Dr. Alka V. Deshmukh

Personal Details:-

Name	**Deshmukh**	**Alka**	**Vinayakrao**
	SURNAME	***FIRST NAME***	***MIDDLE NAME***
Department	**Physics**		
Designation	**Assistant Professor**		
Qualification(s)	**M. Sc., Ph. D. (Physics)**		
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Member Of:-

College Committees	Other Committees
F. Y. B. Sc. Physics Laboratory Incharge	
Departmental Website Administrator	

Research Done:

Doctoral research was carried out on the study of doped oxide systems namely ZnO and Manganites. The study of ZnO was devoted to Mn doping in the context of dilute magnetic semiconductors (DMS). The effect of doping concentration has been studied in detail for the bulk polycrystalline samples synthesized using solid state reaction route and thin films deposited using pulsed laser deposition (PLD). An attempt was also made to improve the electrical properties of the Mn doped ZnO thin films in terms of enhancement of charge carrier concentration by adding 1 weight percent Aluminum (Al) and also Bismuth (Bi). The hole doped manganite ($La_{0.7}Sr_{0.3}MnO_3$ (LSMO)) which shows half metallic behavior and a transition temperature close to room temperature has also been studied. The effect of iron (Fe) doping at the Mn-site was studied in bulk polycrystalline samples prepared using solid state reaction route. The valence band spectroscopy measurements were performed using the synchrotron radiation source in the Indus-1 beamline of UGC-DAE CSR at RRCAT India. The changes in the valence band spectra at the Fermi energy are correlated with the electric and magnetic properties of undoped and Fe-doped LSMO.

Area of Interest in Research:

Oxide Semiconductors, Dilute Magnetic Semiconductors, Thin films

Books Published: Nil

Research publications:

1. Role of Al doping in structural, microstructural, electrical and optical characteristics of asdeposited and annealed ZnO thin films Shashikant D. Shinde, S. K. Date, **Alka V. Deshmukh**, Amit Das, Pankaj Misra, L. M. Kukreja and K. P. Adhi ***RSC Adv.***, **5**, 24178-24187 (2015)
2. Role of grain size on the magnetic properties of $La_{0.7}Sr_{0.3}MnO_3$ P. A. Yadav, **A. V. Deshmukh**, K. P. Adhi, B. B. Kale, N. Basavaih, S. I. Patil ***J. Mag. Mag. Mat.*, 328**, 86 (2013)
3. Effect of Ga doping on micro/structural, electrical and optical properties of pulsed laser deposited ZnO thin films S. D. Shinde, **A. V. Deshmukh**, S. K. Date, V. G. Sathe, K. P. Adhi ***Thin Solid Films*, 520**, 1212 (2011)
4. Effect of Al or Bi on the properties of PLD grown $Zn_{0.95}Mn_{0.05}O$ thin films **Alka V. Deshmukh**, K. P. Adhi and S. I. Patil *Optics: Phenomena, Materials, Devices, and Characterization, **AIP Conf. Proc. 1391**, 508-510 (2011); doi: 10.1063/1.3643593*
5. Structural, chemical and magnetic investigations of polycrystalline $Zn_{1-x}Mn_xO$ **Alka V. Deshmukh**, S. I. Patil, S. M. Yusuf, A. K. Rajarajan, N. P. Lalla ***J. Magn. Magn. Mater.*, 322**, 536 (2010)
6. Effect of iron doping on electrical, electronic and magnetic properties of $La_{0.7}Sr_{0.3}MnO_3$ **Alka V. Deshmukh**, S. I. Patil, S. M. Bhagat, P. R. Sagdeo, R. J. Choudhary and D. M. Phase ***J. Phys. D: Appl. Phys.*, 42**, 185410 (2009)
7. Swift ion irradiation induced changes in the structural and transport properties of $La_{0.7}Sr_{0.3}MnO_3$ thin films M. S. Sahasrabudhe, K. P. Adhi, S. S. Harchirkar, **A. V. Deshmukh**, S. I. Patil and Ravi Kumar ***Nucl. Instr. and Meth. B*, 244**, 333 (2006)

Seminars and Workshops Attended:-

1. National Conference on Ancient Science and Technology: Retrospection and Aspirations (ASTRA-2015), organized by D. E. Society's Fergusson College, Pune, 10-11 January, 2015 (*Member, Local Organizing Committee*)
2. Science Academies Lecture Workshop on Nanotechnology: Energy and Health, organized by D. E. Society's Fergusson College, Pune, Indian Academy of Sciences, Bangalore, Indian National Science Academy, New Delhi, The National Academy of Sciences, Allahabad, 10-11 October, 2014 (Participation)
3. Frontiers in Physics-VII Astronomy Frontiers organized by Astro Club, Department of Physics, Fergusson College, Pune, 21-23 January, 2014 (Participation)
4. Refresher cum Orientation course "Experimental Techniques in Physics (PHY-UT-603), Department of Physics, University of Pune (SPPU) , 17/12/2013- 22/12/2013
5. Two Days Interaction Meeting on Photoelectron Spectroscopy organized by Raja Ramanna Centre for Advanced Technology, Indore, 29-30 August, 2013 (*Oral Presentation*)

6. One Day “Workshop on Revision of M. Sc. I Physics syllabus (credit system)” organized by University of Pune (SPPU) and Department of Physics, Fergusson College, Pune, 5th March, 2013 (Participation)
7. Raman Memorial Conference 2013 organized by Department of Physics, University of Pune (SPPU), 22-23 February, 2013 (Participation)
8. Vedic Science Day organized by Department of Biotechnology, Fergusson College, Pune, Forum for Research in Oriental Sciences & Technology (F.R.O.S.T.), Pradnya Vikas Shikshan Sanstha, Pune, 10-11 January, 2013 (Participation)
9. Teachers Training Program organized by D. E. Society’s Fergusson College, Pune under UGC-CPE: Model for Arts and Science Teachers (M. A. S. T.) program, 18-25 October, 2012 (Participation)

Seminars and Workshops Organized:- Nil

Other Accomplishments:-