PRIKSHIT GAUTAM

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Research project

Actively associated with INMAS (DRDO) sponsored CARS Project on Hyperthermia (Rs.Ten Lakhs)

Current Research Area:

- Synthesis and Characterisation of Magnetic Nanoparticles For Use In Hyperthermia For Cancer Treatment
- Synthesis and Characterisation of Solution-Processed Reduced Graphene Oxide (rGO) Films as Transparent Electrode Material for Organic Solar Cell, Lithium ion Battery and Bio-sensor Applications.
- Bio-functionalized graphene-graphene oxide nanocomposite based electrochemical immunosensing and glucose sensor
- Photo super capacitor using graphene-graphene oxide nanocomposites

Teaching Experience:

Working as an Assistant Professor (Adhoc) in Physics Department, Kirori Mal College, University of Delhi, Delhi from March 2011 till date.

Educational Qualifications:

- **Ph.D. 2011: "Synthesis and Characterization of Lead free ferroelectric thin films"** from Department of Physics and Astrophysics, University of Delhi, Delhi, India.
- **M. Phil 2005: "Solar Neutrino Problem in Light of Sudbury Neutrino Observatory Experiment"** from H.P.Univ. Shimla, Himachal Pradesh, India.
- **Master of Science (M.Sc.). 2003: Physics** from H.P.Univ. Shimla, Himachal Pradesh, India.

Research Experience:

- Two years Research Experience (After Ph.D).
- Nine research papers published in International refereed Journals and one is communicated.
- National/International Conferences Attended: Eight.
- Completed **'PhD program Module"** from IUAC (NSC) New Delhi, (2006).
- Completed Research project (Three years as JRF) sponsored by IUAC (Govt. of India UGC) New Delhi, on Swift Heavy Ion Irradiation study on BLT thin films (2006-2008).

Material Characterisation Technique Known:

Structure and Morphology: X-ray Diffraction (**XRD**), Atomic force microscopy (AFM), Scanning Electron Microscope (**SEM**), Transmission Electron Microscope (TEM), **Electrical, Ferroelectric and Magnetic,** Polarization vs Electric field (**P-E Loop tracer**), Complex Impedance Spectroscopy (**Wayne-kerr**), Leakage current characterization (Source meter-2400), LCR meter (Fluke PM 6306), M-H loop, **Optical - Spectroscopic Ellipsometry (J A Woollam**), UV-spectroscopy (Shimadzu), Photoluminescence (Dongwoo optron), Raman spectroscopy (inVia Renishaw), **BET (Surface area and pore size analysis) Nova win.**

Software used for data analysis

MSOffice, Origin (data analysis), SPMLab (AFM), ImageJ (SEM), Zview (impedance analysis) Rietveld Analysis, POWDX, CHEKCELL (XRD), SRIM, TRIM (simulation codes For Swift Heavy Ion Irradiation), WVASE32 (J. A. Woollam)-for Model fitting in ***Spectroscopic ellipsometry*** **studies.**

Affiliation to Professional Societies

- Materials Research Society of India (MRSI) –LMB -1763
- Electron Microscope Society of India (EMSI)- LM-489
- Society for Technological Advanced Materials of India (STAMI)

Research Papers Accepted in International Refereed Journals

1. Kuldeep Singh, Ashish, K Sen, R K Kotnala, Mahesh Kumar, **Prikshit Gautam**, M. Singh, "Room Temperature Long Rang Ordering in $(BiFeO_3)_{1-x}(PbTiO_3)_x$ NanoCrystallites, **J. Appl. Phys.** 109**,** 123911 (2011); DOI:10.1063/1.3592281
2. **Prikshit Gautam,** S. Bhattacharyya, Sushil K. Singh, Ravi Kumar, R. P. Tandon *"Effect of zirconium doping on ferroelectric properties and leakage current mechanism in* $Bi_{3.25}La_{0.75}Ti_3O_{12}$ *(BLT) thin films"* ***Physica status solidi- B***-248, No. 4, 1010–1017 (2011) / http://dx.doi.org/10.1002/pssb.201046308.
3. Epsita Ghanti, Nobel Tomar, **Prikshit Gautam** and R. Nagarajan, "Synthesis of high surface area transitional alumina from $Al(OPh)_3$", ***Journal of Sol-Gel Science and Technology*** DOI: 10.1007/s10971-010-2316-4
4. **Prikshit Gautam,** S. Bhattacharyya, Sushil K Singh, R P Tandon *"Fabrication and Characterization of Bismuth Lanthanum Titanate (*$Bi_{3.25}La_{0.75}Ti_3O_{12}$*) thin films for FeRAM devices"* ***Integrated Ferroelectrics***, 119:1–11, 2010, DOI: 10.1080/10584587.2010.492288
5. **Prikshit Gautam,** Anupama Sachdeva, Manoj Arora, Sushil K Singh, R P Tandon *"Dielectric functions of Niobium doped* $Bi_{3.25}La_{0.75}Ti_3O_{12}$ *thin films using spectroscopic ellipsometry",* ***Integrated Ferroelectrics***, 119:1–8, 2010, DOI: 10.1080/10584587.2010.492293.
6. Anupama Sachdeva, Vandana Luthra, **Prikshit Gautam**, R P Tandon *"Dielectric and Ferroelectric studies on sol-gel derived calcium modified lead Zirconate Titanate ceramics",* ***Integrated Ferroelectrics***, 119:1–9, 2010, DOI: 10.1080/10584587.2010.492289

7. Anupama Sachdeva, Vandana Luthra, **Prikshit Gautam**, R P Tandon "*Structural and electrical properties of Lead Zirconate Titanate 0-3 composite films", **Integrated Ferroelectrics***, 119:1–10, 2010, DOI: 10.1080/10584587.2010.492294.
8. Raman Kashyap, Tanuj Dhawan, **Prikshit Gautam**, O. P. Thakur, N. C. Mehra, R. P. Tandon, *"Effect of Processing Conditions on Electrical Properties of $CaCu_3Ti_4O_{12}$ Ceramics*", ***Modern Physics Letters B,*** Vol. 24, No. 12 (2010) 1267–1273, DOI: 10.1142/S021798491002327X
9. K.C. Verma, R.K. Kotnala, M.C. Mathpal, N. Thakur, **Prikshit Gautam**, N.S. Negi, "*Dielectric properties of nanocrystalline $Pb_{0.8}Sr_{0.2}TiO_3$ thin films at different annealing temperature", **Materials Chemistry and Physics***, 114 (2009) 576–579.

Manuscripts Communicated

1. **Prikshit Gautam**, Anupama Sachdeva, Sushil K Singh, R P Tandon *"Dielectric functions of Manganese doped $Bi_{3.25}La_{0.75}Ti_3O_{12}$ thin films using spectroscopic ellipsometry''* Under review, ***Journal of Alloys and Compounds.***

Under Preparation

1. **Prikshit Gautam**, Surender sharma, R. P. Tandon *"*Bio-functionalized graphene-graphene oxide nanocomposite based electrochemical immunosensing and glucose sensor*".*
2. **Prikshit Gautam, Yogesh K Bhatti, Vinamrita Singh, R. P. Tandon, "P**hoto-supercapacitor using graphene-graphene oxide nanocomposites".

Conferences Attended (National/International)

1. **Prikshit Gautam** , R P Tandon, "Electrical and ferroelectric properties of Managnese modified $Bi_{3.25}La_{0.75}Ti_3O_{12}$ (BLT) thin films", International Conference and Workshop on Nano-Structured Ceramics and other Nanomaterials (ICWNCN), March 13-17, 2012, University of Delhi, Delhi, India.
2. **Prikshit Gautam**, Sanjay Tandon, Manoj Arora, R P Tandon , "Structural morphological and optical studies of Zr doped $Bi_{3.25}La_{0.75}Ti_3O_{12}$ (BLT) thin films", International conference on Electron nanoscopy, (***EM50***),06-08 july 2011, Defence Metallurgical Research Laboratory (DMRL), Hydrabad, India.
3. **Prikshit Gautam**, Anupama Sachdeva, Swati Arora, N C Mehra, R P Tandon, *"Structural, morphological and optical studies of Mn doped $Bi_{3.25}La_{0.75}Ti_3O_{12}$ (BLT) thin films"* "International Conference on advances in Electron Microscopy and Allied Fields (***EMSI- 2010***), 8-10 March, 2010 , Bhaba Atomic Research Centre (BARC) Mumbai, India.
4. **Prikshit Gautam**, S. Bhattacharyya, Sushil K Singh, R P Tandon ,*"Effect of film thickness on Electrical properties of Bismuth Lanthanum Titanate $Bi_{3.25}La_{0.75}Ti_3O_{12}$) thin films",* International Conference on Electroceramics (***ICE-2009***) 13-17th December, 2009, University of Delhi, Delhi-7, India.
5. **Prikshit Gautam**, Sushil K. Singh, Ravi Kumar, R. P. Tandon, *"Swift Heavy Ion (SHI) irradiation effects on structural and electrical properties of niobium modified $Bi_{3.25}La_{0.75}Ti_3O_{12}$ thin films prepared by chemical solution deposition method*", International conference on multifunctional oxide material (***ICMOM-2009***) -16-18 April, 2009-H P University Shimla, HP, India.
6. **Prikshit Gautam**, N C Mehra, V K Hans, K N Sood, Sushil K Singh, R P Tandon, *"Characterization of Nb doped $Bi_{3.25}L_{0.75}Ti_3O_{12}$ thin films by chemical solution deposition method",* National Conference on Electron Microscopy and Allied Fields (***EMSI- 2009***), 17-19 January-2009, Bundelkhand University, Jhansi U.P. , INDIA,

7. V. K. Hans and **Prikshit Gautam**, *"Studies of $Ca_{0.6}$ $Sr_{0.4}$ $Fe_{12}O_{19}$ ferrites prepared by solid state reaction"*,International Conference on Magnetic Materials and Their Applications for 21st Century (***MMA-21***), 21-23rd October, 2008, National Physical Laboratory, New Delhi-12. , India.
8. **Prikshit Gautam**, Sushil K Singh, R P Tandon, *"Characterization of Zr doped $Bi_{3.25}L_{0.75}Ti_3O_{12}$ thin films prepared by chemical solution deposition method",* National Conference on Electron Microscopy and Allied Fields (***EMSI-2007***), 26-28 November-2007, University of Delhi, New Delhi , India.
9. **Prikshit Gautam**, Sushil K. Singh, R. P. Tandon, *"Structural, morphological and ferroelectric properties of $Bi_{3.25}L_{0.75}Ti_3O_{12}$ thin films prepared by chemical solution deposition method",* National Seminar on Electroceremics (***NSE-2007***) November 5-6, 2007, GVM girls College Sonepat, Haryana, INDIA,
10. **Prikshit Gautam**, N.C Mehra, R.P Tandon, *"Ferroelectric and dielectric properties of Fe_2O_3-doped lead- free $Bi_{0.5}Na_{0.45}K_{0.05}TiO_3$ ferroelectric ceramics",* The 10th International Conference on Advanced Materials" (***IUMRS-ICAM-2007***) 8-13 October, 2007, Bengaluru India.

List of referees

- **Prof. R P Tandon, (PhD Supervisor),** Department of Physics and Astrophysics, University of Delhi, North Campus, Delhi 100007, India, Mobile No. +91-9818229608 , Email: ram_tandon@hotmail.com
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- **Dr. Sudipta Bhattacharyya**, Scientist-D, Electroceramics Group, Solid State Physics Laboratory (SSPL) DRDO,Lucknow Road, Timarpur, Delhi, India 110 054 - Phone: +91-9868885562, Email: sudipto_iisc@yahoo.com
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- **Dr Sushil K Singh** , Scientist-D, MEMS Group, Solid State Physics Laboratory (SSPL) DRDO, Lucknow Road, Timarpur, Delhi, India 110 054
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I hereby certify that the above information given by me is true to the best of my knowledge and belief.

(Dr. PRIKSHIT GAUTAM)