

# Curriculum Vitae



**Dr. Mahendra D. Shirsat**

**PROFESSOR**

**Intelligent Materials Research Laboratory,  
Department of Physics,**

**Dr. Babasaheb Ambedkar Marathwada University, Aurangabad -431 004 (MS) India**

**DIRECTOR**

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**Dr. Babasaheb Ambedkar Marathwada University, Aurangabad -431 004 (MS) India**

## Curriculum Vitae

**Name:** Dr. Mahendra D. Shirsat

### I. Personal Memorandum

**Designation** : Professor  
**Mailing Address** : Intelligent Materials Research Laboratory,  
 Department of Physics / Electronics,  
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**Additional Charge** : Director,  
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 Dr. Babasaheb Ambedkar Marathwada  
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**Date of Birth** : May 8, 1966

### II. Academic Preparation:

Degree	Year	University
B. Sc. ( Physics, Maths, Instrumentation)	1986	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) India
M.Sc Physics / Electronics	1988	-----do-----
MCA ( Engg & Tech)	2008	Indira Gandhi National Open University, New Delhi
PGDCA	2004	-----do-----
ADCA	2005	-----do-----
Ph. D. (Physics)	1998	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) India
Post Doctoral Fellow ( PDF)	2006-08	University of Wollongong, Australia and University of California, Riverside, USA

### **III. Awards / Fellowships / Honors received:**

- Post Doctoral Fellow (University of California, Riverside, USA)
- BOYSCAST Fellowship ( DST, Govt of India : University of California, Riverside, USA )
- Visiting Scientist : ( National Institute of Health USA and University of California, Riverside USA )
- Visiting Principal Fellow ( University of Wollongong, NSW, Australia)
- UGC Teacher Fellow
- Fellow of Institute of Electronics and Telecommunication of Engineers (IETE), New Delhi, India
- Member Editorial Board, International Journal of Material Science (IJMS)
- Member of AUC, Inter University Accelerator Centre, New Delhi.
- Member of NAAC peer Team, Bangalore, India
- Member of Academic Advisory Committee, ASC, SGB Amravati University, Amravati (MS), India
- Member of Academic Advisory Committee, ASC, Mumbai University, Mumbai (MS), India
- Member, Board of School of Physical Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow (UP), India
- Member of RRC in Electronic, RTM Nagpur University, Nagpur, India
- Member of Board of BCUD, Dr. BAMU, Aurangabad, India
- Member of Editorial Board of International Journal of Material Science (IJMSCI), Hong Kong.
- Fellow of Optical Society of India ( OSI)
- Life member of Indian Laser Association, India
- Life member of Biomedical Engineering Society of India

### **IV. Research, Teaching and Administrative Experience:**

#### **Research Experience :**

- Post Doctoral Fellow** : **Department of Chemical & Environmental Engineering,**  
**And Visiting Scientist** **University of California, Riverside,**  
**CA, USA**
- Visiting Principal Fellow** : **Intelligent Polymer Research Institute,**  
**University of Wollongong, Wollongong,**  
**Australia**

UGC Teacher Fellow : Post Graduate Department  
of Physics/Electronics,  
J.E. S. College, Jalna (MS)

### Teaching Experience :

Professor : Intelligent Materials Research Laboratory,  
Department of Physics/ Electronics,  
Dr Babasaheb Ambedkar Marathwada  
University, Aurangabad – 431 004 (MS) INDIA  
August 6, 2007 till date

Associate Professor : Intelligent Materials Research Laboratory,  
Department of Physics/ Electronics,  
Dr Babasaheb Ambedkar Marathwada  
University, Aurangabad – 431 004 (MS) INDIA  
April 8, 2003 to August 5, 2007

Associate Professor : Medical Electronics Laboratory,  
Department of Electronics,  
North Maharashtra University,  
Jalgaon – 425 001 (MS) INDIA  
August 6, 1999 to April 7, 2003

Assistant Professor : Post Graduate Dept of Physics/ Electronics,  
J E S College, Jalna (MS) INDIA  
Aug 7, 1996 to August 5, 1999

Assistant Professor : -----do-----  
Aug 6, 1988 to Aug 6, 1996

### Administrative Experience :

Director : Academic Staff College, Dr Babasaheb  
Ambedkar Marathwada University,  
Aurangabad – 431 004 (MS) INDIA  
April 7, 2011 till date



the Development Of Hazardous Gas Sensors. Funded by UGC, New Delhi, India during. ( 2008-2011) **(Rs 12.0 Lakhs)**.

3. Development of Biosensors for biomedical applications with special reference to antibiotic biotransformation. Funded by University Grants Commission, New Delhi, India during 2003-2006 **(Rs 5.5 Lakhs)**
4. Computer Aided Design tools to Study Excitation Mechanism of Human Heart. Funded by University Grants Commission, New Delhi, India during 2000-2001 ( Minor Research Project)
5. Study of Radial profiles in the Copper Vapour Laser Discharge. Funded by University Grants Commission, New Delhi, India during 1999-2002 (Minor Research Project)

### **VIII : Research Collaborations**

1. University of California, Riverside, CA, USA
2. University of Wollongong, Wollongong, Australia
3. Arizona State University, Tempe, USA
4. University of Tokushima, Japan
5. Indian Institute of Technology (IIT), New Delhi
6. Inter University Accelerator Centre ( IUAC), New Delhi
7. Delhi University, New Delhi
8. Crystal Growth Centre, Anna University, Chennai

### **IX. Expertise / Areas of specialization**

- Synthesis of SWNTs and MWNTs
- Carbon Nanotubes based nanosensor array for gas sensing, bio-sensing and photovoltaic applications.
- Synthesis of Conducting Polymer Nanowires and thin films for gas sensing, bio-sensing and photovoltaic applications.
- Designing of Optical fiber sensors,
- Development of Modified cladding Optical Fiber Sensors,
- Growth of NLO Material Crystals,
- Designing of Optoelectronics Devices
- Microprocessors and their interfacing applications
- Microcontrollers and their interfacing applications

## **X. Synergic Activities**

### **1. Member**

- **Board of Examiners in Electronics/Physics, Dr Babasaheb Ambedkar Marathwada University, Aurangabad – 431 004 (MS) India**
- **Board of Examiners in Electronics, North Maharashtra University, Jalgaon (MS) India**
- **Board of Examiners in Electronics/Physics, Swami Ramanand Teerth Marathwada University, Nanded (MS) India**

### **2. Secretary**

- **Research Symposium entitled “Recent Trends in Electronics and Information Technology” Organized by Department of Electronics, North Maharashtra University, Jalgaon (MS), India on Feb 28, 2000.**
- **National Workshop entitled “Wavelength Division Multiplexing and Demultiplexing” Organized by Department of Electronics, North Maharashtra University, Jalgaon (MS), India on March 22, 2001.**
- **International Conference entitled “Broad Band Optical Fiber Communication Technology” Organized by Department of Electronics, North Maharashtra University, Jalgaon, (MS), India during Dec 3-7, 2001.**

### **3. Convener:**

- **National Conference on Microwaves and Optoelectronics (NCMO – 2004) held in the Dept of Physics, Dr Babasaheb Ambedkar Marathwada University, Aurangabad (MS), India during June 29-30, 2004**

### **4. Chairman:**

- **Technical Committee of International Conference on Microwaves and Optoelectronics ( ICMO-2007) organized by Dept of Physics and Computer Science, Dr Babasaheb Ambedkar Marathwada University, Aurangabad (MS), India during December 17-20, 2007**

## 5. Reviewer of International Journals

- **Electrochimica Acta, Biosensors and Bioelectronics, Material Letters, Applied Physics A, Journal Nano Materials, Physica B, Material Science Engineering B, Journal Applied Polymer Science, IEEE Photonics Technology Letters, Polymer Express, European Polymer Journal, Reactive and Functional Polymers, Talanta etc.**

## **XI : Brief account of research interests with special focus on Nano Science and Technology :**

**This research group headed by Professor Mahendra D. Shirsat is working in the field of chemical sensors. Initially, the research interest for this team was to synthesize two dimensional structures from conducting polymers for biosensor as well as toxic vapour sensor applications. They had carried out extensive research in the field and successfully fabricated glucose, urea and ammonia sensors at that early phase. This work has already been published in various International journal of repute. So far seven students have completed their Ph. D. in this field under the guidance of Professor Shirsat**

**The transition of impetus from macro-materials to nanostructures, for this team, didn't take place merely out of research interest rather due to severe constraints faced with conventional modalities. In order to achieve, especially, miniaturized sensor footprint, lesser energy consumption and improved reproducibility, the aid of nanotechnology proved to be highly fruitful. From then onwards, the group is actively engaged in synthesis and modification of nano-structured materials for target oriented outputs. This work has also been published in various International journal of repute.**

**In a span last couple of years, the group has-**

- **Developed Glucose Biosensors by using multilayer structure of conducting polymer and Carbon Nanotubes. These sensors got excellent linearity from 1 mM to 50 mM of glucose concentration.**
- **Fabricated H<sub>2</sub>S sensors with metal decorated Polyaniline nanowires electrode junctions with excellent sensitivity down to 1ppb.**
- **Designed and fabricated Vapour phase Chemical Vapour Deposition machine for synthesis of Multi Wall carbon nanotubes under a CSIR project. It is worth mentioning here that the type of machine this group has fabricated costs around Rs. 17 to 21 lakhs from any standard make. However, this group has spent only Rs. 8.10 lakhs for the same. Thus, straight away an amount of Rs. 10 to 12 lakhs has been saved from our**

national resources. Presently single walled and multi walled Carbon Nanotubes are being synthesized in this laboratory.

Presently this group is focusing on development of nanosensor array based on Single Walled Carbon Nanotubes (SWNTs). They are modifying SWNT surface by conducting polymers, metalloporphyrins and metal nanoparticles to improve selectivity, sensitivity and retentivity of an individual sensor element. In fact their ultimate aim is to develop hand held sensing gadget for real time monitoring of VOCs and hazardous gases. The nanosensor array is being tested both by chemiresistive as well as CHEMFET configurations. Professor Shirsat is a recipient of BOYSCAST fellowship of DST, New Delhi. He is also recipient of visiting Fellowship from University of Wollongong, Australia in 2006 and from University of California, Riverside, USA in 2008-2009. This group has collaboration with University of Wollongong, Australia and University of California, Riverside, USA.

This group is also working on optical fiber sensors and growth of NLO materials crystals. This work has also been published in various International journal of repute. Two students have completed their Ph.D. in this field under the guidance of Professor Shirsat. Very recently this group has also started working on photovoltaic cells based on nano-structured materials.

### **Invited talks delivered at various International and National Conferences**

1. Closing Symposium on Double Degree Programme organized by the University of Tokushima, Japan during March 1, 2012.
2. International Conference on Recent Trends in Advanced Materials ICRAM – 2012 organized by VIT University Vellore during Feb 20-22, 2012
3. National Workshop on Nanotechnology Intellectual Property Rights, Patents in Science and Technology organized by Department of Nanotechnology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) India Feb 16-17, 2012.
4. International Conference on Advanced Materials Development and Performance (AMDP - 2011) organized by University of Tokushima, Japan during July 15-18, 2011.
5. National Seminar on Recent Trends in Material Science, organized by Mutizapur, Akola on Dec 3, 2011
6. 17<sup>th</sup> National Symposium on Solid State Nuclear Track Detectors and Their Applications ( SSNTD-11) organized by Dept of Physics MS University Baroda during October 17-19, 2011.

7. **International Conference on MEMS and Optoelectronics Technologies (ICMOT -2010) organized by Swarnandhra College of Engineering and Technology, Narsapur ( Affiliated JNTU) during January 22-23, 2010**
8. **National Conference on Recent Trends In Materials Research ( RTMR-11) organized by Birla College of Arts, Science and Commerce, Kalyan during Jan 29-30, 2011.**
9. **International Conference on Lasers and Advanced Materials ( ICLAM) - 2010 organised by Abasaheb Garware College, Pune during March 6-8, 2010.**
10. **National Conference on Chemi-Physics organized by Shivaji College, Morshi, Amaravti on February 28, 2010.**
11. **National Conference on Advances in Material Research organized by Shankarlal Khandelwal Arts, Science and Commerce College, Akola during February 26-27, 2010.**
12. **National Conference on Effect of Drugs on Human Metabolism organized by Department of Biotechnology, Osmanabad Sub Centre on Feb 2008.**
13. **National conference on Advances in Computer Science and Informational Technology organized by ( Feb 2008).**
14. **National Symposium on Genomics, Proteomics and Bioinformatics, Department of Biotechnology, Osmanabad Sub Centre in Feb 2007.**

## **XII. List of Publications (143)**

- **Edited Books: 03**
- **Peer-reviewed International / National Journals / Books : 76**
  - **Research Papers in Peer-reviewed International Journals: 60**
  - **Research Papers in Peer-reviewed National Journals: 04**
  - **Research Papers in Peer-reviewed Books: 12**
- **Research Papers presented in International Conferences: 17**
- **Research Papers presented in National Conferences: 47**

### **Books (03)**

1. **Frontiers of Microwaves and Optoelectronics**  
Editors, **M. D. Shirsat, P. W. Khirade, S. S. Patil, V. V. Nawarkhele, G. S. Raju, P.B. Patil and S.C. Mehrotra**  
**Publisher: Anamaya Publishers New Delhi, India ( 2008) ; ISBN 978-81-89927-19-6.**
2. **Microwaves and Optoelectronics ( International Edition)**  
Editors, **M D Shirsat, V V Nawarkhele, G S Raju and P W Khirade**  
**Publisher: Anshan, Tunbridge Wells UK, (2005) ISBN 1-904798-43-8.**

### 3. Microwaves and Optoelectronics ( Indian Edition)

Editors, **M D Shirsat**, V V Nawarkhele, G S Raju and P W Khirade

**Publisher: Anamaya Publishers (2004) ISBN 81-88342-44-0**

#### Research Papers Published in Peer-reviewed International Journals (60)

1. **Mahendra D. Shirsat**, Tapan Sarkar, James Kakoullis Jr, Nosang V. Myung, Bharatan Konnanath, Andreas Spanias and Ashok Mulchandani, "Porphyrins-Functionalized Single-Walled Carbon Nanotubes Chemiresistive Sensor Arrays for VOCs", **J. Phys. Chem. C**, **2012**, **116(5)** pp **3845-3850**.
2. Santosh B. Kadam, S. S. Hussaini, Kunal Datta, Prasanta Ghosh and **Mahendra D. Shirsat** "Effect of Poly (Toluene Sulphonic Acid) in Enhancing Durability of Poly (Pyrrole)/Poly (N-Methylpyrrole)/GOx Composite Glucose Biosensor", **International Journal of Material Science (IJMSCI)**, **2012**, Vol **2**, Issue **1**, pp. **6-9**.
3. S.S. Hussaini, N.R. Dhumane, and **Mahendra D. Shirsat** "Growth and Characterization of Bis glycine hydrogen bromide ( BGHB) single crystal: new non linear optical Material", **Recent Research in Science and Technology**, **2011**, **3(1)**.
4. Santosh B. Kadam, Kunal Datta, Prasanta Ghosh, **Mahendra D. Shirsat**, "Poly(Pyrrole)-Poly(N-Methylpyrrole) Composite Matrix For Amperometric Biosensor Design" **International Journal of Polymeric Materials**, **60**: **233-243**, **2010**
5. S. B. Kadam, K. Datta, P. Ghosh, A. B. Kadam, P.W. Khirade, Vijay Kumar, R.G. Sonkawade, A.B. Gambhire, M. K. Lande, and **Mahendra D. Shirsat** "Improvement Of Ammonia Sensing Properties Of Poly(pyrrole) – Poly (N-Methylpyrrole) Composite By Ion Irradiation", **Applied Physics A; Volume 100, Number 4**, **1083-1088( 2010)**, DOI: **10.1007/s00339-010-5705-1**
6. P. A. Savale, Kunal Datta, Prasanta Ghosh and **Mahendra D. Shirsat**, "Synthesis and characterization of POA-PVS-DBS, POA-PVS-pTS, POA-pTS-DBS copolymers composite films: A comparative study", **International Journal of Polymeric Materials** , **Volume 59, Issue 2 February 2010** , pages **87- 97**.
7. N.R. Dhumane, S.S. Hussaini, Kunal Datta , Prasanta Ghosh and **Mahendra D. Shirsat** "Effect of L-Alanine on the Optical Properties of Zinc (Tris) Thiourea Sulfate (ZTS) Single Crystal", **Recent Research in Science and Technology**, Vol **2**, No **10 (2010)** **30-34**.
8. N. R. Dhumane, S.S. Hussaini, Kunal Datta, Prasanta. Ghosh, and **Mahendra D. Shirsat**, "Growth and characterization of nonlinear optical Crystal Bis thiourea cadmium chloride (BTCC) in presence of L-Alanine", **J. Pure Appl. & Ind. Phys. Vol 1, Issue 1**, **45-52 ( 2010)**
9. Santosh B. Kadam, Kunal Datta, Prasanta. Ghosh, Ankush B. Kadam and **Mahendra D. Shirsat** "Electrochemical Synthesis and characterization of P(Py) -

- P(NMP)/PVS, P(Py) -P(NMP)/pTS and P(Py) -P(NMP)/-DBS composite films”, **J. Pure Appl. & Ind. Phys. Vol 1, Issue 1, 93-100 ( 2010)**
10. Ravindra G. BAVANE, **Mahendra D. SHIRSAT**, and Ashok M. MAHAJAN, “Ammonia Gas Sensing Characteristics of Chemically Synthesized Polyaniline Matrix” **Sensors & Transducers, Vol. 113, Issue 2, (2010) 63-70.**
  11. S.S. Hussaini, N.R. Dhumane, Kunal Datta, P. Ghosh and **Mahendra D. Shirsat**, “Growth and Characterization of Tri-Glycine Acetate(TGAc) non-linear optical crystal”, **Bionano Frontier (Sepcial Issue- March 2010) 41-43.**
  12. **Mahendra D. Shirsat**, Mangesh A. Bangar, Marc A. Deshusses, Nosang V. Myung, and Ashok Mulchandani, “Polyaniline Nanowires-Gold Nanoparticles Hybrid Networks based Chemiresistive Hydrogen Sulfide Sensor” **Applied Physics Letters, 94, 083502 ( 2009).**
  13. P. A. Savale, **M. D. Shirsat**, “Synthesis of poly (o-anisidine) /H2SO4 film for the development of glucose biosensor”, **Appl Biochem Biotechnol (2009) 159:299–309.**
  14. N.R. Dhumane, S.S. Hussaini, V.G. Dongre, P.P. Karmuse and **M.D. Shirsat**, “Growth and characterization of glycine doped bis thiourea cadmium chloride single crystal”, **Crystal Research Technology, 44, 3, 269– 274 ( 2009).**
  15. N.R. Dhumane, S.S. Hussaini, V.G. Dongre, P. Ghugare and **M.D. Shirsat** “Growth and Characterization of L-Alanine doped Zinc Thiourea Chloride single crystal (ZTC)” **Applied Physics : A ( 2009) 95, 727-732.**
  16. S.S. Hussaini, N.R. Dhumane, V.G. Dongre and **M.D. Shirsat**, “Synthesis, Growth and Characterization of Non-Linear Optical Crystal: Tri-Glycine Acetate(TGAc)”, **Material Science – Poland, Vol 27, No 2 ( 2009) .**
  17. A.B. Gambhire, M. K. Lande, S. B. Kalokhe, **M. D. Shirsat**, K. R. Patil, R. S. Gholap, B. R. Arbad, “Synthesis and characterization of high surface area CeO<sub>2</sub>-doped SnO<sub>2</sub> nanomaterial”, **Philosophical Magazine Letters (2009), Vol 89, Issue 3, 213-129.**
  18. M.N. Rode, G.G.Muley, D.V.Meshram, S. S. Hussaini, V.G.Dongre, B.H.Pawar and **M.D.Shirsat**, “Growth and characterization of L-Tartaric acid doped and mixed Di-sodium hydrogen phosphate (DSHP) Single crystal for Laser applications” **Optoelectronics and Advanced Materials – Rapid Communications, Vol 3, No. 9 (Sept 2009) 927-932.**
  19. H. J. Kharat, K. Datta, P. Ghosh and **M. D. Shirsat** “Towards Development of Optical Urea Biosensor Using Polypyrrole-polyvinyl sulphonate Film” **Sensors & Transducers, Vol. 101, Issue 2, (2009) 112-122.**
  20. D. B. Dupare, **M. D. Shirsat**, and A. S. Aswar, “Metal Oxides Doped PPY-PVA Blend Thin Films based Gas Sensor”, **Sensors & Transducers, Vol. 101, Issue 2, (2009) 82-89.**
  21. D. B. Dupare, **M. D. Shirsat**, and A. S. Aswar, “Inorganic Acids Doped PANI-PVA Composites Films as a Gas Sensor”, **The Pacific Journal of Science and Technology, Vol. 10, No 1, (2009) 417-422.**
  22. D. B. Dupare, **M. D. Shirsat**, and A. S. Aswar, “PPY-PVA Blend Thin Films as a Ammines Gas Sensor” **Sensors & Transducers, Vol. 105, Issue 6, (2009) 94-103.**

23. **Mahendra D. Shirsat**, Chee O. Too and Gordon G. Wallace, “Amperometric glucose biosensor on layer by layer assembled carbon nanotube and polypyrrole multilayer film”, **Electroanalysis**, **20**, (2008), No. 2, 150 – 156.
24. **M. D. Shirsat**, S.S. Hussaini, N. R. Dhumane, and V.G. Dongre, “Influence of Lithium Ion (Li<sup>+</sup>) on NLO Properties of KDP Single Crystal”, **Crystal Research Technology** , **43**, No. 7, 756 – 761 (2008).
25. **M.D. Shirsat**, P.A. Savale, “Electrochemical Synthesis and Characterization of Poly (O-anisidine) film with various dopants: Comparative study, **International Journal of Polymeric Materials**, (2008) **57**, 506-514.
26. N.R. Dhumane, S.S. Hussaini, V.G. Dongre and **M.D. Shirsat**, “Study the effect of Glycine on the nonlinear optical (NLO) properties of Zinc (tris) Thiourea Sulfate (ZTS) single crystal”, **Optical Materials** **31** (2008) 328–332.
27. S.S. Hussaini, N.R. Dhumane, V.G. Dongre, **M.D. Shirsat** “Growth and dielectric study of ZTC semi organic nonlinear optical (NLO) crystal for electro-optic modulation” **Optoelectronics and Advanced Materials – Rapid Communications**, Vol 2, No. 8 (August 2008) 470-473.
28. A.B. Gambhire, M. K. Lande, S. B. Kalokhe, **M. D. Shirsat**, K. R. Patil, R. S. Gholap, B. R. Arbad, “Synthesis and characterization of high-surface-area Ag<sub>2</sub>O-doped SnO<sub>2</sub> nanomaterial”, **Materials Chemistry and Physics** **112** (2008), 719-722.
29. D. B. Dupare, P. Ghosh<sup>1</sup>, K Datta<sup>1</sup>, A.S.Aswar and **M.D. Shirsat**, “Synthesis And Characterization Of A Novel Ammonia Gas Sensor Based On Pani-Pva Blend Thin Films”, **Sensors & Transducers**, Vol. 93, Issue 6, June 2008, pp. 103-113.
30. S. S. Hussaini, N. R. Dhumane, V. G. Dongrea, **M. D. Shirsat**, “Effect of glycine on the optical properties of Zinc Thiourea chloride (ZTC) single crystal”, **Optoelectronics and Advanced Materials – Rapid Communications**, Vol 2, No.2 (Feb, 2008) 108-112.
31. P. A. Savale, H. J. Kharat, K. Datta, P. Ghosh and **M. D. Shirsat**, “Development of POA/DBS/ GOx biosensor for the determination of glucose” **International Journal of Polymeric Materials**, (2008) **57**: 730-744.
32. K.P Kakde, H. J. Kharat, P.A. Savale, K.Datta, P. Ghosh, and **M.D. Shirsat**, “Development of ammonia sensor using Polyaniline film doped with polyvinyl sulphonic acid”, **Mater. Sci. Res. Ind. Vol. 5(1)**, 150-155 (2008).
33. H. J. Kharat, K. P. Kakde, P. A. Savale, K. Datta, P. Ghosh, **M. D. Shirsat** Development of PPy-PVS optical fiber Ammonia sensor” **Optoelectronics and Advanced Materials – Rapid Communications**, Vol 2, No.9 (Sept 2008) 108-112.
34. K.P Kakde, H.J.Kharat, P.A. Savale, K.Datta, P. Ghosh, R.D. Mhaske and **M.D.Shirsat**, “ Development of ammonia sensor using Polyaniline film doped with acrylic acid”, **Mater. Sci. Res. Ind. Vol. 5(1)**, 137-140 (2008).
35. M. N. Rode, S. S. Hussaini, G. Muley, B. H. Pawar, **M. D. Shirsat**, “Effect of thiourea on the optical properties of Di-sodium hydrogen phosphate (DSHP) single crystal” **Optoelectronics and Advanced Materials – Rapid Communications**, Vol 2, No.12 ( December 2008) 855-858.

36. D J Shirale, V K Gade, P D Gaikwad, P A Savale and **M D Shirsat**, “Galvanostatic deposition of Poly(*N*-methylpyrrole) film with various dopants and co-dopants: A comparative study”, **Materials Letters** **61** (2007) **1372-1375**.
37. V K Gade, D J Shirale, P D Gaikwad, K P Kakde, P A Savale, H J Kharat and **M D Shirsat**, “Synthesis and characterization of Ppy-PVS, Ppy-pTS and Ppy-DBS composite films”, **International Journal of Polymeric Materials**, **56** (2007),**107-114**.
38. V.K. Gade, D.J. Shirale, P.D. Gaikwad, K.P. Kakde, P.A. Savale, H.J. Kharat, B.H. Pawar and **M.D. Shirsat**, “Synthesis and characterization of Ppy-PVS, P(NMP)-PVS and their co-polymer Ppy-P(NMP)-PVS films by galvanostatic method” **International Journal of Electrochemical Science**, **2**(2007)**270-277**.
39. V K Gade, D J Shirale, P D Gaikwad, P A Savale and **M D Shirsat**, “Influence of process parameters on the conductivity and surface morphology of polypyrrole films by galvanostatic method”, **International Journal of Polymeric Materials** **56** (2007), **167-176**.
40. Kharat H J, Kakde K P, Savale P A, Datta K, Ghosh P and **Shirsat M D**, “Synthesis of polypyrrole films for the development of ammonia sensor” **Polymers for Advanced Technologies**, Vol **18**, **5**, (2007), **397-402**.
41. S S Hussaini, N R Dhumane, G. Rabbani, P. Karmuse, V.G. Dongre and **M D Shirsat**, “Growth and High Frequency Dielectric Study Of Pure and Thiourea Doped KDP Crystals”, **Crystal Research Technology**, **42**, No **11**, **1110, 1116** ( 2007).
42. P.D. Gaikwad, D.J. Shirale, P.A. Savale, K. Datta, P. Ghosh, A.J. Pathan, G. Rabbani and **M.D. Shirsat**, “Development of PANI-PVS-GOD electrode by potentiometric method for determination of glucose” **International Journal of Electrochemical Science**, **2** (2007)-**488-497**.
43. V K Gade, D J Shirale, P D Gaikwad, P A Savale, K P Kakde, H J Kharat and **M D Shirsat**, “Immobilization of GOD on Ppy-PVS composite film for determination of glucose: A comparative study of phosphate and acetate buffers” **International Journal of Polymeric Materials**, **56**, (2007) **1051-1065**.
44. P.A. Savale, D.J. Shirale, K. Datta, P. Ghosh and **M.D. Shirsat**, “Synthesis and characterization of poly (O-anisidine) films under galvanostatic conditions by using ECP technique” **International Journal of Electrochemical Science**, **2** (2007) **595-606**.
45. K. P. Kakde, H. J. Kharat, P. A. Savale, K. Datta, P. Ghosh and **M. D. Shirsat** “A Novel Low Cost Plastic Optical Fiber Chemical Sensor Using Polyaniline Film, **Journal of Optoelectronics and Advanced Materials – Rapid Communications** Vol. **1**, No. **11**, ( 2007) **601 – 608**.
46. S.S. Hussaini, N.R. Dhumane, V.G. Dongre, P. Ghughare, **M.D. Shirsat**, “Growth and Characterization of Glycine Doped KDP Single Crystal for Optoelectronics Applications” **Journal of Optoelectronics and Advanced Materials – Rapid Communications**, Vol. **1**, No. **12**, December 2007, p. **707 – 711**.
47. D.J. Shirale, V.K. Gade, P.D. Gaikwad, H.J. Kharat, K.P. Kakde, P.A. Savale, S.S. Hussaini, N.R. Dhumane, **M.D. Shirsat**, “The influence of electrochemical

- process parameters on the conductivity of poly(*N*-methylpyrrole) films by galvanostatic method”, **Materials Letters** **60** (2006) 1407-1411.
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- **Applied Physics Letters (American Institute of Physics) : 3.8**
- **International Journal of Electrochemical Science : 2.8**
- **Electroanalysis (Wiley Inter Science) : 2.7**
- **Reactive and Functional Polymers (Elsevier) : 2.5**
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- **Material Letters (Elsevier) : 2.1**
- **Applied Biochemistry and Biotechnology (Springer) : 1.8**

- **Optical Materials (Elsevier) : 1.7**
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2. **Mahendra D. Shirsat**, “ Non Covalent Functionalization of Single Walled Carbon Nanotubes for Sensing Array” **Invited Lecture : Abstract of 17<sup>th</sup> National Symposium on Solid State Nuclear Track Detectors and Their Applications ( SSNTD-11) ( October 17-19, 2011).**
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