Department Of Physics

Department of Physics was established in 1972 and currently offers B.Sc., M.Sc. and Ph.D. Programs. Department of Physics is "*Highly Rated Department"* under *College of Excellence* Scheme of UGC. Department has received special grants from UGC, DBT and DST for strengthening undergraduate teaching and for laboratory up gradation. Department is endowed with motivated research-active staff with a unique research culture. Department has well equipped 'Thin Film Research Laboratory', 'Material Research Laboratory' and 'Nanomaterial Synthesis Laboratory.' There are 03 research guides in the department and has produced 11 Ph.Ds till date. Currently 05 students are pursuing Ph.D.in the department. The faculties have completed several major/minor research projects and have published more than 70 research papers in various reputed national and international journals. Recently 04 patents are also awarded. All the faculty members have visited abroad to present their research work.

Name of the research centre:	**Physics**
Year of establishment :	**2004**
No. of Seats for Ph.D.:	**12**

Research guides in the centre

Dr. Madhavi Thakurdesai
Head, Department of Physics
Associate Professor in Physics

Dr.Madhavi Thakurdesai obtained Ph.D in Physics in the year 2009 from University of Mumbai. She established a 'Thin Film Research Laboratory' in the Department of Physics. She has more than 30 years of teaching experience at UG level and more than 25 years of experience at PG level. She has wide research experience and she has completed several research projects. She has visited countries like USA, France and Croatia for paper presentation. He is a recognized research guide for the University of Mumbai. She is member of various academic bodies, external referee to Doctoral thesis of 02 Universities and referee to many national and international Journals. Currently She is Head, Department of Physics and she is Co coordinator for star college scheme of DBT. She is member of IQAC, international linkage committee etc.

Research Contribution:

No. of Publications: 30; No. of papers presented:18; No. of Books authored : 03; No of talks delivered at Orientation/Refresher/Seminar/Conference: 21; Seminar/ Conference Attended: 25; Workshops / Training programs Attended : 10; Students pursuing Ph. D. : 03

Thrust area of research

- Nanostructured Thin Films
- Ion Beam Irradiation
- Nanocomposites
- Solar Cell Materials

Dr. Mahendra M Khandpekar

Associate Professor in Physics

.

Dr. Mahendra M Khandpekar holds the distinguished Degree of Doctor of Science (D.Sc) in Physics awarded by Sambalpur University, Odisha in 2011. He obtained his Ph.D in Physics from Institute of Science, Mumbai in 1995. He was instrumental in developing the 'Materials Research Laboratory' in the Department of Physics catering to the needs of students from remote areas of Murbad/ Karjat. He has wide teaching and research experience of 27 years and presently holds the post of Associate Professor in Department of Physics. He has presented papers at international conferences in USA (2009), China (2010), Poland (2014). Recently in 2016, he has published two Indian Patents based on his research work. He is member of various academic bodies, external referee to Doctoral thesis of many Indian Universities and referee to more than fifteen International Elsevier Journals.

Research Contribution:

No. of Publications: 56; No. of papers presented: 65; No of talks delivered at Orientation/Refresher/Seminar/Conference: 05; Seminar Conference Attended: 44; Workshops / Training programs Attended: 10; Guided Ph. D. Students: 07 (Degree awarded); Students pursuing Ph. D. : 02

Thrust area of research

- Crystal Growth & Characterization
- Non linear Optical Materials
- Nanomaterials and Applications

Dr. Dattatray E. Kshirsagar
Assistant Professor in Physics

He has completed Post graduation in Physics with specialization in Electronics. Awarded Ph.D. in 2009 for the thesis titled "Synthesis, Characterization and Microwave absorption Studies of Carbon Nano materials". He has been working as a faculty in Department of Physics, Birla College for the past 18 years. Received an Indo-Italian fellowship from Ministry of Education, Universities and Research (MIUR), Italy, year 2008-09 for Post-Doctoral research at University of Genova, Italy.

He is a member of M.Sc. Physics examiners panel,Sant Gadge Baba Amravati University, Amravati since 2013, He is Co-Chairman, Arts Circle. He is reviewer of six renowned International Research Journals**.** He is a Recognized Research guide for the JJT University , Jhunjhunu, Rajasthan for Ph. D. (Science) Degree in Physics .He is a life member of Indian carbon society and member of American Nano Society.

Research Contribution:

No. of Publications: 14; No. of articles published in edited books: 04; No. of papers presented: 30; Seminar Conference Attended: 35; Workshops / Training programs Attended: 15;

Thrust area of research

- Carbon Nano Material
- Microwave Absorption
- Ferromagnetic Materials
- Taguchi Optimization

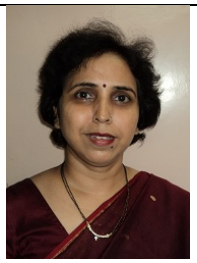
Active Researchers in the Department

Dr. Vijay Jadhav	
Dr. Vijay S Jadhav is working as a Associate professor in the Department of Physics, Birla College Kalyan. He is NET, SLET and GATE qualified and obtained his P.hD Degree from the Department of Physics, Savitribai Phule Pune University . His area of Research includes Accelerator Physics, Computational Physics. Radiation induced defects, diffusion and synthesis of metal/semiconductors nanoparticles in glass matrix and Microbial Fuel cell. He has published seven articles in International Journals and visited to France and USA . He worked minor research projects and collaborated with Department of Physics, Savitribai Phule Pune University , CMET Pune and BARC Mumbai for his research work. He is active in National Service Scheme (NSS) and organized many social activities.	

Dr. Harish Kumar Dubey
Assistant Professor in Physics

Dr. Harish Kumar Dubey is Assistant Professor in the Department of Physics, Birla College, Kalyan affiliated to University of Mumbai, India. He is a true **Birlaite** as he has been student of Birla College from XI Sci. to M.Sc. (Physics) with an excellent academic record. He completed his Ph.D. from Solapur University, Solapur, India under the guidance Prof. M. Sharon, former Professor, IIT Bombay and Prof. L. P. Deshmukh, Head, Department of Physics and Electronics, Solapur University, Solapur. He has published 7 papers in the Peer revived International Journal and contributed 3 chapters in the books of international repute. He has also Co-authored a Book too. He has 2 completed and 1 ongoing Minor Research Project funded by University of Mumbai. He is a reviewer of a International Journal. He has presented 25 papers in the National and International conferences in India and abroad and is awarded for **Best Paper Presentation**, twice in National conference. He has also delivered Invited Talk in a Conference and Chaired Sessions in International Conferences. His area of research includes synthesis and study of electrical properties semiconducting materials like SbSI, SbTeI and Carbon. He is an External Examiner and Paper Setter for M.Sc. Nano Technology of Solapur University. He has 20 years of teaching experience at UG and PG level Specialized in Electronics.

Ph.D. (Science) Degree in the subject of Physics	
Name of Guide	**Dr. Sadanand. V. Salvi**

No.	Name Of Student	Year of Award	
1.	**Dr. Pushpinder Bhatia** Synthesis and Investigation of Structural, Dielectric and Magnetic Properties of Psudobrookites,reduced to Spinel and Pervoksites by using suitable substituents.	2011	
2.	**Dr. Veena Joshi** **Study of new Magnetoeletric Material using Dopants on Fe/Ti-O Sysstem**	2010	

Name of Guide	Dr. M. R. Nair

No.	Name Of Student	Year of Award	
1.	**Dr. Kailash R. Jagdeo** Surface modification of shape memory alloy niti (nitinol) using energetic ions	2012	
2.	**Dr. Suresh N. Kadam** Characterization of surface modified Ti_6Al_4V alloy using energetic ions	2010	

Name of Guide	Dr. Madhavi Thakurdesai		
No.	**Name Of Student**	**Year of Award**	
1.	Ms. Smita Survase Growth and Study of II- VI compound semiconductor Nanostructured Thin Films **(Ongoing)**	Thesis Submitted 2017	
2.	**Mr.Pravin Dhangada** Surface Nanostructuring of CdZnTe Thin Films by Ion Irradiation **(Ongoing)**	Registered in 2016	
3.	**Ms.Dipali Keskar** Development of p-type CdZnTe Thin Films using ion implantation **(Ongoing)**	Registration in Process	

Name of Guide	Dr. Mahendra Khandpekar		
No.	**Name Of Student**	**Year of Award**	
1.	**Dr. Jyotsana Tiwari** Growth and Characterisation of Amino Acid Crystals	2011	
2.	**Dr.. Shailesh Dongare** Growth and Characteisation of Glycine nitrate as potential NLO Materials	2011	

3.	**Dr. Shirish Patil** Studies on Growth and Structural Properties of Glycine Sulphate single crystals	2012	
4.	**Dr. S G Gourkhede** Synthesis and Structural properties of Lanthanide Fluoride nano materials	2013	
5.	**Dr. Smita Patil** Growth and Non linear optical properties of L-Arginine Sulphate Crystals	2014	
6.	**Dr. Amit Singh** Microwave Synthesis and Surface modification of Lanthanum Fluoride Nanoparticles	2016	
7.	**Dr. Anik Shrivastav** Prediction of Glass Forming Ability (GFA) in Fe base Glass forming alloys system using Molecular Dynamics(MD)	2016	

8.	**Ms. Tarannum Shaikh** Synthesis and Characterisation of Lanthanide doped water soluble LaF3 nano particles for upconversion fluorescence	2017	
9.	**Mr. Manoj Mahajan** Synthesis, Structural and Optical Characterization of Lanthanide doped EuF_3 nanoparticles modified with organic ligands for enhanced upconversion luminescence **(Ongoing)**	Registered in 2016	

List of Major Research Projects

Name of Investigator	**Title of project**	**Amount Sanctioned**	**Year**
PI-Dr. Madhavi Thakurdesai	Synthesis and Characterization of CdTe Thin Films by Vapour Deposition Technique	Sanctioned by UGC **Rs. 9,25,000/-**	2011-14 Completed
PI-Dr. Dr Mahendra M Khandpekar	Crystal Growth and Characterisation of alpha-glycine based non linear optical materials for electronic applications	Sanctioned by UGC **Rs. 8,15,800/-**	2011-14 Completed
Co-PI- Dr. DattatrayKshirsagar	Preparation of thin film of carbon from plant derived precursor for p-type and n-type semiconductors	Sanctioned by DST **Rs. 10,90,000/-**	Completed

List of Minor Research Projects

Name of Investigators	Title of project	Amount Sanctioned	Year
Dr. Madhavi Thakurdesai	To study the chaotic nature and emergence of self organizing structures because of entropy transfer of living organisms	Sanctioned by UGC **Rs. 35,000/-**	2003-05 Completed
Dr. Madhavi Thakurdesai	Formation and phase transition of transition metal oxide precipitates embedded in alumina	Sanctioned by University of Mumbai **Rs. 35,000/-**	2005-06 Completed
Dr. Madhavi Thakurdesai	Synthesis of brookite phase of TiO2 using RTA processing	Sanctioned by University of Mumbai **Rs. 15,000/-**	2009-10 Completed
Dr. Madhavi Thakurdesai	Synthesis of TiO2/SiO2 and TiO2/Al2O3 nanocomposite structure using reactive ion beam	Sanctioned by University of Mumbai **Rs. 35,000/-**	2011-12 Completed
Dr. Madhavi Thakurdesai	Photoluminescence studies of CdZnTe thin films	Sanctioned by University of Mumbai **Rs. 38,000/-**	2015-16 Completed
Dr. Mahendra M Khandpekar	Studies on electrical and Ferroelectric Properties of solution grown $BaTiO_3$ Crystals	Sanctioned by UGC **Rs.43,000/-**	2001-02 Completed
Dr. Mahendra M Khandpekar	Growth and Surface Studies on alpha-Glycine Crystals in	Sanctioned by University of Mumbai **Rs. 30,000/-**	2002-03 Completed

	relation to biology and medicine		
Dr. Mahendra M Khandpekar	A ferroelectric and an effective anti radiation drug Potassium Iodate	Sanctioned by University of Mumbai **Rs. 35,000/-**	2003-04 Completed
Dr. Mahendra M Khandpekar	A Novel method for growth of $BaTiO_3$ material	Sanctioned by University of Mumbai **Rs. 30,000/-**	2006-07 Completed
Dr. Mahendra M Khandpekar	Synthesis and Characterisation of aminocid modified water soluble CeF_3 nanoparticles for biomedical applications	Sanctioned by University of Mumbai **Rs. 37,000/-**	2014-15 Completed
Dr.Vijay Jadhav	Ion implantation on Glass	Sanctioned by UGC **Rs. 25,000/-**	2002-04 Completed
Dr.Vijay Jadhav	Design and Development of Electrodes for Microbial fuel Cell	Sanctioned by University of Mumbai **Rs. 37,000/-**	2015-16 Completed
Dr. Harish kumar Dubey	Synthesis and Study of Electrical Properties of SbSI	Sanctioned by University of Mumbai **Rs. 32,000/-**	2008-09 Completed
Dr. Harish kumar Dubey	Synthesis and Study of Electrical Properties of SbTeI and effect of Dopant	Sanctioned by University of Mumbai **Rs. 30 ,000/-**	2011-12 Completed
Dr. Harish kumar Dubey	Light Emission by C Material derived from Shell	Sanctioned by University of Mumbai **Rs. 32,000/-**	2016-17 (Ongoing)
Dr. Dattatray Kshirsagar	Preliminary study of microwave absorption by nano	Sanctioned by UGC **Rs.62,000/-**	2005-06 Completed

	materials		
Dr. Dattatray Kshirsagar	Synthesis and charaetization of carbon nanofiber from neem oil	Sanctioned by University of Mumbai **Rs. 20,000/-**	2010-11 Completed
Dr. Dattatray Kshirsagar	Study of Shielding Effectiveness Property of Carbon Nano Material Synthesized from Cotton Seeds Oil	Sanctioned by University of Mumbai **Rs. 58,000/-**	2015-16 Completed

LIST OF PUBLICATIONS IN CSI JOURNALS

1. **Madhavi Thakurdesai**, A. Mahadkar, D. Kanjilal, Varsha Bhattacharyya, **"**Nanocrystallisation of TiO_2 Induced by Dense Electronic Excitation". *Vacuum* 82 (2008) 639- 644.
2. **Madhavi Thakurdesai,** A. Mahadkar, P. K. Kulriya, D. Kanjilal, Varsha Bhattacharyya, "Synthesis of Nanodimensional TiO_2 Thin Films Using Energetic Ion Beam". *Nuclear Instruments and Methods in Physics Research B* 266 (2008) 1343-1348
3. **Madhavi Thakurdesai,** D. Kanjilal, Varsha Bhattacharyya, "Formation of Nano- Hillocks by Impact of Swift Heavy Ions on Thin Films of TiO_2". *Applied Surface Science* 254 (2008) 4695 - 4700
4. **Madhavi Thakurdesai,** T. Mohanty, John J, T. K. Gundu Rao, Pratap Raychaudhuri, V. Bhattacharyya, D. Kanjilal, "Synthesis of Nanodimensional TiO_2 Thin Films". *Journal of Nanoscience and Nanotechnology* 8 (2008) 4231–4237
5. **Madhavi Thakurdesai**, I. Sulania, A.M. Narsale, D Kanjilal, Varsha Bhattacharyya, "Formation of TiO_2 Nanorings Due to Rapid Thermal Annealing of Swift Heavy Ion Irradiated films". *Journal of Nanoscience and Nanotechnology* 8 (2008) 4387– 4394
6. Himanshu Narayan, Hailemichael Alemu,Lebohang, Macheli, **Madhavi Thakurdesai**, T.K. Gundu Rao, "Synthesis and characterization of Y3+doped TiO2 nanocomposites for photocatalytic applications". *Nanotechnology* 20 (2009) 255601-255608

7. **Madhavi Thakurdesai**, T. Mohanty, D. Kanjilal, Pratap Raychaudhuri and Varsha Bhattacharyya, "Formation of nanocrystalline TiO_2 by 100 MeV Au^{8+}". *Applied Surface Science* 255 (2009) 8935 -8940
8. **Madhavi Thakurdesai,** D. Kanjilal, Varsha Bhattacharyya, "Substrate dependence in the formation of TiO_2 nanophases by dense electronic Excitation". *Semiconductor Science Technology* 24 (2009) 085023 (7pp)
9. Himanshu Narayan, Hailemichael Alemu,Lebohang Macheli, Mantoa Sekota **Madhavi Thakurdesai,** T.K. Gundu Rao, "Role of particle size in visible light photocatalysis of Congo Red using TiO_2. $[ZnFe_2O_4]_x$ Nanocomposites". ***Bulletin of Materials Science*** 32 (2009) 499–506.
10. **Madhavi Thakurdesai,** Nilesh Kulkarni, Bhagyashri Chalke, Ajit Mahadkar, "Synthesis of CdSe films by annealing of Cd/Se bilayer". *Chalcogenide Letters* 8 (2011) 223-229
11. Himanshu Narayan, Hailemichael Alemu, Daniel N. Alotsi, Lebohang Macheli, **Madhavi Thakurdesai,** Sandesh Jaybhaye, Arvind Singh, "Fast and complete degradation of Congo red under visible light with Er^{3+} and Nd^{3+} ions doped TiO2 nanocomposites". *Nanotechnology Development* **Vol 2: e2: (2012) 5- 11**
12. **Madhavi Thakurdesai,** D Kanjilal, Varsha Bhattacharyya, "Effect of Rapid Thermal Annealing on Nanocrystalline TiO_2 Thin Films Synthesized by Swift Heavy Ion Irradiation". *Applied Surface Science* 258 (2012) 7855– 7859
13. "**Madhavi Thakurdesai,** Ajit Mahadkar**,** Varsha Bhattacharyya, Study of Swift Heavy Ion Irradiation Induced Nanophases of TiO_2". *Journal of Nano Research* 24 (2013) 133-139
14. Himanshu Narayan, HailemichaelAlemu, PusetsoF.Nketsa, Toka J.Manatha, and **MadhaviThakurdesai** "Synthesis and structure of some nano-sized rare-earth metal ions doped potassium Hexacyanoferrates". *Physica E* 69 (2015)127–132
15. S. Survase, **M. Thakurdesai**,A.G.Rao, "Role of Substrate Temperature on Nanocrystallisation of CdTe Thin Films" . *Chalcogenide Letters* 12 (2015) 407-414
16. Kirti Agashe, Nisha Sarvade ,Sangeeta Joshi, **Madhavi Thakurdesai,** "Resistive Switching in Titanium Dioxide Thin Films For the Emerging Non Volatile Memory Device" *Bionanofrontier* (2015) Vol 8 pp 1-3

17. S Survase, I Sulania, D Kanjilal, **M Thakurdesai ,** "Effect of 100 MeV Nickel Ion Beam Irradiation on CdTe Nanostructured Thin Fillms" *Advanced Science Letters* 22 (2016) 1008-1012
18. Smita Survase, Himanshu Narayan , I. Sulania , **Madhavi Thakurdesai,** "Swift heavy ion irradiation induced nanograin formation in CdTe Thin Films" *Nuclear Instruments and Methods in Physics Research B*387 (2016) 1–9
19. Smita Survase, **Madhavi Thakurdesai**, I Sulania, D Kanjilal, " **Swift Heavy Ion irradiation induced nanocrystallisation in Te/Cd/Te trilayer thin films"**, *Thin Solid* Films 636 (2017) 403-411
20. Kirti Agashe, Nisha Sarwade, Sangeeta Joshi, **Madhavi Thakurdesai**, Smita Surwase, Pravin Tirmali, Kandasami Asokan, "Effect of gamma irradiation on resistive switching of Al/TiO 2/n+ Si ReRAM" *Nuclear Instruments and Methods in Physics Research B 403* (2017) 38-44
21. **M M Khandpekar**, "Thermal Evaporation of diglycine hydrogen fluoride crystals**"** Indian Journal of Pure and Applied Physics, 41 (9) (2003) 704-706
22. **M M Khandpekar**, "Dielectric Properties of mixed Glycine Fluoride Crystals". Indian Journal of Physics, 80 (8) (2006) 841-843
23. Vinod Narayane, **M M Khandpekar**, "Physical and Biological findings of Radish Root Ash: Therapy for Jaundice Treatment". **Bionano Frontier**, 3 (1) (2010) 141-144.
24. S G Gourkhede, **M M Khandpekar**, S P Pati**,** "Synthesis of LaF3 superfine powder by microwave heating method". *Materials Science*, Vol.7 (6) (2011)
25. S.V. Salvi, A.J. Ranade and **M M Khandpekar**, "Dielectric Characterization of Ba (Fe1/3 Nb2/3)O3 Pervoskite". *Ferroelectrics* , 323 (2005) 107 –111.
26. **M.M. Khandpekar** and S.P. Pati, "Growth, characterization, non-linear optical properties and dislocation studies in new GCF crystals". *Journal of Crystal Growth*, 312 (2010) 1150–1153.
27. P. Sivaraman, R.K. Kushwaha, K. Shashidhara, V.R. Hande, A.P. Thakur, A.B. Samui, **M.M. Khandpekar**, "All solid supercapacitor based on polyaniline and crosslinked sulfonated poly[ether ether ketone". *Electrochimica Acta* 55 (2010) 2451–2456.

28. **M.M. Khandpekar** and S.P. Pati, “Growth and characterisation of new non linear optical material α-glycine sulpho-nitrate (GLSN) with stable dielectric and light dependent properties”. *Optics Communications* 283 (2010) 2700–2704.
29. **M.M. Khandpekar** and S.P. Pati, “Growth, chemical and structural analysis of glycine potassium iodate (GPI):A new non-linear optical material”. *Solid State Sciences*, 12 (2010) 1831-1836.
30. **M.M. Khandpekar** and S.P. Pati “Thermal Evaporation, Chemical Etching, Microhardness and Dielectric Behaviour of Glycine Sulpho Nitrate (GSN) Crystals of Non-linear Optical Origin”. *International Journal of Material Science*, Volume 5(5) (2010) pp. 657—665.
31. **M.M. Khandpekar** and S.P. Pati, “XRF, Electrical, Photoconductive, Light Dependent and Dielectric Behaviour of Tri Glycine Potassium Iodate (TGPI) Crystal of Non Linear Optical Origin”. *International Journal of Material Science*, Volume 5, Number 5 (2010), pp. 697—704.
32. “**M. M. Khandpekar**, S. P. Pati Growth, structural, optical and electrical behavior of glycine potassium nitrate (GPN) crystal with non-linear optical response”. *Optics Communications*, 284 (2010) 818–823.
33. **Mahendra M. Khandpekar** , Shailesh S. Dongare , Shirish B. Patil , Shankar P. Pati, “Growth, structural and optical studies on amino acid based new GSB crystals having, non-linear optical characteristics”. *Optics Communications* (2010), pp. 1578-1582.
34. **M.M. Khandpekar** , S.S. Dongare , S.B. Patil , S.P. Pati, “Enhanced non-linear optical response in hybrid GSPN crystals: Structural, optical and dielectric analysis”. *Optics Communications* (2010), pp. 1583-1588.
35. **M.M. Khandpekar** , S.S. Dongare , S.B. Patil , S.P. Pati, “Growth and characterization of GSZS crystals with enhanced transparency window for non linear optical applications, *Optics Communications*”. 284 (2011) 3548–3551
36. **M.M. Khandpekar**, R.K. Kushwaha, S.P. Pati, “Design, Fabrication, and Evaluation of a 5F - 5V Prototype of Solid-State PANI based Supercapacitor”. *Solid State Electronics*, 62 (2011) 156–160
37. **M.M. Khandpekar**, R.K. Kushwaha, S.P. Pati, ”Rapid synthesis of pervoskites (KNbO3, SrTiO3) and spinel (LiMn2O4) in presence of α-glycine with finished end product”. *Materials Letters*, 65 (2011) 2439–2441

38. **Mahendra M. Khandpekar** , Shailesh S. Dongare, Shirish B. Patil , P.P. Satpute , Shankar P. Pati, "Structural, optical and electrical studies on amino acid based new GBC crystals having non linear optical response". *Optics Communications* 284 (2011) 4508-4513
39. **Mahendra M. Khandpekar**, Shankar P Pati, "Synthesis and characterisation of glycine sodium nitrite crystals having non linear optical behavior". *Optics Communications* 285 (2012) 288-293
40. **Mahendra M. Khandpekar**, Shailesh S. Dongare, Shirish B. Patil, Shankar P Pati, "Growth, structural, optical and mechanical studies on acid mixed glycine metal salt(GABN) crystal as potential NLO material". *Optics Communications* 285 (2012) 1253–1258
41. S G Gourkhede, **M M Khandpekar**, S P Pati, A T Singh, "Blue Fluorescence in doped LaF3 nanocrystals synthesized by microwave technique". *Advanced Materials Research*, Vol. 584 (2012), pp.219-223
42. S G Gourkhede, **M M Khandpekar**, S P Pati, A T Singh, "Effect of Rare Earth Doped Elements and Characterisation of LaF3: Ln3+ (Ln3+ = Ce3+, Pr3+, Nd3+) Nanocrystals". *Advanced Materials Research*, Vol. 585 (2012), pp.174-178
43. S G Gourkhede, **M M Khandpekar**, S P Pati, A T Singh, "Red Fluorescence in doped LaF3: Nd3+, Sm3+ Nanocrystals synthesized by Microwave Technique". *ISRN Materials Science*, doi:10.5402/2012/763048
44. S G Gourkhede, **M M Khandpekar**, S P Pati, A T Singh, "Synthesis of Hexagonal LaF3: Nd3+,Sm3+ Nanocrystals and studies of NLO Properties". *Nanosystems: Physics, Chemistry, Mathematics* (2013) 4(2), pp.241-146
45. **M. M. Khandpekar**, S. P. Pati, "Topographical studies on GNF Crystals of non linear optical origin". AIP Conf. Proc. 1512, 1246-1247 (2013)
46. **M M Khandpekar**, J. G. Mhetar, S. K. Patil, S. S. Araj, P. P. Satpute, "Comparative studies on synthesis and structure of old and new polymorphs of desvenlafaxine - an antidepressant drug". *Indonesian Journal of Pharmacy*, 2013 (published online)
47. **M M Khandpekar** and Smita Patil, "Growth And Characterization Of L-Arginine Sulphate: A New Nanocrystal With Non Linear Optical Behaviour". AIP Conf. Proc. 1536, 725-726 (2013)
48. **Mahendra M Khandpekar** and Siddeshwar G Gaurkhede, "Red Fluorescence in LaF3: Nd3+, Sm3+ nanocrystals grown by rapid microwave assisted synthesis: A comparative

analysis of vibrational, thermal and electrical properties". *J. Crystal Growth*, 2013 (published online)

49. **M M Khandpekar** and Smita Patil, "Synthesis and Characterisation of L-arginine sodium sulphate (LANS) Nanocrystals with non-linear optical response". *Advances in Applied Science Research*, 5(1), 186-196, 2014.
50. Amit Singh and **M M Khandpekar,** "Enhanced Luminescence of L-Alanine Capped LaF3:Ce nanoparticles for fluorescent biological labeling". *Journal of Nano Research*, 31(2015) 81-92
51. Amit Singh and **M M Khandpekar**, "Improved photoluminescence and thermostabilisation of glycine functionalized LaF3:Ce nanoparticles useful in bio imaging and bio tagging". *Materials Research Express*, 2(2016),055401
52. Anik Shrivastava, **Mahendra Khandpekar**, D. S. Gowtam, and V. P. Deshmukh, "Revealing the Inherent Structure of Fe100-XZrX from Radial Distribution Function Using Molecular Dynamics". *Adv. Sci. Lett.* 21(2015) 2783-85
53. Anik Shrivastava, **Mahendra Khandpekar**, Satya Gowtam Dometti, Mahesh Mohape and Vinay Deshmukh, "Molecular dynamics study of the structural and dynamical properties of binary Cu50Zr50 bulk metallic glass". *Advances in Applied Science Research* 6(7) (2015) 74-80
54. **Mahendra Khandpekar**, Anik Shrivastava, , D S Gowtam Mahesh Mohape, V P Deshmukh, **"Prediction of glass forming ability in Cu_xZr_{1-x} alloys using molecular dynamics"**. *Nanosystems: Physics, Chemistry, Mathematics*, 6(5) (2015) 650-660
55. Pandey Munish, Bhangale B M, **Khandpekar M M**, "Effect of Temperature on Dielectric Constant and Electrical Conductivity of Pure and Urea added KDP". *Invertis Journal*, 9 (2016) 30-35
56. Tanwin Ashrafi and **Mahendra Khandpekar**, "Formation of nanoparticles and red fluorescence in leucine capped cerium fluoride nanoparticles". *International Journal of Science and Technology*, 4 (2016) 8-11
57. Tarannum Attar and **Mahendra Khandpekar**, "Preparation and Photoluminescence of Hexagonal LaF3 Pr, Ho Nanoparticles by Microwave Assisted Technique". *International Journal of Chemical and Physical Sciences*, 5 (2016) 21-27

58. Amit.T. Singh , **M.M.Khandpekar**, S.G.Gaurkhede, "Enhanced luminescence of L-Alanine capped LaF3: Ce nanoparticles useful in biological labeling". *Journal of Nanoscience Research*, 32 (2015), 81-92

59. Vijay.S Jadhav, Avinash Deore, S.S.Dahiwale, S.D.Dhole , "100MeV Silver ions induced defects and Modifications in Silica Glass, *Nuclear Instruments and Methods in Physics Research Section :B* , 331(2014) 149-146

60. **Vijay.S Jadhav**, Ashok Bankar, Smita Zindarde "Size Control of Cu Nanoparticles in Ion – Exchanged Soda Lime Glass by 6 MeV Electron Irradiation and its Application in Biofilm inhibition", *International Journal of Green Nanotechnology*. 433-463**.**

61. **Vijay.S Jadhav**, Ashok Bankar, Smita Zindarde "Surface and Structural Changes in Polyimide by 100 MeV Ag7+ ion irradiation" *Surface &Coating Technology* 203 (2003) 2620-2624

62. **Harish K. Dubey**, D. E. Kshirsagar, L.P. Deshmukh, Madhuri Sharon and Maheshwar Sharon, "A new carbon material synthesized from coconut shell", *Advanced Science*, Engineering and Medicine, 3 (2011):1-4.

63. **Harish K. Dubey**, L.P. Deshmukh, D. E. Kshirsagar, Vijay S. Jadhav, Madhuri Sharon and Maheshwar Sharon, "Synthesis of Antimony Sulphoiodide by CVD and its characterization", *J. Nepal Chem. Soc*. 30 (2011), 111-117.

64. **Harish K. Dubey,** L. P. Deshmukh, D. E. Khirsagar, Madhuri Sharon and Maheshwar Sharon, "Synthesis and Study of Electrical Properties of SbTeI", *Advances in Physical Chemistry*, (2013)

65. **Harish K. Dubey**, D. E. Kshirsagar, L.P. Deshmukh, Madhuri Sharon and Maheshwar Sharon, " A Study of the electrical properties of SbSI synthesized using CVD techniques", QScience Connect 2013:40, http:/dx.doi.org/10.5339/connect.2013.40..

66. **Dattatraya E. Kshirsagar**,VijayaPuri, Maheshwar Sharon and Madhuri Sharon, Microwave absorption study of carbon nano materials synthesized from natural oils *Carbon Science*, vol.7 ,No.4 ,2006, pp245-248

67. **Dattatraya E. Kshirsagar** ,VijayaPuri, Maheshwar Sharon and Madhuri Sharon, Electromagnetic Wave-Absorbing Properties of PongamiaGlabra Based-CNMs in the 8–

12 GHz,Taylor and Francis, *Synthesis and Reactivity in Inorganic, Metal-Organic, and Nano-Metal Chemistry*, 37, 2007, pp477–479.

68. **Dattatraya E. Kshirsagar**, VijayaPuri, Madhuri Sharon, Sandesh Jaybhaye, Rakesh A. Afre, Prakash Somani, and Maheshwar Sharon, Carbon Nanobeads from Brassica Nigra Oil: Synthesis and Characterization, *Advanced Science Letters*, Vol. 2, 388–390, 2009.
69. **Dattatraya E. Kshirsagar**, VijayaPuri, Manesh Zachariah, Madhuri Sharon, E.DiZitti, and Maheshwar Sharon, Investigation of microwave absorption property in carbon nanofiber film synthesized from linumusitatissimum oil *International Journal of Nanoscience*, Vol. 9, No. 5 (2010) 407-411.
70. Shrikant S. Kawale, Sunil Bhardwaj, **D. E. Kshirsagar**, C. H. Bhosale, Madhuri Sharon, Maheshwar Sharon Thin Films of Carbon Nanomaterial from Natural Precursor by Hot Wire CVD, *Fullerenes, Nanotubes, and Carbon Nanostructures*,19: 540–549, 2011.
71. , **D.E. Kshirsagar**, D. Marr'e , M. M. Carnasciali, L. Pellegrino, M. Sharon, A.S. Siri , E. Di Zitti, Synthesis , characterization and study of low temperature ferromagnetic behavior of glossy carbon film obtained from karanja oil, *Materials Letters* 67 (2012) 190–192.
72. **D. E. Kshirsagar**, Harish K. Dubey, Vijay Jadhav and Maheshwar Sharon, "Intrinsic Ferromagnetic Behaviour of Glossy Carbon Films Obtained from Karanja Seeds Oil", *Advanced Science*, Engineering and Medicine, 7 (2015):1-3. doi:10.1166/asem.2015.1706

73. Dattatray E. Kshirsagar,Vijaya Puri, Harish Dubey, Maheshwar Sharonc, "Giga hertz frequency absorber carbon nano fibers synthesized using linseed oil", *Materials Today Communications* 13 (2017) 23–25

LIST OF PUBLICATIONS IN CONFERENCE PROCEEDINGS

1. A. Mahadkar, A. Chauhan, **M. Thakurdesai**, and D. Gaikwad, **"**Synthesis and Structural Studies of CdTe Thin Films Formed by Vacuum Evaporation Technique,"AIP Conference Proceedings 1004 (2008) page 305
2. **Madhavi Thakurdesa**i, T Mohanty, D Kanjilal and Varsha Bhattacharyya, Synthesis and Characterisation of nanocrystalline TiO_2", Conference proceedings 12th national seminar on Physics and technology of sensors (NSPTS-12) March 7-9 2007 page 124
3. **Madhavi Thakurdesai,** John J, Varsha Bhattacharyya, D Kanjilal "Synthesis of nanocrystalline anatase TiO_2 thin films" Conference proceedings 52nd DAE solid state physics symposium 2007 pp 567-568
4. **Madhavi Thakurdesai**, Ajit Mahadkar , M. G. Patil, "Synthesis of brookite phase of TiO_2 using RTA processing". Conference proceedings 54th DAE solid state physics symposium 2009 pp 555-556
5. **Madhavi Thakurdesai**, "Ion beam Processes in micro and nanoelectronics". Conference Proceedings Next Generation Electronics - 15 page 42 (ISBN No:81- 88-513- 65-2)
6. Smita Survase, **Madhavi Thakurdesai**, Ajit Mahadkar , "Effect of Swift Heavy Ion Irradiation on structural and electrical properties of nanostructured thin films". Next Generation Electronics -15 page 82 (ISBN No:81-88-513-65-2)
7. Smita Survase, Pravin Dhangda, **M.A Thakurdesai**, "Structural and Optical Charaterisation of CdTe thin films irradiated by 100 MeV Ag ion beam" .National Conference on Emerging Trends in Physical Sciences, N B Mehta Science College, Bordi, 23rd January 2015.
8. Kirti Agashe, Nisha Sarwade, Sangeeta Joshi, **Madhavi Thakurdesai,** Pravin Tirmali, **"Effect of plasma growth temperature on resistive switching behavior of Pt/TiO 2/n+ Si ReRAM "** 3rd International Conference on Emerging Electronics (ICEE) proceedings at Mumbai, India from 27-30 Dec. 2016.
9. **M M Khandpekar**, "Detection of Dislocations in Diglycine Hydrogen Fluoride Crystals". Proceedings of DAE Solid State Physics Symposium, 36 (1993)
10. **M M Khandpekar**, "Thermal Decomposition of glycine (potassium/ hydrogen) fluoride crystals". Proceedings of 9th National Symposium on Thermal Analysis, Goa (1993) 42

11. Salvi S V, Joshi V H, Bhatia P and **Khandpekar M M ,** "Synthesis and Characterisation of Manganite used in lithium batteries**" .** Proceedings of the 9th International Conference on Electro Magnetic Interference and Compatibility (INCEMIC), (2006) 270-
12. Veena Joshi, S V Salvi, M M Khandpekar "Effect of Anatase and Rutile Phases of TiO2 and sintering in the properties of BaTiO3". **Proc. Nat. Acad. Sci. India. Sec A**, 78 (2008)
13. **M M Khandpekar**, S P Pati, "Effect of Glycine on Solid State Synthesis of Ceramic Materials". **Proceedings of DAE Solid State Physics Symposium**, (2007) 501.
14. Jyotsana Tiwari, **M M Khandpekar,** "Growth and Stuctural Behaviour of New- GOA Organic Single Crystal". **Proceedings of DAE Solid State Physics Symposium**, 2007, 1179.
15. V. Joshi, P. Bhatia, S V Salvi, **M M Khandpekar**, "New soft Barium Hexaferrite BaTiFeLiO" . **Proceedings of DAE Solid State Physics Symposium**, (2007)1039.
16. **M M Khandpekar**, S P Pati, "Growth, Chemical and Structural Analysis of a new non-linear optical material: Glycine Potassium Iodate (GKI)". Proceedings of 53rd DAE Solid State Physics Symposium, (2008) 1247.
17. **M M Khandpekar,** Shailesh Dongare, S P Pati**,** "Dissolution and Chemical Etching Topography of Gel Grown Urinary Crystals". Proceedings of 53rd DAE Solid State Physics Symposium, (2008) 303.
18. **M M Khandpekar,** Shailesh Dongare, S P Pati**,** "Growth and Characterisation of mixed Glycine-Nitrate (d-GSA) crystals of non-linear optical origin". Proceedings of 54th DAE Solid State Physics Symposium, (2009)225.
19. **M M Khandpekar,** Shirish Patil , S P Pati**,** "Growth of mixed Glycine Sulphate (GSL) Crystals with non –linear optical characteristics". Proceedings of 54th DAE Solid State Physics Symposium, (2009)1111.
20. **M M Khandpekar,** Shailesh Dongare, S P Pati, "Semiorganic mixed amino-nitrate (d-GAB) NLO material for short wavelength generation". Proceedings of 54th DAE Solid State Physics Symposium, (2009)1155.
21. Amit Singh, **M M Khandpekar,** "Synthesis of Water Soluble LaF3: Ce3+, Pr3+ Nano Crystals". 3rd International Symposium on Materials Chemistry (ISMC-2010) BARC Mumbai, (2010).

22. **M M Khandpekar,** Shirish Patil , S P Pati **,** "Growth and characterization of mixed Glycine Sulphate (GSZ) crystal with non linear optical Characteristics". Proceedings of National Conference of Crystal Growth, VIT, (2010).
23. **M M Khandpekar,** S. Dongare, S P Pati**,** "Growth, Structural & Optical Studies of mixed Amino-nitrate (GSB) Crystal as Potential NLO material". **Proceedings of National Conference of Crystal Growth**, VIT, (2010)
24. Shailesh Dongare and **M M Khandpekar**, "Growth, Structural and Optical Studies on mixed glycine-nitrate (d-GBC) crystals of non-linear optical origin"**.** AIP Conf Proc. 1665 (2015) 140020
25. S G Gourkhede and **M M Khandpekar**, "Structural, Optical and Dielectric Properties of Ce-Pr-Nd doped LaF3 hexagonal nanoparticles". AIP Conf Proc. 1665 (2015) 050002
26. Amit Singh and **M M Khandpekar**, "Synthesis And Structural Studies of LaF 3: Ce Nanoparticles Modified By Tyrosine For Bioimaging and Biotagging Applications". Materials Today: Proceedings 3 (2016) 4260-4265
27. Siddeshwar Gaurkhede and **Mahendra Khandpekar**, "Room Temperature Structural, Electrical and Dielectric Studies of Ce 3+, Pr 3+ Doped Hexagonal LaF 3 Nanoparticles". Materials Today: Proceedings**,** 2 (2016) 4509-4515
28. **Dattatray E. Kshirsagar,** Harish K. Dubey, Vijay Jadhav, Kailash Jagdev, BholanathMukharjee, Maheshwar Sharon, Novel glossy carbon films synthesis, characterization and study of magnetic properties, Nanomaterials: Synthesis-Applications Dombivili Shikshan PrasarakMandal's, KVP College of Arts,Science and Commerece,Dombivili (E)-2016,CH14,73-78, ISBN 978-81-925842-2-5
29. **Dattatraya E. Kshirsagar** ,VijayaPuri, Maheshwar Sharon, Sandesh V. Jaybhaye Synthesis, characterization and microwave absorption study of Carbon nano material prepared using natural oils, International Conference on Carbon Materials For energy applications-IWCMEA-2004., NPL, New Delhi, Nov 22nd-24th 2004,pp 163-166.
30. ,**Datta E. Kshirsagar**,International workshop on Carbon Materials For energy applications., Hydrogen storage capacity by carbon nano materials synthesized from natural source, SandeshV.Jaybhaye,Maheshwar Sharon *Indian Carbon Society, NPL*, New Delhi, Nov 22nd-24th 2004,pp 171-178.

31. **Dattatray E. Kshirsagar** ,Maheshwar Sharon,Vijaya Puri, Study on Microwave Absorbing Property of Carbon Nano- Material, Proceedings of the International Conference on Nano materials, July 13-15,2005, Sivakasi,India.,pp-723-726.
32. Maheshwar Sharon,Madhuri Sharon ,D. Sathiyamoorthy, L.N.Singh, **Datta E. Kshirsagar** and SandeshV.Jaybhaye, Synthesis of CNM'S from natural source and its use in hydrogen storage, International Conference on Molecules to materials-ICMM 2006, Longowal,India, March 3-4,2006,pp53-56
33. **Kshirsagar Dattatray E.**, Sharon Maheshwar, Jaybhaye Sandesh and Puri Vijay Electromagnetic Wave-Absorbing Properties of Pongamia Glabra Based CNFs in X-band, Proceedings of the National Seminar on Materials for Advanced Technologies , January 23-25,2006 ,Kolhapur, pp.274-275

LIST of Patents

1. **Published**

Patent – Govt of India, Dated 02/09/2016, The Patent Office Journal No. 36/2016 / 67173

(R C Patil, K G Abraham, Dhamnaskar R M, **Khandpekar M M**, Attar Tarannum V, Chavan R P, S K Jangham, Parulekar G T, Parade U S, Kulkarni C)

Title : Method of preparation , characterization and antibacterial activity of a nanocomposite formed by grapheme oxide sheets decorated with silver nanoparticles.

2. **Published**

Patent – Govt of India, Dated 18/11/2016, The Patent Office Journal No. 48/ 2016/ 73371

(Tarannum Attar and **Mahendra M Khandpekar**)

Title :- Synthesis and Characterisation of Lantahanide Doped LFPH nanomaterials for optical and biomedical applications

3. **Published**

Patent – Govt of India, Dated 30/12/2016, The Patent Office Journal No. 54/ 2016/ 76921

(Rajesh C Patil, Shailendra Deolankar, V I Katchi, K George Abraham, **Mahendra Madhukar Khandpekar**, Ramesh Shriranga Yamgar, Pandhare Arjun Bhausaheb, Archana Kochrekar, Namita Santosh Mahadik, Raju Tamboli)

Title :- Synthesis of mixed silver- chitosan nanoparticles and their activity against effective control of Mosquito larvae.

4. Published

Patent – Govt of India, Dated 15/09/2017, The Patent Office Journal No. 37/ 2017/ 31140 (V N Magare, Amit Parekh, Charu Kulkarni, Dhanashree Talekar, **Mahendra Madhukar Khandpekar,** Arvind Samb Kulkarni, Rajesh Chandrakant Patil, Shailendra Deolankar)

Title : Process for preparation of dried bags using Colostrum milk free from bacteria.