three days FDP on "Recent Trends on Energy Materials and Allied Areas".**	**Department of Physics. August 26-28, 2020 at CMRIT, Bangalore.**	**National**

4.	**Invited lecture on Study of Doping Incorporated Physical Modifications in Complex Perovskite Oxides Systems.**	**Two days National Webinar On "Advances in Physical and Mathematical sciences".**	**Department of Physics and Mathematics, Government Degree College for Women Anantnag J & K. 10th and 11th September, 2020.**	**National**
5.	**Invited speaker on Spinal Aluminates, Multiferroics, and Perovskite Oxides: Applications and Impact in Material Science.**	**Three days International Symposium on Semiconductor Materials and Devices (ISSMD-2024).**	**Department of Physics, University of Kashmir, Srinagar during 4 -6 Sep. 2024.**	**International**
6.	**Multiferroic Materials: Mechanisms, and an emerging field for Energy Storage Application.**	**MMTTC, DAVV, Indore Refresher Course in Chemistry**	**Devi Ahilya University, Indore 22-July-2025 to 04-Aug-2025.**	**State University**

XX-I. **REVIEWER OF THE JOURNALS:**

1. Arabian Journal for Science and Engineering.
2. Ceramics International Journal.
3. Nano.
4. International Journal of Ceramic Engineering and Science.
5. Journal of Thermal Analysis and Calorimetry.
6. Journal of Physics and Chemistry of Solids.
7. Polymer Testing.
8. Inorganic Chemistry Communications.
9. Chemistry Select.
10. Journal of Materials & Design.

XXII.**NO. OF POST DOCTORAL STUDENTS**:

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2. Dr. Fida Mohad.
3. Dr. Suhail Ahmad.

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(MOHD. IKRAM)

List of Research Publications in International Journals

1. **M. Ikram**, A. Punnoose, B.P. Maurya, R.J. Singh, "An Investigation of the Magnetic Dilution Effect in CaO- CuO and SrO-CuO System", Modern Physics Letters B, **8,** 27, 1709-1717 (1994) [**I.F. = 1.90].**

2. B.P. Maurya, A. Punnoose, **M. Ikram**,R.J. Singh. "EPR Study of Mn^{+2} ion Doped in PotassiumOxalate Monoperhydrate Single Crystal", Polyhedron, **14,** 17-18, 2561-2567(1995) **[I.F. = 2.60].**

3. R. J. Singh, **M. Ikram**, A. Punnoose, B.P. Maurya , S. Khan, "Copper Tetramers in High-Temperature Superconductors", Physics Letters A, **208**, 369,(1995) [**I.F.= 2.654].**

4. B.P. Maurya , **M. Ikram,** S. Khan, R.J. Singh, "S = ½, S =1 and S = 2 EPR Spectra in Copper Doped $KHSO_4$ Single Crystal" Solid State Communications, **98,** 9, 843(1996) **[I.F.= 2.10].**

5. S. Khan, **M. Ikram**, A. Singh, R.J. Singh, "EPR Study of Deoxygenated La_2CuO_4", Physica C-Superconductivity and its Applications, **281,** 143(1997) **[I.F. = 1.70].**

6. **M. Ikram** and R.J. Singh, "EPR of Cu^{+2} Spins in $Y_2Cu_2O_5$ "Indian Journal of Pure & Applied Physics" **37,** 622(1999) [**I.F. = 0.70].**

7. **M. Ikram**, and R.J. Singh "Copper Tetramers in $CaCuO_2$: An EPR Study", Modern Physics Letters B, **13**, 8, 239(1999) [**I.F. = 1.90].**

8. **M. Ikram**, and R.J. Singh, "EPR Study of Deoxygenated $Y_{1-x}Pr_xBa_2Cu_3O_7$ (X = 0.0, 0.08, 0.20, 0.50, 1.00)", Modern Physics Letters B, **16,** 10, 433 (2002) **[I.F.= 1.668].**

9. **M. Ikram**, and R.J. Singh, "EPR of $Cu^{+2,}$ Mn^{+2}, VO^{+2} Doped in $LiHSO_4$, Modern Physics Letters B, **17**, 19, 1067 2003) [**I.F. = 1.668].**

10. R.Kumar, R.J. Choudhry, **M.Ikram**, D.K.Shukla, S. Mollah, P.Thakur, B.Angadi & W.K. Choi." Structural, Electrical, Magnetic and Electronic Structure Studies of $PrFe_{1-x}Ni_xO_3$ ($x \leq 0.5$): Journal of Applied Physics, **102**, 073707, (2007) **[I.F.= 3.20].**

11. **M. Ikram,** H.Ahmed Pietro Mendes,F.A..Mir, Abida A. Paula,A.M. Rossi and J.G. Eon "Reduction by Hydrogen of Vanadium in Phosphate and Vanadate lead Apatites:An ESR Study" Modern Physics Letters B, **21**, 22, 1489 (2007) **[I.F.= 1.668].**

12. **M. Ikram** , R.Ambardar **,** A.M. Rossi and J.G. Eon "Electron Paramagnetic Resonance Studies of $(VO_4)^{+2}$ Ions Doped in Reduced $Pb_{10-x}Ca_x(VO_4)_1(PO_4)_5(OH)_2$ Apatites [x= 0.0, 2.0, 4.0, 6.0 8.0 & 10.0, International Journal of Modern Physics B, **23**, 3369 (2009) **[I.F.= 1.70].**

13. Abida, **M Ikram,** Ravi Kumar, P Thakur, K H Chae, W K Choi and V R Reddy, "Structural, Magnetic and Electronic Structure Studies of $NdFe_{1-X}Ni_XO_3$ ($0 \leq x \leq 0.3$)", Journal of Physics-Condensed Matter, 21, 325501 (2009) **[I.F.=** 2.745**].**

14. Abida , **M.Ikram**, Ravi Kumar "Mössbauer and Magnetic Studies of $PrFe_{1-X}Ni_XO_3$

(x≤0.3)" Journal of Magnetism and Magnetic Materials, ***322***,*2581-2584 (2010)* **[I.F.=** 3.097**].**

15. Abida, **M.Ikram**, Ravi Kumar,P.N. Lisboa-Filho and P. Thakur "Structural, Electronic Structure and Magnetic Studies of $SmFe_{1-x}Ni_xO_3$ (x≤0.5), Material Science and Engineering B, **172,** 242-247 (2010) **[I.F. =3.60].**

16. Abida, **M.Ikram**, Ravi Kumar " Structural, Transport, Magnetic and Electronic Structure Studies of $NdFe_{1-x}Ni_xO_3$ (x≤0.5)" *Modern Physics Letts B* **25**, 2439–2450(2011) **[I.F.= 2.20].**

17. Feroz Ahmad Mir, **M.Ikram**, R.J. Choudhary, and Ravi Kumar "Doping Effects Arising From Ni for Fe in PrFeO3 Ceramic Thin Films", Philosophical Magazine**, 92,** 1058-1070*(2012)* **[I.F.= 1.864].**

18.Feroz Ahmad Mir, **M.Ikram**, , and Ravi Kumar **"**Impact Of Substrate on Some Physical Properties of $Prfe_{0.5}Ni_{0.5}O_3$ Thin Films" **,**Solid State Sciences, **13,** 1994-1999(2011) **[I.F.= 3.059].**

19. Feroz Ahmad Mir, **M.Ikram**, and Ravi Kumar "Symmetry Breaking In Ni-Doped $PrfeO_3$ Thin Films Established by Raman Study", Phase Transition, **84,**167-178(2011) **[I.F.= 1.40].**

20. Feroz Ahmad Mir, **M.Ikram**, and Ravi Kumar "Local Symmetry Breaking in PrFeO3 Thin Films and Other Similar Systems after Ni Doping: A Brief Raman Study", Vibrational Spectroscopy, **55,** 307–310(2011) **[I.F.=**2.506**].**

21. Feroz Ahmad Mir, **M.Ikram**, and Ravi Kumar "Temperature Dependant Raman Study of $PrFeO_3$ Thin Film**",** Journal of Raman Spectroscopy, ***42***, 201–208(2011**) [I.F.=3.133].**

22. Abida Bashir, **M.Ikram,** Ravi Kumar " Studies of Transport Properties of $RFe_{1-X}Ni_XO_3$ (x ≤ 0.5) where R=Nd, Sm and Gd" Modern Physics Letters B **25**, 1787-1794(2011) **[I.F.= 1.668].**

23. Feroz Ahmad Mir**, M.Ikram**, and Ravi Kumar "Fractal Analysis of $Prfe1_{-x}Ni_xO_3$(0≤X≤0.3)Pervoskite Samples by Using Micrographs" Journal of Optoelectronics and Biomedical Materials, **2,** 161 – 165 (2010) [**I.F.= Nil].**

24. Abida Bashir, **M.Ikram**, Ravi Kumar,P.N. Lisboa-Filho "Structural, Electronic Structure and Magnetic Studies of $Gdfe_{1-X}Ni_xO_3$ (X ≤ 0.5), Journal of Alloys and Compounds, **521,** 183-188 (2012) **[I.F.= 5.316].**

25. Feroz Ahmad Mir, **M.Ikram**, and Ravi Kumar "Amorphization & Disorder of $PrFeO_3$ Thin Films after Heavy Ion Irradiation", Applied Radiation and Isotopes, **70,** 2409–2415(2012) **[I.F.= 1.513].**

26. M. I. Zaki, A. Katrib and A. I. Muftah, T. C. Jagadale[3]**,** **M. Ikram** and S. B. Ogale" Exploring Anatase-TiO_2 Doped Dilutely With Transition Metal Ions as Nano-Catalyst for H_2O_2 Decomposition: Spectroscopic & Kinetic Studies" Applied Catalysis A: General, **452,** 214-221 (2013) **[I.F= 4.8].**

27. Khalid Sultan, **M. Ikram** and K.Asokan "Structural, Optical and Dielectric Study of Mn Doped $PrFeO_3$ Ceramics" ,Vacuum, **99** 251-258 (2014) **[I.F.=** 3.627**].**

28. Sajad A. Mir, **M. Ikram, and** K.Asokan "Ni doping effects on morphological, electric

and dielectric behavior of $SmFe_{1-x}Ni_xO_3$ ((0≤x ≤0.5)" International Journal of Applied Engineering Research, **8**, 1975-1982 (2013) **[I.F. =1.30].**

29. Khalid Sultan, **M. Ikram** and K.Asokan "Structural, electrical and Magnetic Study of $La_{0.5}Ca_{0.5}MnO_3$ Ceramics, Elixir Magnetic Materials, **61**,16757-16760 (2013) **[I.F. = NIL].**

30. K. Pramoda, Kota Moses , **M. Ikram**, K. Vasu , A. Govindaraj and C. N. R. Rao "Synthesis, Characterization and Properties of Single- Walled Carbon Nanohorns" Journal of Cluster Science, **25**,173-188(2014) **[I.F.=3.061].**

31. Zubida Habib **M. Ikram** , Kowsar Majid , and K.Asokan " Structural, Dielectric and ac Conductivity Properties of Ni-doped HoFe O_3 before and after irradiation " ,Applied Physics A, **116**, 1327–1335 (2014) **[I.F= 2.584].**

32. Khalid Sultan, Zubida Habib , Asima Jan , Sajad Ahmad Mir, **M. Ikram** and K.Asokan "Temperature Dependent Raman Spectroscopy of $La_{1-x}Ca_xMnO_3$ (x = 0.0, and 0.3)", Advanced Materials Letters, **5(1),** 9-13(2014) **[I.F.=0.203].**

33. S. R. Lingampalli, Anand Roy, **M. Ikram** and C. N. R. Rao "Visible-light Induced Hydrogen Generation with ZnO/NiO/Cd1-xZnxS (x=0.0, 0.2) Heterostructures" Chemical Physics Letters, **610–611**, 316–320 (2014) **[I.F.= 2.328].**

34. Sajad Ahmad Mir**, M.Ikram** and K.Asokan "Structural, Optical and Dielectric Properties of Ni substituted $NdFeO_3$" , OPTIK , **125**, 6903-6908 (2014) **[I.F.= 2.443].**

35. Zubida Habib**,** Kowsar Majid, **M. Ikram** and K.Asokan" Structural Analysis and Dielectric Properties of $HoFe_{1-x}Ni_xO_3$¬ (0.0≤x≤0.5), Journal of Electronic Materials, Vol. 44, No. 4, 1044-1053 (2015**) [I.F.= 1.938].**

36. Khalid Sultan, **M. Ikram** ,Sanjev Gatum,Han-Koo Lee, Keun Hwa Chae and K.Asokan "Structural, Magnetic and Electronic Structure Studies of $PrFe_{1-x}Mn_xO_3$ (x=0.0, 0.1, 0.3, 0.5) Thin Films Grown on Si (100)" Journal of Alloy and Compound **628** 151–157 (2015) **[I.F. = 6.20].**

37. Khalid Sultan and **M. Ikram** "An investigation of Electrical, Magnetic and Optical, Properties of $La_{1-x}Ca_xMnO_3$ (x= 0.0, 0.3, 0.5 and 0.7) system", Advanced Materials Letters, 6**(7),** (2015) 749-755 **[I.F.=0.203].**

38. Khalid Sultan and **M. Ikram** Sanjeev Gautam , Han-Koo Lee, Keun Hwa Chae and K. Asokan "Electrical and magnetic properties of the pulsed laser deposited Ca doped LaMnO3 thin films Si(100) and their electronic structures" RSC Adv., **5**, 69075-69085 (2015) **[I.F.= 3.361].**

39. Khalid Sultan, **M. Ikram** and K.Asokan "Effect of Mn doping on Structural, Morphological and Dielectric properties of $EuFeO_3$ Ceramics" RSC Adv., **5**, 93867-93876 (2015) **[I.F.= 3.361].**

40. Sajad A. Mir, **M. Ikram** and K.Asokan "Investigating spin reversal and other anomalies in magnetic, transport and specific heat measurements of NdFeO3 and NdFe0.5Ni0.5O3 ortho-perovskites RSC Adv., **5,** 85082-85094 (2015) **[I.F.= 3.361].**

41**.** Zubida Habib, **Mohd. Ikram** Kowser Majid; K Asokan "Effect of 200 MeV Ag^{12+} ion irradiations on

structural, morphological and magnetic properties of $HoFe_{1-x}Ni_xO_3$ (x = 0.0, 0.1, 0.3 and 0.5) thin films grown on Si (100) substrates" Journal of Materials Science: Materials in Electronics, **27**, 3583-3590 (2016)**[I.F.= 2.478].**

42. Zubida Habib, **M. Ikram** Kowsar Majid, Khalid Sultan, Sajad A.Mir , and K.Asokan "Influence of B-site Ni Substitution for Fe^{3+} Ion on Morphological, Optical and Magnetic Properties of $HoFeO_3$ Ceramics" Applied Physics A,**122**, 550 (2016) **[I.F.=1.584].**

43. Sajad A. Mir, **M. Ikram,** Khalid Sultan, Z. Habib , H. Kauser and K.Asokan " Correlative exploration of Structural, Optical and electronic properties of colossal Dielectric Ni doped Sm orthoferrites", Advanced Materials Letters. **6(12),** 1081-1097 (2015) **[I.F. =0.203].**

44. Khalid Sultan , **M. Ikram** , Sajad A. Mir, Zubida Habib, Shah Aarif ul Islam, Yasir Ali and K.Asokan " Ion-beam-induced ferromagnetism in Mn-doped PrFeO3 thin films grown on Si (100)" Applied Physics A, **44,**122 (2016**) [I.F.= 1.584].**

45. Abida , Shakeel A Khanday, Samina Akhter**, and M.Ikram,** "Comparative Studies of X-Ray Absorption Studies of Ni Doped $GdFe_{1-x}Ni_xO_3$ ($x \leq 0.5$) and SmFe1-xNixO3 ($x \leq 0.5$)" International Journal for Innovative Research in Science & Technology, **5(03)**, 2349-6010 (2016) **[I.F =4.4].**

46. Zubida Habib, **M. Ikram,** Khalid Sultan, Abida, , Sajad A. Mir , Kowsar Majid and K.Asokan "Electronic excitation-induced structural, optical, and magnetic properties of Ni-doped $HoFeO_3$ thin films" Applied Physics A, **123**, 442 (2017**) [I.F.= 2.584].**

47. Zubida Habib, Bilal Hamid Bhat , Pawan Kumar and **M. Ikram "**Effect of Doping on Structural and Dielectric Properties of Barium Hexaferrit**e"** Science and Engineering Applications **2(3)** 152-155(2017) **[I.F.=2.10].**

48. Khalid Sultan, Shah Aarif Ul Islam, Zubida Habib **M. Ikram** and K.Asokan "Ion Beam Induced Ferromagnetism in Ca doped $LaMnO_3$Tthin Films Grown on Si (100)" Radiation Effects and Defects in Solids **173** (3-4), 184-197 (2018) **[I.F.= 1.141].**

49. Sheeraz Ahmad Bhata, Shah Aarif Ul Islama, Mohd Faizanb, **Mohd Ikram** "Synthesis and Luminescent characteristics of Eu^{3+} doped $LiZnPO_4$ phosphors for white LEDs" Optik – International Journal for Light and Electron Optics **181** 836–841 (2019) **[I.F.= 2.443].**

50. Shah Aarif Ul Islam & **Mohd Ikram "**Structural Stability Improvement, Williamson Hall Analysis and Band Gap Tailoring Through A-Site Sr Doping in Rare Earth Based Double Perovskite La_2NiMnO_6", J. Rare Metals, **38(9):**805–813 (2019) [**I.F. = 9.60].**

51. Mushtaq Ahmad Margay & **M. Ikram**, "Dielectric and Raman spectroscopy study of structural phase transformation of Sr-doped La_2CoMnO_6 double perovskite" Journal of Materials Science: Materials in Electronics, **30**:8655–8666 (2019) **[I.F =2.478].**

52. Mushtaq Ahmad Margay & M**. Ikram**, "Effect of Oxygen Concentration on the Ferromagnetic Transition of $La_{1.9}Sr_{0.1}CoMnO_6$ Thin Film" J. of Applied Physics A (2019) **125**:267- (2019) **[I.F=2.584].**

53. Shah Aarif Ul Islam and **Mohd. Ikram** "Effect of Strontium Substitution on the Structural,

Morphological and Magnetic Properties of $La_{2-x}Sr_xNiMNO_6$ Double Perovskite Thin films Deposited on Si(100)" Materials Research Express **6** 096416 (2019) **[I.F = 1.620].**

54. Khalid Sultan, Rubiya Samad, Shah Aarif Ul Islam, Mir Zubaida Habib, and **M. Ikram** **"**Effect of Rare Earth Ions (R = Pr, Eu and Ho) on the Structural and Electrical Properties of Orthoferrites" Journal of Electronic Materials, **48**, No. 9, 6003-6007(2019) **[I.F =1.938].**

55. Boda, Muzaffar, **Mohd. Ikram**; Rubab Seemin "Dynamics of Photo-Induced Charge Carriers in Anodized Titania Nanotube Array" Materials Research Express **6,** 104002 (2019) **[I.F =** 1.620**].**

56. Shah Aarif Ul Islam, Khalid Sultan, Sheeraz Ahmad Bhat, Nazima Nazir and **Mohd. Ikram** "Structural, morphological and cryogenic magnetic behavior of double perovskite $La_{1.9}Sr_{0.1}NiMnO_{6-\delta}$ thin film", SN Applied Sciences **2**:728 (2020)**[I.F = Nil**].

57. Shah Aarif Ul Islam, Farooq Ahmad Andrabi, Fida Mohd, Khalid Sultan, **M. Ikram** and K.Asokan "Ba Doping Induced Modifications In the Structural, Morphological and Dielectric Properties of Double Perovskite La_2NiMnO_6 Ceramics" Journal of Solid State Chemistry, **290** 121597 (2020) **[I.F= 3.30].**

58. Gowher Hameed Rather and **Mohd. Ikram** **"**Magnetoelectric Coupling in Terbium Doped Particulate Multiferroic Composites Based on $BaTiO_3$–$CoFe_2O4$" Physica B- Condensed Matter, **599,** 412577 (2020) **[I.F. = 2.80].**

59**.** Nazima Nazir & **Mohd Ikram** "Structural, Dielectric and Conductivity Studies of Strontium Doped Gd_2NiMnO_6 Perovskite" Journal of Materials Science- Materials in Electronics, **31** 23002–23011(2020) **[I.F. =2.478].**

60**.** Gowher Hameed Rather & **Mohd. Ikram** "Enhancement of Magnetoelectric Effect in Multiferroic Composites of Dysprosium and Zinc Doped $BaTiO_3$ – $CoFe_2O_4$" Journal of Materials Science- Materials in Electronics, **32,**551–566 (2021) **[I.F. =2.90].**

61. Mushtaq Ahmad Margay**, M. Ikram & M.** Nijama **"**Impact of Oxygen Vacancies to Control the Magnetic and Electronic Properties of the La_2CoMnO_6 System" Journal of Magnetism and Magnetic Materials **529,** 167857 (2021) **[I.F. =**3.097**].**

62. Khalid Sultan, Rubiya Samad, Feroz A Nazar, Shohaib Abbas, Saima Jahan, M. R. Rayher and **M. Ikram** **"**Structural, Optical and Dialectical Properties of Sr Doped $LaVO_4$", Advanced Materials Letters, **12(6),** 21061640 (2021) **[I.F. =0.203].**

63. Gowher Hameed Rather, Mehra ud Din Rather, Nazima Nazir, Afreen Ikram, **Mohd. Ikram** & Basharat Want "Particulate Multiferroic $Ba_{0.99}Tb_{0.02}Ti_{0.99}O_3 - CoFe_{1.8}Mn_{0.2}O_4$ Composites: Improved Dielectric, Ferroelectric and Magneto-dielectric Properties", Journal of Alloys and Compounds**, 887,** 161446 (2021)**[I.F. =6.30].**

64. Nazima Nazir and **Mohd. Ikram** "Tuning of the Structural, Morphological, Dielectric, and Magnetoresistance Properties of Gd_2NiMnO_6 Double Perovskite by Ca doping", Physica B-Condensed Matter, **632,** 413734 (2022) **[I.F. = 2.80].**

65. Gulzar Ahmad lone and **Mohd. Ikram** "Investigating the Structural and Dielectric Properties of $CoFe_{2-x}Ni_xO_4$ Spinel Ferrite" Journal of Alloys and Compounds, **908,** 164589(2022) [**I.F. = 6.30].**

66. Gulzar Ahmad lone and **Mohd. Ikram** "Effect of Sintering Temperature On Structural, Dielectric and Magneticproperties of $CoFe_{1.5}Ni_{0.5}O_4$ Prepared by Solid-State Reaction Method" Applied Physics A **128**:1013 , (2022) [**I.F.= 2.70].**

67. Gulzar Ahmad lone and **Mohd. Ikram** "Role of Ni doping in magnetic dilution of Fe sublattice and in tailoring optical properties of $CoFe_2O_4$", Journal of Alloys and Compounds, **934**,167891 (2023) [**I.F. = 6.30].**

68. Nazima Nazir, Afreen Ikram and **Mohd. Ikram** "Impact of a non-magnetic Sr^{2+} ion Doping on the Magnetic and Optical Properties of $Gd_{2-x}Sr_xNiMnO_6$ (x = 0,0.3,0.5) Double Perovskite", Journal of Magnetism and Magnetic Materials, **571**,170549 (2023) **[I.F. =2.993].**

69. Sujeet Kumar , Showket Ahmad Bhat , Sanjeev Chaurasiya , Gulzar Ahamed Lone , Aaqib Rashid , Pankaj Kumar Sharma and **Mohd Ikram** "Investigation on the structural, morphological and magnetic properties of $Ca_{1-x}Eu_xFe_{12-y}Ti_yO_{19}$ hexaferrite system" Solid State Sciences, **145,** 107337(2023) **[I.F. =3.5].**

70. Shohaib Abass, Fauqia Bilal, Khalid Sultan, Mudasir Rashid Rather, and **Mohd Ikram** "Understanding the Impact of Ca Doping on Structural, Morphological and Low Temperature Transport Properties of Nd_2NiMnO_6" Ceramics International, **50** ,10216–10224(2024), **[I.F. =5.4].**

71. Showket Ahmad Bhat and **Mohd Ikram** "Probing of Structural, Electrical, and Dielectric Properties of Samarium Doped Composite of Barium Titanate ($Ba_{0.5}Sm_{0.5}TiO_3$) and Cobalt Ferrite ($Co_{0.5}Sm_{0.5}Fe_2O_4$) J. Phys.: Condens. Matter **36,** 145401(2024), **[I.F. =2.745].**

72. Showket Ahmad Bhat and **Mohd Ikram** "Exploring the Magnetic, Electric and Magnetodielectric Properties $(1-x)Ba_{0.9}Ni_{0.1}Ti_{0.9}Mn_{0.1}O_{3-x}Co_{0.9}Mn_{0.1}Fe_{1.9}V_{0.1}O_4$" Multiferroic Composites, *New J. Chem.*, **48**, 951–970 (2024) **[I.F.=3.3].**

73. Gulzar Ahmad Lone , Nazima Nazir , Mohammad Balal , and **Mohd Ikram** "Thin Film Deposition of Undoped and Ni-doped Cobalt Ferrite on MgO (110) Substrates Using Pulsed Laser Deposition Technique" Thin Solid Films **791,** 140243(2024), **[I.F.=2.10]**.

74. Aaqib Rashid and **Mohd Ikram** " Exploring the structural, morphological, optical and magnetic properties of pure and Ni-doped Triple Perovskite La2SrFe2TiO9 for magneto-opto electronic applications" Ceramics International, 50, Issue 9, Part B, 16215-16227(2024) **[I.F. =5.4].**

75. Sanjeev Chaurasiya, Sujeet Kumar, Gulzar Ahmad Lone, Ashish Kumar, Kirti Sankhala, Nazima Nazir, Aaqib Rashid, Showket Ahmad Bhat and **Mohd Ikram** "Influence of Gd and Ni Doping on the Structural, Morphological, and Magnetic Properties of M-Type Calcium Hexaferrite" New J. Chem., **48**, 5144-5159 (2024) **[I.F.=3.3].**

76. Shah Faisal,Sofi Suhail Majid, Abdul Ahad,Feroz Ahmad Sofi, Samanway Mohanta, Mukul Gupta, Pabitra Sahu,Wen-Pin Hsieh,Himanshu Srivastava, **Mohd. Ikram** and Dinesh Kumar Shukla, "Photocatalytic Activity of $BaAl_2O_4$ for Water Purification" *Langmuir*, **40**, 16, 8418–8426 (2024) **[I.F.=3.9].**

77. Aaqib Rashid and **Mohd Ikram** "Optical Characterization of $La_2SrFe_2TiO_9$ Triple Perovskite: Insights for Advanced Optoelectronic and Solar Cell Applications" Optik, **308**, August 2024, 171843 [I.F.=3.1].

78. Showket Ahmad Bhat, Ab Mateen Tantray , Junaid Ul Ahsan and **Mohd Ikram** "Exploring the supercapacitive potential of Sm^{3+} doped $CoFe_2O_4$ nanoparticles: Enhanced Magnetic and Dielectric Properties" Ceramics International**,** ***50,*** 14, 26220-26233(2024)[I.F. =5.4].

79. Showket Ahmad Bhat and **Mohd Ikram** "Synergistic magnetoelectric enhancement in 0–3 particulate multiferroic composites: unveiling the exceptional interplay of $Ba_{0.85}Sm_{0.15}TiO_3$ and $Co_{0.85}Sm_{0.15}Fe_2O_4$ phases for superior energy conversion", RSC Adv **14**, 15915-15928 (2024) **[I.F. =3.90]**.

80. Showket Ahmad Bhat , Malik Aalim Mushtaq , Aaqib Rashid , Muntha Majeed , Asha Rani , Yasmeen Gul, Shaista Yousuf, Aasim Rashid Khanday and **Mohd Ikram** "Investigating the potential of Nd and Co modified bismuth ferrite ($BiFeO_3$) nanoparticles for advanced energy storage and electronic applications" Ceramics International **50 (**21), 44347-44361(2024) **[I.F. =5.4].**

81. Aasim Rashid Khanday , Showket Ahmad Bhat , Faheem Ahmad Dar and **Mohd. Ikram,** "Investigating the Potential of Gd^{3+} doped $LiBPO_4$ Phosphors in Improving White Lighting Applications: Synthesis, Characterization, and Analysis of Their Optical Properties", Mat Sci Express., Vol. 1, No. 2, **105**,105-115(2024) **[I.F. = 0.7].**

82. Showket Ahmad Bhat , Aaqib Rashid , Muntha Majeed , Ab Mateen Tantray , Asha Rani , Shaista Yousuf and **Mohd Ikram** "Enhanced magnetic, ferroelectric, and photocatalytic properties of Nd and Co doped bismuth ferrite ($Bi_{1-x}Nd_xFe_{1-y}Co_yO_3$) ceramics", Inorganic Chemistry Communications **170** 113148 (2024) [I.F. =4.4].

83. Muntha Majeed and **M. Ikram** "Comprehensive Investigation of Ti-Doped $Sr_3CoSb_2O_9$ Triple

Perovskite: Structural, Morphological, Optical, and Dielectric Characteristics" Journal of Alloys and Compounds **1010,** 177352(2025) **[I.F. = 6.20].**

84. Aaqib Rashid and **Mohd Ikram** "Effect of Sintering Temperature on the Structural, Morphological, Optical, Magnetic, and Dielectric Properties of lead-free $La_2SrFe_{1.7}Ni_{0.3}TiO_9$ Triple Perovskite" J Mater Sci: Mater Electron **36**, 206(2025) **[I.F. = 2.8].**

85. Showket Ahmad Bhat, Irfan Ayoub Itoo , Roomul Mushtaq, and **Mohd Ikram** "Enhanced multifunctionality in Nd- and Zn-doped $BaTiO_3$: Structural, Optical, Dielectric, and Catalytic Insights for Sustainable Wastewater Treatment" J Mater Sci: Mater Electron **36** 507(2025) **[I.F. = 2.8]**.

86. Shaista Yousuf & **Mohd Ikram** "Insights into Electric, Magnetic, and Magneto-Electric Properties of (1-x) $Ba_{0.8}Sr_{0.2}TiO_3$ –(x)$NiFe_2O_4$ Multiferroic Composites: Relaxation Dynamics and Energy Storage Applications" Ceramics International **51,** 23499–23519 (2025) **[I.F. =5.6].**

87. Aaqib Rashid & **Mohd Ikram** "Investigate the AC Conductivity, Ferroelectric Studies, and Mossbauer Spectroscopy Studies of $La_2SrFe_2TiO_9$ Triple Perovskite for Various Applications" Applied Physics A-Materials Science & Processing **131**, 249 (2025)) [**I.F.= 2.50].**

88. Aaqib Rashid, Showket Ahmad Bhat , Gulzar Ahmad Lone ,Muntha Majeed , Shaista Yousuf Ubaida Jan , and **Mohd Ikram** " Photocatalytic Efficiency of $La_2Srfe_2Tio_9$ Perovskite in Advanced Water Purification Systems"J Mater Sci Mater Electron 36,653(2025)**,[I.F.=2.8].**

89. Aaqib Rashid and **Mohd Ikram** "Dielectric Behavior, Complex Modulus, and Conduction Mechanism Studies of Ni-doped La2SrFe2-xNixTiO9 Triple Perovskite for High-Frequency Electronic Applications" Materials Science & Engineering B, **319**, 118332(2025),**[I.F.= 5.70].**

90. Haris Khan & **Mohd Ikram** "Unravelling the Impact of Manganese (Mn) Doping on the Structure, Morphology, Optical, and Magnetic Properties of Triple Perovskite $Sr_3Fe_2TeO_9$" Journal of Materials Science: Materials in Electronics **36** (22), 1-15 (2025), **[I.F. = 2.8].**

91. Haris Khan & **Mohd Ikram** "Exploring the linear and nonlinear optical properties of Triple perovskite $Sr_3Fe_2TeO_9$" Optik 339 172543 (2025) **[I.F. = 3.10].**

92. Asha Rani and **Mohd. Ikram** "Insights into electric and magnetic properties of (1-x) $Ca_{0.9}Mg_{0.1}TiO_{3-(x)}CoFe_2O_4$ multiferroic composites", Journal of Alloys and Compounds, **1042**, 184128 (2025) [**I.F. = 6.30].**

93. Aarif Ul Islam Shah, Edson L. Meyer, **Mohd Ikram**, Nicholas Rono, Chinedu Ahia & Mojeed A. Agoro, "Bandgap Engineering, Device Optimization, and Performance Analysis of a Perovskite Solar Cell using Sr-Doped La 2 NiMnO 6 as an Absorber Layer: A Promising Material for Next-Generation Perovskite Solar Cells "Solar RRL; **9**: e2500467 (2025) (https://doi.org/10.1002/solr.202500467) [**I.F. = 4.70].**

94. Muntha Majeed and **M. Ikram** "Evolution of Temperature-Dependent Electrical and MagneticBehavior in a Series of Antimonate Triple Perovskite $Sr_3CoSb_{2-x}Ti_xO_9$**",** Langmuir, **41**, 31359−31375(2025) [**I.F.=3.9**].

95. Shaista Yousuf & **Mohd Ikram** "Unveiling the Structural and Optical Characteristics of $Ba_{0.8}Sr_{0.2}TiO_3$–$NiFe_2O_4$ Composites" Ceramics International **51,** 64403–64415(2025) **[I.F. =5.6].**

96. Aaqib Rashid, **Mohd Ikram** & Himanshu Srivastava "Enhanced Multifunctionality in Co-doped $La_2SrFe_2TiO_9$ Triple Perovskite for High-Performance Energy Storage", Journal of Energy Storage, 141, 119108, (2026)[**I.F. = 10.70].**

97. Kousar Jan, Aaqib Rashid, M. Ashraf Bujran, Rumaisa Jan, Masarat Fayaz Bhat and **Mohd Ikram** "Quantum Mechanical Transport Analysis in Formamidinium-Based Perovskite Solar Cells". Advanced Theory and Simulations, **9**, e01291 (2026) (https://doi.org/10.1002/adts.202501291) **[I.F. =2.90].**

98. Muntha Majeed and **Mohd. Ikram** "Insights into the Physical Properties and Electrochemical Performance of $Sr_3CoSb_2O_9$ and $Sr_3CoSb_{1.7}Ti_{0.3}O_9$ Triple Perovskites for Supercapacitor Electrodes" Journal of Power Sources, **676,** 239932 (2026) [I.F**. = 7.90].**

99. Aaqib Rashid, Showket Ahmad Bhat, Khalid Sultan and **Mohd Ikram** "Structural, Chemical Composition, Optical and Magnetic Studies of Pulse Laser Deposited Ni-doped $La_2SrFe_2TiO_9$ Triple Perovskite Thin Films" Next Materials **12,**102019 (2026) [**I.F. = 4.70**].

100. Yasmeen Gull, Hilal Ahmad Dar, Lila Alkhtaby, Aaqib Rashid and **Mohd Ikram "**Interrelationship Between Cation Inversion And Structural, Morphological, Optical, and Magnetic Properties in Ni-substituted $MgFe_2O_4$ Spinels" RSC Advances (2026), DOI: 10.1039/d6ra04177a **[I.F. = 6.10].**

LIST OF PAPERS PUBLISHED IN PROCEEDING

1. A.Punnoose, **M. Ikram**, B.P. Maurya, R.J. Singh, "EPR Study of Exchange Coupled Copper Clusters in $Y_2Cu_2O_5$", proceeding of the DAE Solid State Physics Symposium, held at University of Rajasthan, Jaipur, Vol. 37C, Dec.27-31 (1994), p. 486.

2. B.P. Maurya, A. Punnoose, **M. Ikram**, R.J. Singh, "EPR Study of Mn^{2+} ion Doped in Potassium Oxalate Monoperhydrate Single Crystal", Proceeding of the DAE Solid State Physics Symposium, held at University of Rajasthan, Jaipur, Vol. 37C, Dec.27-31(1994), p. 487.

3. S.Khan, **M. Ikram**, A. Singh, R.J. Singh "EPR Study of $La_{1.94}Ba_{0.06}CuO_4$", Proceeding of the DAE Solid State Physics Symposium, held at Bhaba Atomic Research Center, Mumbai, Vol. 39C, Dec.27-31 (1996), p. 399.

4. **M. Ikram** & R. J. Singh, "EPR Studies of the Constituents of High-Temperature Superconductors, ($CaCuO_2$, $Y_2Cu_2O_5$, $SrCuO_2$) and 123-Compound", Proceeding of the DAE Solid State Physics Symposium, held at Cochin University of Science & Technology, Kochi, Vol. 40C, Dec.27-31 (1997), p. 30.

5. **M.Ikram,** Pietro Mendas, A. Paula , H.Ahmed , A.M. Rossi, and J.G. Eon, **"**Reduction by Hydrogen of Vanadium in Phosphate and Lead Vandat Calcium Apatites: an ESR Study "Proceeding of the DAE Solid State Physics Symposium, held at Barkatullah University, Bhopal. Vol. 51, Dec.26-30 (2006) p. 839-840.

6. Feroz. A. Mir, A. Bashir, **M. Ikram,** R.J.Choudhary,D.M. Phase, and Ravi Kumar, **"**Structural and Electrical Studies of $PrFe_{1-X}Ni_XO_3$ ($x \leq 0.5$) Thin Film," Proceeding of the DAE Solid State Physics Symposium, held at in the Department of Physics University of Mysore, Karnataka, Vol. 52, Dec.27-31 (2007), p. 847-848.

7. Ravi Kumar, D.K. Shukla, S. Mollah , P. Thakur. K.H. Chae, W.K. Choi A. Bashir, and **M. Ikram** **"**Electronic structure studies of $PrFe_{1-X}Ni_XO_3$ ($x \leq 0.5$) using X-Ray absorption spectroscopy", Proceeding of the DAE Solid State Physics Symposium, held at in the Department of Physics University of Mysore, Karnataka, Vol. 52, Dec.27-31 (2007), p. 1013-1014.

8. Abida Bashir, Ravi Kumar, **M. Ikram** F. Mir, D.K. Shukla, R.J.Choudhary and Ajay Gupta "Mossbauer Studies of Ni doped Orthoferrite $PrFe_{1-X}Ni_XO_3$ ($x \leq 0.3$), Proceeding of the DAE Solid State Physics Symposium, held at in the Department of Physics University of Mysore, Karnataka, Vol. 52, Dec.27-31 (2007), p. 1057-1058.

9. Feroz Ahmad , **M.Ikram** , P. Thakur, K. H. Chae[2], W. K. Choi[2]and Ravi Kumar "NEXAFS Study of $PrFe_{1-x}$ Ni_x O_3 Thin Films, Proceeding of the DAE Solid State Physics Symposium, held at Bhaba Atomic Research Center & Tata Institute of Fundamental Research Mumbai, Vol. 53, Dec.16-20 (2008), p. 825--826.[**ISBN**978-81-8372-044-1]

10. Abida , Ravi Kumar, **M.Ikram** and Feroz Ahmad , " Transport and Magnetic Studies of Ni Doped Orthoferrite $PrFe_{1-X}Ni_XO_3$ ($x \leq 0.5$), Proceeding of the DAE Solid State Physics Symposium, held at Bhaba Atomic Research Center & Tata Institute of Fundamental Research Mumbai, Vol. 53, Dec.16-20 (2008), p. 1191—1192,[[ISBN 978-81-8372-044-1]]

11. Abida Bashir, **M. Ikram**, Ravi Kumar,P.N. Lisboa-Filho, and P. Thakur, "Crystallographic and Electronic Structure studies on $SmFe_{1-x}Ni_xO_3$ Magnetic Pervoskite" in 33rd Brazillian National Meeting on Condensed Matter Physics, held at SP Brazil, May 10-14(2010), p.1. [http://dx.doi.org/10.1016/j.mseb.2010.05.024]

12. Feroz Ahmad , **M.Ikram** and Ravi Kumar "Effect of shift heavy ion irradiation (SHI) on structural and electrical Properties of $PrFe_{0.5}Ni_{0.5}O_3$ thin films" 208 p; 2012; p. 111; SHIMEC 2012:international conference on swift heavy ions in materials engineering and characterization; New Delhi (India); 9-12 Oct 2012.

13. Khalid Sultan, **M. Ikram** and K, Asokan "Effect of Gamma Irradiation on the Structural and Electrical Transport Properties of $PrFe_{1-x}Ni_xO_3$, AIP Proceedings, **1591,** (2014), (doi:10.1063/1.4872929) p.1278-1290.

14. **M.Ikram ,** Khalid Sultan, Sajad Ahmad Mir & Mir Zubida Habib "NEXAS study of pulsed laser deposited $La_{1-x}Ca_xMnO_3$ ($x=0.0, 0.3, 0.5$ and 0.7) thin films on Si(100)" Malaviya National Institute of Technology, Jaipur (India); 86 p;2014; p. 17-18; ICSM-2014: International conference on soft materials; Jaipur (India); 6-10Oct 2014.

15. Sajad Ahmad Mir , **M. Ikram** and K Asokan **"**Effect of Ni doping on optical, electrical and magnetic properties of Nd orthoferrite" International Conference on Recent Trends in Physics (ICRTP 2014), Journal of Physics: Conference Series **534** (2014) 012017 [doi:10.1088/1742-6596/534/1/012017].

16.Shah Aarif UL Ismam, , Sajad A.Mir, Khalid Sultan, Mushtaque A. Magray , Mir Zubida Habib, Nazima Nazir and **M. Ikram** "Effect of Sr doping on Electrical and Optical properties of Double Pervoskite La_2NiMnO_6" International Conference on Nanotechnology for Better Living (NBL-2016) jointly organized by IIT Kanpur and NIT Srinagar during May 25-29, 2016 Vol. 3 No.1 P-327 (2016[doi:10.3850/978-981-09-7519-7nbl 16-rps-327].

17. Sheeraz Ahmad b, Mohd Faizan, Shabbir Ahmad, and **Mohd. Ikram** "Synthesis and characterization of Y_2O_3 nano-material: An experimental and theoretical study" Citation: AIP Conference Proceedings 1942, 050013 (2018); doi: 10.1063/1.5028644 View online: https://doi.org/10.1063/1.5028644View Table of Contents: http://aip.scitation.org/toc/apc/1942/1 Published by the American Institute of Physics.

18. Nazima Nazir , Gulzar Ahmad Lone,Yasmeen Gull and **Mohd. Ikram** "Synthesis, characterization, structural and morphological studies of rare-earth double perovskite Gd2NiMnO6" Applied Science Innovations PVT. LTD., NBL [2019].

19. Fida Mohmed, **Mohd. Ikram** & Yuan-Hua Lin "THE INVESTGATION Of SPIN SEEBACK EFFECT in Ce Doped Yttrium Iron Garnet thin Films Using Rhodium as a spin Current Detector The 2020 Around –The-Clock Around –The-Globe Magnetics Conference *IEEE Magnetics* [2020].

20. Aaqib Rashid and **M Ikram "**Synthesis and Investigation of the Structural and Optical Properties of the Triple Perovskite $La_3Ni_2SrO_9$ for Optoelectronics and Solar Cell" PROCEEDINGS OF INTERNATIONAL CONFERENCE ON ADVANCED MATERIALS, DEVICES AND TECHNOLOGIES (ICAMDT-2023) 6-7 NOVEMBER 2023, [ISBN: 978-81-19093-38-0 DOI: 10.58673/sp.2024.05.25.03].

21. Gulzar Ahmad Lone, Aaqib Rashid and **Mohd Ikram** "Structural, Morphological and Dielectric Studies of Transition Metal Doped Cobalt Ferrite" (ICAMDT-2023) ISBN**: 978-81-19093-38-0** DOI**: 10.58673/sp.2024.05.25.03.**. [ISBN: 978-81-19093-38-0 DOI: 10.58673/sp.2024.05.25.03]

22. Aaqib Rashid, **Mohd Ikram**, Showket Ahmad Bhat "Synthesis and Investigation of the Structural and Optical Properties of Triple Perovskite $La_3Ni_2NbO_9$ for Optoelectronics and Solar Cell Applications" ICFAN 2024 **ISBN NO: 978-81-957433-9-1**

ABSTRACTS PUBLISHED IN CONFERENCES/SYMPOSIA/SEMINAR/WORKSHOP

1. R. J. Singh, M**. Ikram,** A.Punnoose, B.P. Maurya, S. Khan, "Copper Clusters in Parent Compounds of High- Tc Superconductors", International Conference on Modern Spectroscopy, A.M.U., Aligarh (1994).

2. **M. Ikram** and S. Khan, "S = 2, in the Constituents of High- Tc Superconductors", Proceedings of 83rd Session of the Indian Science Congress, Patiala (1996).

3. S. Khan & **M. Ikram, "**A.C. Susceptibility Measurement of High- Tc Superconductors by LCR Metre", Proceedings of 83rd Session of the Indian Science Congress, Patiala (1996).

4. R. J. Singh, **M. Ikram, S**. Khan, "EPR of High-Tc Constituents", First Asian Pacific EPR/ESR Symposia, Hong Kong (1996).

5. **M. Ikram**, S. Khan, A. Singh, "EPR Studies of CaO-CuO System", Proceedings of 84th Session of the Indian Science Congress, University of Delhi (1996).

6.. S.Khan, **M. Ikram**, A. Singh, R. J. Singh,"EPR Study of Deoxygenated $La._2CuO_4$" Proceedings of 84th Session of the Indian Science Congress, University of Delhi (1996).

7.. **M. Ikram**, A. Singh, S. Khan, "EPR Study of Deoxygenated $Y_{1-x}Pr_xBa_2Cu_3O_7$ (X = 0.0, 0.08, 0.20, 0.50, 1.00)" Proceedings of 85th Session of the Indian Science Congress, Osmania University, Hyderabad (1997).

8. M.F. Ansari, F. Mohammad, **M. Ikram, "**Syntheses and Characterization of some Aniline Based Polymers" National Conference under the Auspices of Sir M. Visveswaraiah Chair on "Recent Trends in Structure, Functions, Analysis of Molecules and Applications "Department of Studies in Chemistry, University of Mysore, Manasagangotry, Mysore (1999).

9. P. K. Sharma A. Singh S. Khan, **M. Ikram**, R. J. Singh, "EPR Study of the De-oxygenated Bi-based High Temperature Superconductors" MRSI- AGM, Science City, Calcutta (2001).

10. P. Adamo, S. Mendas. A.M. Rossi, A. Paula, **M.Ikram,** J.G. Eon, C.L. Torres and

C.B. Boechat "Comparison of the Hamiltonian Parameters in the EPR Studies of Lead Vanadate AP, $[Pb_{10}(PO_4)_{9.5}(VO_4)_{0.5}(OH)_2$ and Vanadate Apatite $[Ca_{10}(PO_4)_{9.5}(VO_4)_{0.5}(OH)_2$ Solid Solutions" Congreso Latinoamericano de Quimica 27ª Reuniao Annual sociedade brasileiro de quimica – SBQ, Brasil (2004).

11. **M. Ikram,** H.Ahmed, P. Adamo, S. Mendas. A.M. Rossi, A. Paula, J.G. Eon, C.L. Torres and C.B. Boechat " EPR and X-Ray Studies of $Pb_{10-x}Ca_x(VO_4)_1(PO_4)_5(OH)_2$ (X= 0.0,2.0,4.0,6.0,8.0 and 10.0) J&KSC 06, University of Kashmir (2006).

12. . **M. Ikram,** H.Ahmed, P. Adamo, S. Mendas. A.M. Rossi, A. Paula, J.G. Eon, C.L. Torres and C.B. Boechat "Studies of $Pb_{10}(PO_4)_{6-x}(VO_4)_x(OH)$ (X= 0.5,1.0,2.0,3.0,4.0,5.0, 6.0) J&KSC 06, University of Kashmir (2006).

13**. M.Ikram** "STUDIES OF $PrFe_{1-x}Ni_xO_3$ (where x=0.0, 0.1.0.2, 0.3.0.4 and 0.6) SYSTEM" presented on workshop on Functional Oxide materials w.e.f. Sept. 25-26, 2006 at IUAC, New Delhi-110067.

14. Feroz A. Mir , **M.Ikram** , V.Sathe,R.J.Choudary, D.M.Phase, Ravi Kumar "Temperature dependent Raman study of $PrFeO_3$ thin film on $LaAlO_3$substrate", 4th JK Science Congress (2008) held at University of Kashmir, Srinagar during October 29-30, 2008.

15. Abida, Ravi Kumar, **M. Ikram** "Insulating to Semiconducting (I-S) Transition in Ni- doped $NdFe_{1-X}Ni_XO_3$ where $x \leq 0.5$", 4th JK Science Congress (2008) held at University of Kashmir, Srinagar during October 29-30, 2008.

16. Feroz A. Mir **M.Ikram** ,R.J.Choudary and Ravi Kumar" Electrical and magnetic characterization of $PrFe_{1-x}Ni_xO_3$(x=0.3,0.4&0.5)Thin films" presented in the National Conference on Recent Advances in Condensed Matters Physics (RACMP-2009), NIT, Hamirpur Shimla (HP) May 23-24, 2009.

17. M.A.Kharoodi Abida , F.A. Mir, **M. Ikram** "Coexistence of Paramagnetic and Antiferromagnetic Phases in Reduced $Pb_{10-x}Ca_x(VO_4)_1(PO_4)_5(OH)_2$ Apatites [x= 0.0, 2.0, 4.0, 6.0 8.0 & 10.0] in the National Conference on Recent Advances in Condensed Matters Physics (RACMP-2009), NIT, Hamirpur Shimla (HP), India May 23-24, 2009.

18. Feroz A. Mir, **M.Ikram** ,R.J.Choudary and Ravi Kumar "Effect of Shift heavy ion irradiation (SHI) on Structural and electrical properties of $PrFe_{0.5}Ni_{0.5}O_3$ thin films" presented in the workshop on oxide materials held at Department of Applied Physics, AMU, Aligrah, India w.e.f. 12-13 May 2009.

19. Abida, **M.Ikram** and Ravi Kumar "Structural, Transport and Magnetization properties of $SmFe_{1-x}Ni_xO_3$ ($x<0.5$)" in the International workshop on Nanotechnology and Advanced Functional materials held at NCL, Pune, July, India 8-11, 2009.

20. Feroz A. Mir, **M.Ikram,** R.J.Choudhary and Ravi Kumar "Effect of Substrate on Transport Properties of $PrFe_{0.5}Ni_{0.5}O_3$ Thin Films in the International workshop on Nanotechnology and Advanced Functional materials held at NCL, Pune, India July 8-11, 2009.

21. Abida, **M. Ikram**, P. Thakur, K.H. Chae, W.K. Choi and Ravi Kumar

"X ray Absorption Studies of Ni doped orthoferrites $NdFe_{1-x}Ni_xO_3$ ($x \leq 0.5$)" *International conference of Multi-Functional Oxide Materials at Department of Physics ,Himachal Pradesh University, Shimla 2009.*

22. Feroz Ahmad Mir, **M.Ikram** and Ravi Kumar *Effect of Ni doping on structural & electrical properties of $PrFeO_3$ thin films* by *Innovations in Thin Film Processing and Characterizations (*ITFPC 09) Nancy,, France November 17--20, 2009.

23. Feroz Ahmad Mir,**M.Ikram** and Ravi Kumar *Magneto Transport of $PrFe_{0.5}Ni_{0.5}O_3$ Thin Film* by Feroz et al in International Conference on Recent Trends in Materials and Characterization (RETMAC – 2010) National Institute of Technology, Karnataka Surathkal, India, February 14-15, 2010.

24. "Feroz Ahmad Mir, **M.Ikram** and Ravi Kumar *"Effect of Shift heavy ion irradiation (SHI) on Structural, Optical and Electrical properties of $PrFe_{0.7}Ni_{0.3}O_3$ thin films* "in national Conference on Smart, Electronic & Engineering Materials (SEEMS-2010) from 5^{th}-6^{th} March 2010, Baba Farid College of Engineering and Technology Bathinda Punjab India.

25. Feroz Ahmad Mir and **M.Ikram** "Synthesis and Optical properties of $SmFeO_3$ Thin Film Prepared By Sol gel method "The 6th Nanoscience and Nanotechnology Conference (NanoTR6) held at Izmir Institute of Technology,Urla Izmir, Turkey during 15 - 18 June 2010 .

26. Feroz Ahmad Mir, **M.Ikram** and Ravi Kumar "*Multiferrioc Properties of* $PrFe_{0.5}Ni_{0.5}O_3$ *Thin Film Prepared By Pulse Laser Deposition"* in 3rd National Symposium for Material Research Scholars,MR-10 & Work shop on Advanced Characterization Techniques from 6 -8,May,2010 at Dept. of Metallurgical Eng. &Material Research IIT Bombay, India.

27. Sjad A.Mir, K.S. Bhat, Zubaida Habib and **M.Ikram** "Synthesis and Characterization of Y-Junction Single wall Carbon Nanotubes" in the national conference from Sept.3-5, 2012 on Recent Trend in Materials Science Research (RTMSR-12) held at National Institute of Technology Srinagar, Kashmir-190006, India.

28. K.S. Bhat, Sjad A.Mir, , Zubaida Habib and **M.Ikram** "Synthesis, Characterization and Anolomous Metal to Insulator Transition in Borocabonitride" in the national conference from Sept.3-5, 2012 on Recent Trend in Materials Science Research (RTMSR-12) held at National Institute of Technology Srinagar, Kashmir-190006, India.

29. Zubaida Habib ,K.S. Bhat, Sjad A.Mir, , and **M.Ikram** "Sol-Gel Synthesis, Characterization of Titanium Dioxide Doped with Iron Nanoparticles" in the national conference from Sept.3-5, 2012 on Recent Trend in Materials Science Research (RTMSR-12) held at National Institute of Technology Srinagar, Kashmir-190006, India.

30. Abida**, M.Ikram** and Ravi Kumar "Mossbauer Studies of doped Samarium Orthoferrite" in the national conference from Sept.3-5, 2012 on Recent Trend in Materials Science Research (RTMSR-12) held at National Institute of Technology Srinagar, Kashmir-190006, India.

31. K.S. Bhat, Zubaida Habib, **M.Ikram** and K. Asokan **"**Structural, Electrical and optical study of Mn doped $PrFeO_3$ system prepared by ceramic method" in the 8th J.K Science Congress from 17-19 September, 2012.held at the University of Kashmir -190006.

32. Sajad Ahmad Mir, **M.Ikram** and K.Asokan "Ni Doping Effects on Morphological,

Electric and Dielectric behavior of SmFeO3 and SmFe0.7Ni0.7O3 **International** Conference on "Chemical, Environmental and Bioprocess Engineering**"**, JNU, New Delhi, India (December 21-22, 2013).

33. Sajad Ahmad Mir, K.Sultan, Zubida Habib**, Mohd Ikram**, K.Asokan "Effect of Ni Substitution on the dielectric properties of Pervokskite type Rare Earth Orthoferrites, , National conference on Microscopy and Advances In Material Science, Department of Physics and Electronics, University of Jammu, India (March 2-4, 2015).

34. Sajad Ahmad Mir, **M.Ikram,** and K.Asokan "Investigation of Structural, Electrical, Magnetic and Thermal Properties of Ni Doped Nd Orthoferrites, National Conference on Advances in Materilas and Materials Processing, Department of Metallurgy, NIT, Srinagar, India (May 22-23, 2015).

35. Sajad Ahmad Mir**, M.Ikram**, and K.Asokan "Structural, Optical , Electric and Dielectric Behaviour of Ni doped Samarium Orthoferrite", , **8th J&K Science Congress**,University of Kashmir, India (September 17-19, 2012).

36. Sajad Ahmad Mir, **M.Ikram** and K.Asokan, K. Sultan, Z. Habib "Structural ,Optical , Electric and Dielectric Behaviour of Ni doped Samarium Orthoferrite"**, , 9th J&K Science Congress**, , University of Kashmir, India (October 1-3, 2013).

37. Khalid Sultan and **M. Ikram** "Effect of Mn doping on AC conductivity and Dielectric Constant of $PrFeO_3$" presented at in the 9th JK Science Congress, September 2013 at university of Kashmir, J&K Srinagar 190006 India.

38. Sajad Ahmad Mir, **M.Ikram** and K.Asokan, "Dielectric studies of amalgamated room temperature insulating and metallic matrix of Nd based transition metal oxides ", National Seminar on Towards New Horizons with Interplay Between Physics and Computer Sciences, , Amarsingh College Srinagar, University of Kashmir, India (June 9-10, 2014).

39. Zubida Habib, Khalid Sultan Sajad Ahmad Mir, Kowsar Majid, **M. Ikram** and K. Asokan "Frequency and temperature dependent dielectric properties oh $HoFeO_3$ and Ni doped $HoFeO_3$" presented in the national conference on microscopy and advances in material science held at university of Jammu march 2-4 2014.

40. Sajad Ahmad Mir, **M.Ikram** and K.Asokan, K. Sultan, Z. Habib, Arif Ahmad

"Exploration of Electronic Structure, Electrical, Magnetic and Thermal properties of Ni doped Neodymium orthoferrites", **11th J&K Science Congress**, University of Kashmir, India (October 12-14, 2015).

41. Zubida Habib, **Mohd. Ikram**, and Kowsar Majid "Effect of irradiations on structural, morphological and magnetic properties of nickel doped $HoFeO_3$ thin films grown on Si (100) substrates**"** Presented in the 11th JK Science Congress, 12-14 October 2015.

42. Sajad Ahmad Mir, **Mohd.Ikram** and K.Asokan "Structural properties and anomalous Transport, Magnetic and Thermal behaviour of Ni doped Neodymium orthoferrite ceramics , International Conference on Materials Science & Technology, Delhi University, Delhi, India (March 1-4,2016).

43. Zubida Habib , Kowsar Majid, **Mohd.Ikram**, Sajad A.Mir and Khalid Sultan, "Structural and Magnetic Properties of Irradiation Thin Films of Nickel Doped HoFeO" International Conference on Nanotechnology for Better Living (NBL-2016) jointly organized by IIT Kanpur and NIT Srinagar during May 25-29, 2016 .

44. Sajad A.Mir, **Mohd.Ikram**, K. Sultan, Z. Habib, H. Kousar, S. Arif and K.Asokan" B-site Reorganization Inculcated Anomalies in Transport, Magnetic and Thermal Properties of ABO3 Type Neodymium Ferrite Ortho-Pervoskite" International Conference on Nanotechnology for Better Living (NBL-2016) jointly organized by IIT Kanpur and NIT Srinagar during May 25-29, 2016 .

45. Khalid Sultan, **M.Ikram**, Sajad A.Mir, Z. Habib, Shah Arif and K.Asokan" Effect of Swift Heavy Ion Irradiation on Various Physical Properties of Mn Doped $PrFeO_3$ Ceramics " International Conference on Nanotechnology for Better Living (NBL-2016) jointly organized by IIT Kanpur and NIT Srinagar during May 25-29, 2016.

46. Shah Aarif Ul Islam & **M.Ikram** "Investigation of Doping induced modifications in Double Perovskite La_2NiMnO_6" in J&K Science Congress,University of Jammu, India (

March 02-04, 2017).

47. Shah Aarif Ul Islam, **Nazima Nazir,** and M Ikram, International Conference On Innovative Trends in Applied Physical, Chemical, Mathematical Sciences, Statistics, and Emerging Energy Technology for Sustainable Development" (APCMSET-2017). JNU New Delhi, Volume 4, Issue 6; July-September, 2017, pp. 446-446, e-ISSN: 2350-0255.

48. Shah Aarif Ul Islam **& M.Ikram** "Structural and Optical studies of La_2NiMnO_6 ceramics" one day national Conference on recent innovation in science, Technology and engineering) held on 16th Dec, 2017 at Department of Chemical engineering, NIT Srinagar, Kashmir.

49. Mushtaq Ahmad Magray, Nazima Nazir, Yasmeena Gul, Gulzar Ahmad and **M.Ikram** "Effect of Sr-doping on structural, magneticelectrical transportproperties of La_2CoMnO_6", Recent Trends in "Engineering, Technology, Agriculture, Applied Sciences, Humanities and Business Management for Sustainable Development **(ETAHBS- 2018)** ,NIT Srinagar, Jammu and Kashmir – 190006, 20th - 21st October, 2018 Venue: NIT, Srinagar, Jammu and Kashmir, India. ISBN: 978-93-85822-75-9 (p 47- 48).

50. Nazima Nazir and **Mohd Ikram**, "Structural and Morphological Studies of Double perovskite Gd_2NiMnO_6", JKSC-1369,13th JK Science Congress 2018, Organised by University of Kashmir, Srinagar, India -190006.

51. Mushtaq Ahmad Magray and **M. Ikram** "Effect of Sr-doping on structural and magnetic properties of La_2CoMnO_6" International Conference on Nanotechnology for better living, (***ICNBL 2019***), SKUAST Srinagar, J&K, 7-11 April 2019, ISBN:978-81-939516-0-6.

52. Shah Aarif Ul Islam, G H Rather, T H Mir, Y Gull and **M. Ikram** "Effect of Sr Doping on Electrical and Optical Properties of Double Perovskite La_2NiMnO_6" International Conference on Nanotechnology for better living, (**ICNBL 2019**), SKUAST Srinagar, J&K, 7-11 April 2019, ISBN:978-81-939516-0-6.

53. Nazima Nazir, Gulzar Ahmad Lone, Yasmeen Gull, **Mohd Ikram**, "Synthesis, characterization, structural and morphological studies of rare-earth double perovskite Gd_2NiMnO_6", International Conference on Nanotechnology for better living,(ICNBL2019), NIT Srinagar.

54. Gulzar Ahmad Lone, Muntaha Majeed and **Mohd Ikram**, "Structural stability, Optical

analysis and Morphological behavior of Triple perovskite $Sr_3CoSb_2O_9$", International Conference on Nanotechnology for better living,(ICNBL2023), NIT Srinagar.

55. Gulzar Ahmad Lon**e,** Aqib Rashid Shah and **Mohd Ikram**, Structural, "Morphological and Dielectric Studies of Transition Metal Doped Spinel Cobalt Ferrite, $CoFe_2O_4$", International Conference on Advanced Materials, Devices and Technologies *(ICAMDT-2023), Sri Venkateswara University, Tirupati, Andhra Pradesh, India.*

*56***.** Aaqib Rashid, Showket Ah. Bhat, Gulzar Ahmad Lone, Muntha Majeed, Ubaida Jan, Shaista Yousf and **Mohd Ikram** "Structural and photocatalytic degradation of $La_2SrFe_2CoO_9$ for advanced water Purification" at ISSMD-2024, 4^{th}-6^{th} September 2024, at University of Kashmir, Srinagar 190006 India.

57. Aaqib Rashid, and **Mohd Ikram**, 'SrLaFeTiO$_6$ double pervoskite as an Electrode material for energy storage and electrochemical supercapacitor applications' at ICNBL 2025, 7^{th}-11^{th} Sep 2025, University of Kashmir, Srinagar 190006 India.

BRIEF SUMMARY OF PREVIOUS/CURRENT RESEARCH WORK

Till now we studied several compounds as CuO, $BaCuO_2$ $CaCuO_2$ $Y_2Cu_2O_5$, 123- compounds, $La_{2-x}CuO_4$, $Y_{1-x}Pr_xBa_2Cu_3O_7$ etc.,[1-6] by EPR technique. In these compounds very interesting results were

obtained. EPR spectra due to monomers, dimmers and tetramers were recorded. Copper tetramers $(CuO)_4$ units are observed in all these compounds after quenching. $(CuO)_4$ unit cell represents the unit cell of CuO_2 plane present in all the constituents of High-Tc materials as well as the whole superconductors. As the $(CuO)_4$ unit shows the Ferromagnetic Coupling [F.M] – it gives hint that the magnetic interaction plays as an important role in the mechanism of high Tc- superconductivity.

The main work proposed in the proposal consists of nine sections;

1) Extension of the previous work earlier done by our research group.
2) EPR & XRD studies of VO^{+2}, Mn^{+2}, Cu^{+2} etc., ions doped in some single crystals.
3) EPR & XRD investigation of the doped rare earth manganites showing colossal magneto resistance.
4) Structural characterization and optical properties of nano-structured hydroxyapatite biocerimic in calcium phosphate.
5) Structural, Magnetic and Electrical transport studies of Transition Metal Oxide System.
6) Sol-Gel Synthesis, Characterizations and Application of Titanium Dioxide Doped with Iron and Co-doped with iron and niobium Nanoparticles (NPs).
7) Synthesis and Characterization of Y-junction Single Wall Carbon nanotubes.
8) Synthesis, Characterization and Functionalization of Carbon Nanohorns.
9) Doping induced modification Studies of Rare Earth based Double Perovskite La_2NiMnO_6.

First section consists of consists of four parts:

a) Preparation and characterization of the superconducting and non-superconducting compounds as Bi-based, Tl-based and Hg-based compounds.

b) To understand the aging effect of these compounds. It was observed in $La_{2-x}Sr_xCuO_4$ compounds that after quenching, it gives different types of EPR signal signal after passage of different time spans it becomes EPR silent. This effect is attributed to different process of oxygen equilibrium inside the crystal.

c) A great difficulty in our experiment is lack of reproducibility in the results. In ceramic samples, some grains give EPR signals and others do not give EPR signals. It is assumed that the quenching entails loss of oxygen contents from the crystal or the displacement of oxygen ions from their equilibrium position.

d) the most important information to obtain to establish a systematic relationship between the spin-Hamiltonian parameters as g, D, E, A, etc., given by the analysis of the Cu-tetramers spectra in different superconductors. To achieve this all the high-Tc materials and their constituents have to be investigated.

In the second section, EPR of transition ions as VO^{+2}, Mn^{+2}, and Cu^{+2} etc., doped in some single crystals have to be studied. It gives the idea of site symmetry of the dopant inside the host crystals. Earlier

we studied the 3d-transition elements doped in various diamagnetic hosts as: Sodium format ($NaHCOO:Mn^{+2}$, VO^{+2}),[7] Potassium oxalate Monoperhydrate ($K_2C_2O_4.H_2O:Mn^{+2}$, Cu^{+2})[8] and Lithium Hydrogen Sulphate ($LiHSO_4:VO^{+2}$, Cu^{+2})[9]. We obtained very interesting results. EPR spectra of $LiHSO_4$: Cu^{+2} were very interesting and unusual. It 2 region as arising due to S=2 system?extended from zero field region to g obtained by super exchange among four copper ions mediated by intervening oxygen ions. Such spectra have been

observed in many other systems. More work in this system is planned in the laboratory.

In the third section, the group of the compounds $R_{1-x}A_x\ MnO_3$ (where R= rare earth, such as La, Pr, Nd, Eu, etc. and A= alkaline earth, such as Ca, Sr, Ba, Pb, etc.) shows very interesting results. It exhibits wide variety of electronic and magnetic properties, especially, magneto resistance [10-12].Also they show complex phase diagram and unusual physical properties, such as at low temperature, they are metallic and at high temperature, semi conducting/conducting. Similarly starting from low temperature side their magnetic susceptibilities increase and after a critical temperature they start decreasing. Such complex behavior will be investigated by various experimental techniques like EPR, XRD, SEM, etc.. Compounds will be prepared by Solid-State reaction technique.

In the forth section, we are particularly interested in study the influence of metals such as Fe, Cu, V, Zn, Co, Pb, and Cd in hydroxyapatites structure. In these studies we will use different technique such as EPR/ENDOR, XRD, Mossbauer, IR, UV.

Hydroxyapatites have been intensively studied because of its applications as biomaterials and metals adsorbent. Studies about the absorption of small molecules such as CO_2, CO, etc. at the surface of hydroxyapatites are of great importance, because they contribute the knowledge of the surface properties of these materials. Most of its chemical properties are related to a great capability of accepting cationic and anioic substitutions. Earlier, several studies[13-15] have been performed concerning the applications of these compounds, $A_{10}(PO_4)_6(OH)_2$ where A= Ca, Pb, Sr to the catalysis, since these solids display a wide range of acid properties which can be controlled by their impurity content .This behavior of hydroxyapatites $Ca_{10}(PO_4)_6(OH)_2$ is also tunable by partial substitution of Ca^{2+} by transition metals with a variable valence state such as Cu^{2+}, VO^{2+}, CO^{2+}, Ni^{2+} [16-17] etc. We previously studied the EPR spectra of reduced Pb-based hydroxyapatites , namely $Pb_{10}(PO_4)_{6-x}(VO_4)_x(OH)_2$ [x= 0.5, 1.0,2.0,3.0 and 6.0], in which spectra due to two species like isolated vanadium(+4) and clusters of V^{4+} has been observed. It is worthwhile to study the EPR of deoxygenated $Pb_{10}(PO_4)_{6-x}(VO_4)_x(OH)_2$ of the above five compositions to see the bulk modifications in the apatite structure as well as the local changes occurring in the neighbor of vanadium during the reduction. Also the knowledge of this process is essential to understand the reaction involving apatite compounds on catalytic process.

In the fifth section, several compounds in the family of transition metal oxide systems $LaFe_{1-x}Ni_xO_3$, where x= 0.0, 0.1, 0.2, 0.3,0.4,0.5,0.6 were investigated by several research group [18] earlier. In these compounds very interesting results were obtained. On substitution of Ni at Fe site in $LaFeO_3$, O K- edge spectra show a new structure about 2.0 lower than that of $LaFeO_3$. This new feature is growing as the concentration of Ni is increasing. This is consistent with the results of the resistively data, which shows that the resistively decreases very fast from GΩ cm to a few m Ω cm for the sample with 60% Ni substitution. The resistively have been analyzed using the variable-range model and it is found that the gap parameter reduces symmetrically with the Ni substitution. From the above mentioned observations, it is evident that the disorder –induced localization is found to effectively control the resistively behavior.

The main work proposed in the proposal consists of two sections;

1. Extension of the previous work done by the research group [18]

2. Studies of the Structural, electric and magnetic transport properties of the systems after SHI radiation.

First section consists of three parts:

a) Preparations and characterization of the transition metal oxide systems such as as $PrFe_{1-x}Ni_xO_3$ (x< 0.6), $NdFe_{1-x}Ni_xO_3$ (x< 0.6) ec.,

b) To understand the electronic structure of the system and the effect of the disorder on the electronic correlation effect.

c) Generally TMO systems are insulators. This provide an interesting occurrence of Metal-Insulator (MI) transition as one goes from the concentration of Fe x=0 to the end member of another TMO system (viz Fe in as La $Fe_{1-x}Ni_xO_3$ [19-20] . It has also been recognized that the MI transition phenomenon, occurring in the mixed system, correspond to the structural transition as well [21] . These aspects generated several motivating studies in this direction in the mixed composition of as $LaFe_{1-x}M_xO_3$ [22-23] .

In the second section the effect of the radiation in TMO systems have to be studied.

Over the last few years, several groups established that SHI irradiation can be utilized to tune the properties in several oxide systems such as High-Tc materials, CMR materials, and other oxide systems [24-26]. Depending on the choice of energy and the type of ions, SHI irradiation can generate various defects such as point defects and columnar amorphization in the target materials and can renovate the materials properties by annealing out of the pre-existing defects or strain in the systems. These defects can create structural disorder or localized strain in the lattice of the target materials.More work is planned in some other related system after SHI irradiation.

In the six section we are interested to study the doped-TiO_2Nanoparticles. Nanomaterials

Often display properties that differ marginally from their bulk counter part. In particular, TiO_2 is an important wide–band gap semiconductor and has been studied because of its outstanding chemico-physical properties and unique applications in photo catalysis, optical properties, water splitting, degradation of organic contaminants, gas sensing, solar energy conversion etc.[27-36].The properties of the titania nanoparticles can be further tuned by adding either cationic or anionic dopant to the lattice. In the literature it has been reported that transition metal doped Titanium Dioxide nanostructures can be produced in a variety of ways including pulse laser deposition, sputtering, Molecular- beam epitaxy, and sol-gel techniques. Sol-gel method is often employed since it offers the advantages of crystallnility, small particles size and high purity [37-38]. Recently several groups [39] have also turned their attention to transition-metal-oxide based diluted magnetic semiconductors (DMS) that exhibit high-Tc ferromagnetism. In some of the 3d-TM doped oxide [41] room temperature ferromagnetism has been observed. Whereas some people [40] have reported absence of ferromagnetism in such a systems. This issue is still under controversy. Little efforts have put on making DMS nanoparticles. Yu-Hong Zhang and Armin Reller [42] prepared Fe-doped TiO_2 nanoparticles as a single phase product. By transmission, scanning and analytic electron microscopy as well as by complementary techniques it was found that the as prepared solid exhibits a narrow size distribution and the ion is homogeneously distributed in the TiO_2 matrix. The influence of the iron concentration on the phase transformation of the doped TiO_2 was investigated by X-ray diffrectrometry. Some groups [43-45] observed room temperature ferromagnetism of Co-doped TiO_2 nanoparticles, nanotubes and nanocrystals. The ferromagnetism behavior was clearly observed at room temperature in the as-synthesized nano materials, which is related to the oxygen vacancies created by the Co^{+2} substitution of Ti^{+4} site in TiO_2. Our present work focuses on the synthesis and characterization of iron doped TiO_2 nano-crystalline powder prepared by a sol-gel route. Also we extended this study to prepare and characterize the TiO2 co-doped with iron (III) and niobium(V) with the expectation that the carrier induced room temperature ferromagnetism may seen and hope that it may help to enhance the photocatalytic activity and solar energy conversion efficiently. The factors influencing the photocatalytic activity and the probable mechanism of co-doped nano TiO_2 are to be investigated.

In the seventh section we focus on Carbon nanotubes. Carbon Nanotubes (CNTs) are one of the most promising materials for hydrogen storage, sensors probes, and nano electronics devices applications [46-53] due to their physical, chemical, and electronic properties. Single-walled carbon nanotubes are the ideal building blocks for novel nanoelectronics devices because of their unique electrical properties. Depending upon the chirality and diameter of the nanotubes, they can be characterized as metallic (M) and semi conducting (S). Single-walled carbon Nanotubes have already been explored as hetrojunction, negative differential resistors , field-effect transistors and single electron transmission [54-62]. Several methods such as electrical discharge, laser evaporation, chemical deposition, pyrolysis-organometallic

mixture [63-67] have been developed to produce the carbon nanotubes (SWNTs/MWNTs) but one of the important problems in the area of carbon nanotubes to prepare the Y-Junction Single Wall Carbon Nanotubes is still under consideration and intensive research works are under progress to improve synthesis, quality, and productivity of the Y-junction SWNTs[68-69].

Many works have been done to research the properties and find the application of 1D intermolecular junction of CNTs. Experimentally, various devices have been fabricated based on 1D CNT junctions. The p-n junction and M-S junction of CNTs were fabricated as rectifier, amplifier quantum devices, photovoltaic devices, photochemical switches, logic gate and circuits [70-71] and so on. Infrared emission devices were fabricated by using the electrostatic induced p-n junction [72].

Du et al.[73] synthesized the CNTs by cobalt –catalyzed pyrolysis of thiophene and investigated. The morphology and microstructure of the product are controlled by the thiophene vapor concentration and flow rate. Other group [74] demonstrated a bulk process for the synthesis of Y-junction CNTs using Ti-doped Fe catalysts. Detailed electron microscope studied suggests that the mechanism for the observed Y-junction formation is mediated via catalyst particle attachment on the wall of a growing MWNT, from which the branching nanotubes nucleate and flow. By controlling the Ti concentration in the precursor, cascading Y-junction series as well as quadruple junction have been successfully synthesized.

Compared with multiterminal MWNT junctions, multiterminal SWNTs are more practical for nanoscale electronic devices because of their small dimension and reliable transport properties at toom temperatus, thus more attention of the theoretical research is focused towards the multiterminal SWNT junctions. However, experimentally most of the the literature reported is related to multiterminal MWNT junctions. The synthesis of multitermial SWNTs are of considerable interest. Y-shaped SWNTs can be occasionally observed in the samples produced by CVD process [75], laser ablation techniques [76], and arc discharge method [77]. But high yield synthesis of intramolecular junctions of SWNTs is of considerable interest. In order to prepare the Y-junction SWNTs here we applied the arc-discharge method in presence of thiophene..

Thiophene is a heterocyclic compound consisting of four carbon atoms and one sulfur atom in a five-membered ring and several group [78] reported that thiophene can serve as a growth promoter for producing long single-walled carbon nanotubes bundles. By pyrolyzing organometallics in the presence of thiophene CNT Y-junction were prepared by decomposing thiophene on a Co/Mg catalyst [79]. These results demonstrate that thiophene is versatile ingredient as a precursor to produce branched SWNTs.

In the eighth section, Single-wall carbon nanotubes have stimulated great interest in physics and chemistry with a special relevance to potential applications in electron emitters and hydrogen storage materials [80-83]. Iijima et al. synthesized a new type of horn-shaped sheath aggregate of single-wall graphene sheets, which was named single-wall carbon nanohorns (SWNHs) [85].

SWNHs are associated with each other to form the dahlia flower-like structured aggregates whose average diameter is about 80 nm. A detailed X-ray diffraction examination showed that the inter horn-wall distance is 0.4 nm, being greater than the interlayer spacing of graphite (0.335 nm) [86]. Thus SWNHs aggregates should have both microporosity and mesoporosity originating from the above specific structure.

Carbon nanohorns (CNHs) represent the promising alternatives to the carbon nanotubes, and have started emerging as interesting nanomaterial building blocks for the construction of novel materials. Carbon nanohorns [87-88] represent a new type of nanostructured carbon-based materials, which shows many applications in nanoscience and nanotechnology [89-90]. Single wall carbon nanohorns (SWNHs) are of the particular interest since these compounds possess high porosity and large surface area compared to carbon nanotubes. SWNHs are typically composed of a tube of about 2–5 nm in diameter and 30 to 50 nm long, closed by a cone at one extremity. SWNHs associate with each other to give rise to round-shaped aggregates of 100 nm in diameter. Their large surface areas and porosity ensure a great affinity with organic compounds [91–92] and make them potential candidates for hydrogen and methane storage [93–95] as well as drug delivery systems [96-97].

Functionalization of CNHs has given scientists the ability to manipulate these structures enhancing their solubility and broadening the spectrum of applications. While different functionalization strategies have been described including covalent attachment of organic fragments [98] as well as non-covalent interactions [99] reactions usually proceed with long times, in the presence of highly contaminating solvents and/or under harsh conditions. Noelia Rubioet al. group [100] has recently described the multiple functionalizations of carbon nanotubes using a combination of two different covalent reactions, both via a simple and fast microwave-induced method [101]. Microwave irradiation is an unconventional energy source, whose usefulness has been recognized in recent years [102]. The use of emerging microwave-assisted chemistry techniques in conjunction with greener reaction media dramatically reduces chemical waste and reaction times in synthetic organic chemistry. Recent work has explored the use of this radiation to assist CNT purification and functionalization, and has shown that this technique is especially useful in the design of energy efficient processes, simple and easy to scale-up[103] Surface properties of CNHs have also been modified under microwave irradiation, showing the ability of this method to enhance dispensability[104].

In the last section, the doping induced modification studies of rare earth based double perovskite La_2NiMnO_6 has been discussed. Double perovskites constitute a class of inorganic compounds with general formula $A_2BB'O_6$ or $AA'BB'O_6$ and related materials, unlike ABO_3 type transition metal oxides which are called as Perovskites or single Perovskites. These compounds are of great interest owing to the wide diversity of physical properties exhibited by them, and the wide choice of selecting elements A, B′ and B, that compose of the structure. Perovskite oxides generally display arrange of functional properties like pyroelectricity, piezoelectricity, ferroelectricity, multiferroic properties and non-linear dielectric behaviour[105–108]. Such versatile properties are essential for various areas particularly for the fabrication of devices in microelectronics. In 1950, Jonker and Van Santen [109] reported ferromagnetic behavior around room temperature in the perovskite manganites ($AMnO_3$), where Ais a divalent/trivalent cation. In these oxide compounds, the presence of the mixed states of Mn (Mn^{+3} and Mn^{+4} ions) will allow the transfer of an electron through oxygen orbital, called the double exchange mechanism proposed by Zener [110] which explains the ferromagnetic behavior in the manganites. This strange discovery motivated the researchers to study a similar phenomenon in other related oxides. In 1961, Longo and Ward [111] observed the ferromagnetic behavior at room temperature in the rare earth-based double Perovskite having the general formula $A_2BB'O_6$ where A is mostly a divalent/trivalent cation and B/B′, are transition metals. A subsequent experiment was performed on the same materials, which explored their electrical and magnetic properties further rand on a broader scale [112-113]. This new outcome inspired further research on the ferromagnetic double Perovskite compounds such as those compounds with B′ = Mo or W-based double Perovskites [114]. The study confirmed that ferromagnetism is possible in some of these compounds above room temperature. Galasso et al [115] noticed robuststeric effects connected with the A-site cation in A_2FeMoO_6. In addition to this, the compounds $A_2FeReO_6$and A_2FeMoO_6 were reported to have highly conducting nature [116]. All of these properties suggest that the physics involved in double Perovskite oxides was much richer. So, double Perovskites are seen to have a promising scope as next-generation materials and better substitute for conventional single Perovskites.

REFERENCESS:

1. M. Ikram, A. Punnoose, B.P. Maurya, R.J. Singh, Mod. Phys. Letts. B, 8, 27, 1709(1994).
2. R. J. Singh, M. Ikram, A. Punnoose, B.P. Maurya , S. Khan, Phys. Letts. A, 208, 369,(1995).
3. S. Khan, M. Ikram, A. Singh, R.J. Singh, Physica C, 281, 143(1997).
4. M. Ikram and R.J. Singh, "EPR of Cu^{+2} Spins in $Y_2Cu_2O_5$"Indian J. of Pure & Applied Phys., 37,

622(1999).
5. M. Ikram, and R.J. Singh, Mod. Phys. Letts. B, 13, 8, 239(1999).
6. M. Ikram, and R.J. Singh,Mod. Phys. Letts. B, 16, 10, 1 (2002).
7. B.Maurya, A. Punnoose, M. Umar R.J. Singh, Spectrochemica Acta A, 51, 1317, (1995).
8. 2. B.P. Maurya, A. Punnoose, M. Ikram,R.J. Singh,, Polyhedron, 14, 17, 2561(1995).
9. M. Ikram, and R.J. Singh, Mod. Phys. Letts. B, 17, 19,1067 2003).
10. S. Angappane, G. Rangarajan, K.Sethupathi, Physica B, 339, 87 (2003).
11. A.N. Ulyanov et al., Solid State Commun. 123, 383-386 (2002).
12. J.M.D.Coey, M. von Molnar, Adv, Phys. **48,** 167(1999).
13**.** C.L. Kibby and W.K. Hall, J. Catal., **29**,144 (1973).
14. H. Monna, J. Catal., 1982, **75,** 2000.
15. K.Y. Lee, M. Houalla, D.M. Hercules and W.K. Hall, J. Catal., **145,** 233 (1994).
16. 4. M.Misono and W.K. Hall, J. Phys. Chem., 1973,**77**(6),791
17.Y. Matsurama et al., J.Chem. Soc. Faraday Trans., **90,** 2113 (1994).
18. Kumar R. et al., J. Appl. Phys. 97 093526 (2005).
19. P.Ganguly, N.Y. Vasantacharya, C.N.R. Rao, and P.P. Edwards, J. Solid State Chem. 54, 400 (1984).
20. Chainani, D.D. Sharma, I. Das, and E.V. Sampathkumaran, J. Phys.: Condens. Matter 8 ,L631(1996).
21. Y. Okimoto, T. Katsufuji, et al., Phys Rev. Lett. 75, 109(1995).
22. N.R. Rao, O. Prakash and P.Ganguly, J. Solid State Chem. 15, 186 (1975).
23. D. Sharma, et al., Phys Rev. B 49, 1423809(1994).
24.Ravi kumar, R.J. Choiudhry, S.I. Patil, Shahid Husain, J.P. Srivastava, S.P. Sanyal and S.E. Lofland , J.Appl. Phys. 96 7383 (2004).
25.J. Choiudhry, Ravi kumar, Shahid Husain, J.P. Srivastava, S.I. Patil, and S.K. Malik, Appl. Phys. Lett. 82 222501 (2005).
26. Khatua, P.K. Mishra, Ravi kumar, D.C. Kundaliya, D. Buddhikot, R. Pinto and S.K. Malik, J.Appl. Phys. 96 7403 (2004).
27.Hoffmann M.R., Martin M.T., Choi W., and Bahnemann D.W., Chem. Rev. (1995),**95**,69.
28. Nishide T and Mizukami F., Thin Solids Films (1999) **353**, 67.
29. Wei-Qiang Han et al.; J. Phys. Chem. C (2007**), 111**, 14339-14342.
30. Jin Young Kim et al.; Langmuir (2008), **24**, 4316-4319.
31.Li-Heng Kao, Tzu-Chien Hsu and Hong-Yang Lu; J. Coll. Interface Sci. (2007), **316**, 160-167.
32. D. Buso, J. Pacifico, A. Martucci, and P. Mulvaney, Adv. Funct. Mater.(2007),**17**, 347-354..
33. Gurunathan K. and Trivedi D.C., Mater Lett.**45**, 262.
34. Dengyu et al. Langmuir (2006), **22**, 5537-5540.

35.Jonker B.T. et al., Phys. Rev. B (2000), **62,** 8180-8183.

36. Glaspell G. and Manivannam, J. Cluster Sci.,(2005), **16**, 501.

37. Li P., Yue P. and Kutal C. New J. Chem,(2003), **27**, 262.

38. Gratzel M. and Howe R., J. Phys. Chem. (1990), **94**, 2566.

39.Bryan J. D., Heald S.M. Chamber S.A. Gamelin D.R. J. Am. Chem. Soc. (2004), **126**,11640.

40. Radovanovic P.V., Gamelin D.R. Phus. Rev. Lett.(2003), **91**, 157202.

41. Balcells et al., Appl Phys.Lett. (2006),89,122501.

42. Yu-Hong Zhang and Armin Reller, J. Mater. Chem. (2001), **11**, 2537-2541.

43. Chuming Haung, Xueqin liu, Yanping Liu, Yinyue wang., Chemical Physics Letters (2006) **432**, 468-472.

44.Bryan J. D. J. Am. Chem. Soc. (2005), **127**, 15568-15574.

45. Barakat M.A., Hayes G. and Shah S.I. J.Nanosci. Nanotech (2005) **5**, 759-765.

46. Rao, C. N. R.; Govindaraj, A. Nanotubes and Nanowires: *RSC Nanoscience & Nanotechnology series*; Royal Society of Chemistry: Cambridge, **2005**

47. Ahn Ye.Y, Witham C.C, Fultz C, Liu B, Rinzler J, A. G.;Colbert A.G, D.; Smith, K. A., Smalley, R. E. *Appl. Phys. Lett*. **1999**, *74*, 2307.

48. Chopra, S.; McGuire, K.; Gothard, N., Rao, A. M.; Pham, A. *Appl.Phys. Lett.* **2003**, *83*, 2280.

49. Dai, H. J.; Hafner, J. H.; Ringler, A. G.; Colbert, D. T.; Smalley,R. E. *Nature* **1996**, *384*, 147.

50. Nguyen, C. V.; Chao, K. J.; Stevens, R. M. D.; Delzeit, L.; Cassell,A.; Han, J.; Meyyappan, M. *Nanotechnology* **2001**, *12*, 363.

51. Qian, D.; Dickey, E. C.; Andrews, R.; Rantell, T. *Appl. Phys. Lett.***2000**, *76*, 2868.

52. Yao, Z.; Postma, H. W. C.; Balents, L.; Dekker, C. *Nature* **1999**,*402*, 273.

53. Tans, S. J.; Verschueren, A. R. M.; Dekker, C. *Nature* **1998**, *399*.

54. Chico, L.; Crespi, V. H.; Benedict, L. X.; Louie, S. G.; Cohen, M. L. *Phys. Re*V. *Lett.* **1996**, *76,* 971-974.

55. Hu, J. T.; Min, O. Y.; Yang, P. D.; Lieber, C. M. *Nature* **1999**, *399,* 48-51.

56. Do-Hyun Kim, Jun Huang, Hoon-Kyu Shin, Somenath Roy, and Wonbong Choi, Nano Letters **2006**, 6, 2821-2825.

57. Tans, S. J.; Verschueren, A. R. M.; Dekker, C. *Nature* **1998**, *393*, 49-52.

58. Yao, Z.; Postma, H. W. C.; Balents, L.; Dekker, C. *Nature (London*) **1999**, *402*, 273.

59. Odintsov, A. A. *Phys. Re*V. *Lett.* **2000**, *85*, 150.

60. Le´onard, F.; Tersoff, J. *Phys. Re*V. *Lett.* **2000**, *84,* 4693.

61.Rochefort, A.; Avouris, Ph. *Nano Lett.* **2002**, *2,* 253.

62. Choi, W. B.; Cheong, B. H.; Chae, S. D.; Bae, E. J.; Lee, J. W.;Kim, J. R.; Kim, J. J. *Appl. Phys. Lett.* **2003**, *82*, 275.

63. A.; Sakakibara, T.; Itoh, S.; Iijima, S. *Physica B* **2002**, *323*, 277.

64. Li, X.; Zhu, H.; Jiang, B.; Ding, J.; Xu, C.; Wu, D. *Carbon* **2003**,*41,* 1664.

65. Zhang, M.; Yudasaka, M.; Iijima, S. *Chem. Phys. Lett.* **2001**, *336*,196.

66. Hirahara, K.; Suenaga, K.; Bandow, S.; Iijima, S. *Chem. Phys. Lett.***2000**, *324,* 224.

67. Singh, C.; Shaffer, M.; Kinloch, I.; Windle, A. *Physica B* **2002**,*323*, 339.

68. Satish kumar B.C.,Thomas P.J. Gindraj A., Rao C.N.R.,Appl, Phys.Letts **2000**, 77, 2530.

69. Deepak F.L., John N.S. Gindraj A, Kulkarni G.U.and Rao C.N.R,Chem. Phys. Letts. **2005**, 411,468-473

70 . Dacheng W. and Yunqi Lu, Advance Mater.**2008**, 20, 2815-2841.

71. TrioZon A. Lambin P. Roche S., Nanotechnology **2005**, 16,230.

72. Misewich J.A. et al., Science, **2003**, 300, 783.

73. G. H. Du, and W. Z. LiY. Q. LiuY. Ding, and Z. L. Wang*J. Phys. Chem. C,* **2007**,

111, 14293-14298

74. Gothard N., Daraio C., Gaillard J., Zidan R., Jin S., Rao A.M., Nano letters,

2004, 4,213-217,

75. J. W. Liu, J. H. Fang, L. Lu, F. Zhou, H. F. Yang, A. Z. Jin, C. Z. Gu, *Phys. Rev.*

B **2005**, 71, 155 424

76P. W. Chiu, S. Roth, *Appl. Phys. Lett.* **2007,** 91, 102 -109

77. Z. Osvath, A. A. Koós, Z. E. Horvath, J. Gyulai, A. M. Benito, M. T. Martinez, W. K.

Maser, L. P. Biró, *Chem. Phys. Lett.* **2002**, 365, 338.

78. Cheng, H. M.; Li, F.; Sun, X.; Brown, S. D. M.; Pimenta, M. A.;Marucci, A.;

Dresselhaus, G.; Dresselhaus, M. S. *Chem. Phys. Lett.* **1998,** *289*, 602.

79. Li, W. Z.; Pandey, B.; Liu, Y. Q. *J. Phys. Chem. B* **2006**, *110*, 23694.

80. S. Iijima, T. Ichihashi, Nature **363** 603(1993).

81. T.W. Odom, J.-L. Huang, P. Kim, C.M. Lieber, Nature
391 62(1998).

82.J.W.G. Wildoer, I.C. Venema, A.G. Rinzler, R.E. Smalley,
C. Dekker, Nature **391** 59(1998).

83. A.C. Dillon, K.M. Jones, T.A. Bekkedahl, C.H. Kiang,
D.S. Bethune, M.J. Heben, Nature **386** 377(1997).

84. S. Bandow, F. Kokai, K. Takahashi, M. Yudasaka, L.C.
Qin, S. Iijima, Chem. Phys. Lett. **321** 514(2000).

85. W.A. Steele, The Interaction of Gases with Solid Surface,
Pergamon, Oxford, (1974).

86. S. Iijima, M. Yudasaka, R. Yamada, S. Bandow, K. Suenega,F. Kokai and K.
Takahashi, Chem. Phys. Lett., **309**, 165 (1999).

87. (a) K. Murata, K. Kaneko, H. Kanoh, D. Kasuya, K. Takahashi, F. Kokai, M.
Yudasaka and S. Iijima, J. Phys. Chem. B, **106**,1132(2002); (b) E. Bekyarova, K.
Murata, M. Yudasaka, D. Kasuya, S. Iijima, H. Tanaka, H. Kanoh and K. Kaneko,
J. Phys. Chem. B, , **107**, 468(2003); (c) K. Murata, A. Hashimoto, M. Yudasaka,D.

Kasuya, K. Kaneko and S. Iijima, Adv. Mater., **16**, 1520(2004); (d) H. Murakami, K. Ajima, J. Miyawaki, M. Yudasaka, S. Iijima 4412 | J. Mater. Chem., **19**, 4407–4413(2009); (e) K. Ajima, M. Yudasaka,T. Murakami, A. Maigne, K. Shiba and S. Iijima, Mol. Pharm., ,**2,** 475(2005); (f) H. Isobe, T. Tanaka, R. Maeda, E. Noiri, N. Solin M. Yudasaka, S. Iijima and E. Nakamura, Angew. Chem., Int. Ed., **45**, 6676(2006); (g) E. Miyako, H. Nagata, K. Hirano,K. Sakamoto, Y. Makita, K. Nakayama and T. Hirotsu, Nanotechnology, , **19**, 075106(2008); (h) S. Lacotte, A. Garcı´a, M. D_ecossas, W. T. Al-Jamal, S. Li, K. Kostarelos, S. Muller, M. Prato, H. Dumortier and A. Bianco, Adv. Mater., **20,** 2421(2008).

88. a) Introduction to Nanotechnology (Eds: C. P. Poole, F. J. Owens),Wiley-VCH, Weinheim **2003**. b) Nanophysics and Nanotechnology an Introduction to Modern Concepts in Nanoscience (Ed: E. L. Wolf), Wiley, New York (2004).

89. J. Adelene Nisha,M. Yudasaka, S. Bandow, F. Kokai, K. Takahashiand S. Iijima, Chem. Phys. Lett., **328,** 381(2000).

90. J. Fan, M. Yudasaka, Y. Kasuya, D. Kasuya and S. Iijima, ChemPhys. Lett., **397**, 5 (2004).

91. R. Yuge, M. Yudasaka, J. Miyawaki, Y. Kubo, T. Ichihashi, H. Imai, E. Nakamura, H.Isobe, H. Yorimitsu and S. Iijima, J. Phys. Chem. B, **109**, 17861 (2005).

92. K. Murata, K. Kaneko, H. Kanoh, D. Kasuya, K. Takahashi, F. Kokai, M. Yudasaka and S. Iijima, J. Phys. Chem. B, **106,** 11132 (2002).

93. H. Tanaka, H. Kanoh, M. El-Merraoui, W. A. Steele, M. Yudasaka, S. Iijima and K. Kaneko, J. Phys. Chem. B, **108,** 17457(2004).

94. E. Bekyarova, K. Murata, M. Yudasaka, D. Kasuya, S. Iijima, H. Tanaka, H. Kahoh and K. Kaneko, J. Phys. Chem. B, **107,** 4681 (2003).

95. K. Murata, A. Hashimoto, M. Yudasaka, D. Kasuya, K. Kaneko and S. Iijima, Adv. Mater., **16**, 1520 (2004).

96. H. Murakami, K. Ajima, J. Miyawaki, M. Yudasaka, S. Iijima and K. Shiba, Mol. Pharm., **1**, 399 (2004).

97. N. Venkatesan, J. Yoshimitsu, Y. Ito, N. Shibata and K. Takada, Biomaterials, **26**, 7154 (2005).

98. (a) N. Tagmatarchis, A. Maigne, M. Yudasaka and S. Iijima, Small , **2,** 490 (2006);(b)

C. Cioffi, S. Campidelli, F. G. Brunetti,M. Meneghetti and M. Prato, Chem. Commun., 2129 (2006); (c) G. Pagona, N. Tagmatarchis, J. Fan, M. Yudasaka and S. Iijima, Chem. Mater., **18**, 3918(2006); (d) G. Pagona,A. S. D. Sandanayaka, Y. Araki, J. Fan, N. Tagmatarchis,G. Charalambidis, G. Coutsolelos, B. Boitrel, M. Yudasaka andS. Iijima, Adv. Funct. Mater., **17**, 1705(2007); (e) C. Cioffi,S. Campidelli, C. Sooambar, M. Marcaccio, G. Marcolongo,M. Meneghetti, D. Paolucci, F. Paolucci, C. Elhi, G. M. Rahman,V. Sogobba, D. M. Guldi and M. Prato, J. Am. Chem. Soc.,**129**, 3938(2007); (f) G. Mountrichas, S. Pispas and N.Tagmatarchis,Chem. Eur. J., 2007, 13, 7595; (g) G. Pagona, N. Karousis andN. Tagmatarchis, Carbon, **46,** 604(2008).

99. (a) J. Zhu, M. Yudasaka, M. Zhang, D. Kasuya and S. Iijima, NanoLett., **3,** 1239 (2003); (b) G. Pagona, A. S. D. Sandanayaka, Y. Araki,J. Fan, N. Tagmatarchis, M. Yudasaka, S. Iijima and O. Ito, J. Phys.Chem. B, **110**, 20729 (2006); (c) G. Pagona, J. Fan, A. Maigne,M. Yudasaka, S. Iijima and N. Tagmatarchis, Diam. Relat. Mater.,2007, 16, 1150; (d) G. Pagona, A. S. D. Sandanayaka, A. Maign_e,J. Fan, G. C. Papavassiliou, I. D. Petsalakis, B. R. Steele,N. Tagmatarchis, M. Yudasaka, S. Iijima and O. Ito, Chem. Eur J., 2007, 13, 7600.6 F. G. Brunetti, M. A. Herrero, J. de M. Mu~noz, A. Dı´az-Ortiz,J. Alfonso, M. Meneghetti, M. Prato and E. V_azquez J. Am. Chem.Soc., **130**, 8094 (2008).

100. Noelia Rubio, M. Antonia Herrero, Moreno Meneghetti, Angel Dı´az-Ortiz, Mauro Schiavon, Maurizio Prato d and Ester V_azquez, J. Mater. Chem. **19,** 4407 (2009).

101.(a) A. De la Hoz, A. Dı´az-Ortiz and A. Moreno, Chem. Soc. Rev.,2005, 34, 164; (b) Microwaves in Organic Synthesis, ed. A. Loupy,Wiley-VCH, Weinheim, 2nd edn, (2006).

102. (a) D. Dallinger and C. O. Kappe, Chem. Rev., 2007, 107, 2663; (b)V. Polshettiwar and R. S. Varma, Acc. Chem. Res., **41,** 629(2008).

103.(a) Y.Wang, Z. Iqbal and S. Mitra, J. Am. Chem. Soc. , **128**, 95;(2006) (b) F. Della Negra, M. Meneghetti and E. Menna, Fuller. Nanotub.Carbon Nanostruct, **11**, 25 (2003); (c) J. L. Delgado, P. de la Cruz,F. Langa, A. Urbina, J. Casado and J. T. L. Navarrete, Chem.Commun., 1734(2004); (d) M. Alvaro, P. Atienzar, P. de la Cruz, J. L. Delgado, V. Troiani, H. Garcia, F. Langa, A. Palkar andL. Echegoyen, J. Am. Chem. Soc., **128**, 6626(2006); (e) J. Li andH. Grennberg, Chem. Eur. J., 2006, 12, 3869; (f) J. Liu,I. Rodriguez, M. Zubiri, B. Vigolo, M. Dossot, Y. Fort,J. J. Ehrhardt and E. McRae, Carbon, 45, 885(2007); (g) Y. Xu,X. Wang, R. Tian, S. Li, L. Wan, M. Li, H. You, Q. Li andS. Wang, Appl. Surf. Sci., , **254,** 2431(2008); (h) F. G. Brunetti, M. A. Herrero, J. de M. Mu~noz, S. Giordani, A. Dı´az-Ortiz,S. Filippone, G. Ruaro, M. Meneghetti, M. Prato and E. V_azquez,J. Am. Chem. Soc., **129**, 14580(2007); (i) F. Langa and P. de laCruz, Comb. Chem. High Throughput Screening, **10**,766(2007).

104. S. Yoshida and M. Sano, Chem. Phys. Lett. , **30**, 165 (1999).

105. Dawber M, Rabe KM, Scott JF. Physics of thin-film ferroelectric oxides. Rev Mod Phys;**77**:1083–130(2005).

106. Scott JF. Nanoferroelectrics: statics and dynamics. J Phys Condens Matter;**18**:R361– 86 (2006).

107. Gruverman A, Kholkin A. Nanoscale ferroelectrics: processing, characterization and future trends. Rep Prog Phys;**69**:2443–74(2006).

108. Zhu X H. Recent patents on perovskite ferroelectric nanostructures. Recent PatNanotechnol;**3**:42–52(2009).

109. Jonker G H and Van Santen J H Physica**16**, 337–49(1950).

110. Zener C Phys. Rev. **82** ,403–5(1951).

111. Longo J and Ward R.J. Am. Chem. Soc. **83,**2816–8 (1961).

112. Sleight A W, Longo J and Ward R Inorg. Chem. **1**,245–8(1962).

113. Sleight A W and Weiher J F J. Phys. Chem. Solids **33**,679–87 (1972).

114. Patterson F K, Moeller C W andWard R Inorg. Chem. **2** 196–8 (1963).

115. Galasso F S, Douglas F C and Kasper R J 1966 J. Chem. Phys. **44** 1672–8

116. Nakagawa T J. Phys. Soc. Japan **24** 806–11(1968).