

Curriculum Vitae



Dr. Mahendra D. Shirsat

Dean, Faculty of Science and Technology,

Senior Professor, Dept of Physics

Head, Department of Electronics

Director, RUSA Centre for Advanced Sensor Technology

**Dr. Babasaheb Ambedkar Marathwada University,
Chhatrapati Sambhajinagar (Aurangabad) – 431004 (MS) India**

Curriculum Vitae

Name: Dr. Mahendra D. Shirsat

I. Personal Memorandum

Designation : Dean, Faculty of Science and Technology,
Senior Professor, Dept of Physics
Director, RUSA Centre for Advanced Centre Technology,
Head, Department of Electronics

Mailing Address : RUSA Centre for Advanced Sensor Technology,
Department of Physics,
Dr. Babasaheb Ambedkar Marathwada
University Aurangabad 431 004 (MS) India

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mdshirsat_bamu@yahoo.co.in

Date of Birth : May 8, 1966

II. Academic Preparation:

Level	University / Institution	Year
B. Sc.(Physics, Mathematics, Instrumentation)	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) India	May 1986
M.Sc. Physics (Electronics)	-----do -----	May 1988
MCA (Engg & Tech)	Indira Gandhi National Open University, New Delhi, India	May 2007
PGDCA (Computer Application)	Indira Gandhi National Open University, New Delhi, India	May 2005
ADCA (Computer Application)	-----do -----	May 2006
Ph. D. (Physics)	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) India	April 1996
Post-Doctoral Fellow (PDF)	University of California, Riverside, USA	2007-2008

III. Awards / Fellowships / Honors received:

- Scholarship Awardee, under the framework of National Scholarship Program (NSP) of Slovak Republic, Europe, Awarded by SAIA, Slovakia, Europe (March 15– November 30, 2023)

- Visiting Professor (National Taiwan Uni. Of Science and Technology, Taiwan) - Nov-December 2022
- LEAP (Leadership for Academic Programme) University of Cambridge, UK- 2020
- Research Professor Award (By Dr. BAMU, Aurangabad, India) - 2017
- Ideal Teacher Award (By Dr. BAMU, Aurangabad, India) - 2014
- Visiting Professor (Hanyang University, Seoul, South Korea) - 2013
- Visiting Professor (National Taiwan Uni. Of Science and Technology, Taiwan) – 2016, 2018 and 2022
- BOYSCAST Fellowship (DST, Govt. of India: University of California, Riverside, USA) - 2007
- Visiting Scientist: (National Institute of Health USA and University of California, Riverside USA) -2008-09
- Visiting Principal Fellow (University of Wollongong, NSW, Australia) - 2006
- UGC Teacher Fellow - 1994
- Fellow of Institute of Electronics and Telecommunication of Engineers (IETE), New Delhi, India
- Member of AUC, Inter University Accelerator Centre, New Delhi, India
- Member of NAAC peer Team, Bangalore, India
- Associate Editor, Frontiers in Chemistry, USA
- Member of Editorial Board of International Journal of Material Science (IJMSCI), Hong Kong.
- Member of Steering Committee of International Journal of Application of Materials and Chemical Engineering (AMCE), Hong Kong.
- Member of Editorial Board of ISRN Electrochemistry: An International Peer Reviewed Journal, New York, USA.
- Member of Academic Council of Government College of Engineering, Aurangabad (MS) India
- Member of RRC in Electronics, RTM Nagpur University, Nagpur, India
- Member of RRC in Electronics, SRTM University, Nanded, India
- Member of BOS in Electronics, SRTM University, Nanded, India
- Former Member of Academic Advisory Committee, ASC, SGB Amravati University, Amravati (MS), India
- Former 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 Board of BCUD, Dr. BAMU, Aurangabad, India
- 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 :

Visiting Researcher : Department of Nuclear Physics and Biophysics,
Faculty of Mathematics, Physics and Informatics,
Comenius University, Bratislava, Slovak Republic,
Europe
March 15- November 30, 2023

- Post-Doctoral Fellow And Visiting Scientist** : Department of Chemical & Environmental Engineering,
University of California, Riverside, CA, USA (2007-2009)
- Visiting Principal Fellow** : Intelligent Polymer Research Institute,
University of Wollongong, Wollongong,
Australia (2006)
- UGC Teacher Fellow** : Post Graduate Department of Physics/Electronics,
J.E. S. College, Jalna (MS) (1993-94)
- Teaching Experience** :
- Senior Professor** : Department of Physics,
Dr. Babasaheb Ambedkar Marathwada
University, **Aurangabad – 431 004 (MS) INDIA**
February 05, 2020 to till date
- Professor** : Department of Physics,
Dr. Babasaheb Ambedkar Marathwada
University, **Aurangabad – 431 004 (MS) INDIA**
August 6, 2007 to February 04, 2020
- Visiting Professor/Researcher:** Department of Nuclear Physics and Biophysics,
Faculty of Mathematics, Physics and Informatics,
Comenius University, Bratislava, Slovak Republic,
Europe
March 15- November 30, 2023
- Visiting Professor** : Department of Material Science Engineering,
National Taiwan University of Science &
Technology, **Taipei, Taiwan**
Nov 15- Dec 10, 2022
- Visiting Professor** : Department of Material Science Engineering,
National Taiwan University of Science &
Technology, **Taipei, Taiwan**
April 09-15, 2018
- Visiting Professor** : Department of Material Science Engineering,
National Taiwan University of Science &
Technology, **Taipei, Taiwan**
May 07-14, 2016
- Visiting Professor** : Department of Chemistry, Hanyang University,
Seoul, South Korea

March 22 – June 20, 2013

Associate Professor : Department of Physics,
Dr. Babasaheb Ambedkar Marathwada
University, **Aurangabad – 431 004 (MS) INDIA**
April 8, 2003 to August 5, 2007

Associate Professor : Department of Electronics,
North Maharashtra University,
Jalgaon – 425 001 (MS) INDIA
December 9, 1999 to April 7, 2003

Assistant Professor : Post Graduate Dept of Physics,
J E S College, **Jalna (MS) INDIA**
Aug 6, 1988 to December 8, 1999

Administrative Experience :

Dean : **Faculty of Science and Technology,**
Dr. Babasaheb Ambedkar Marathwada University,
Chhatrapati Sambhajinagar – 431 004 (MS) INDIA
February 2024 till date

Director : **RUSA Centre for Advanced Sensor Technology,**
Dr. Babasaheb Ambedkar Marathwada University,
Chhatrapati Sambhajinagar
(Aurangabad) – 431 004 (MS) INDIA
June 2016 till date

Head : **Department of Electronics,**
Dr. Babasaheb Ambedkar Marathwada University,
Chhatrapati Sambhajinagar
(Aurangabad) – 431 004 (MS) INDIA
June 2017 till date

Director : **Internal Quality Assurance Cell**
Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad – 431 004 (MS) INDIA
August 2017 to Nov 07, 2019

Director : **Deen Dayal Upadhyay KAUSHAL Kendra,**
Dr. Babasaheb Ambedkar Marathwada University,
Aurangabad – 431 004 (MS) INDIA
June 21, 2013 to March 31, 2014
and
Nov 15, 2014 to July 04, 2021

Director	:	Innovation and Incubation Centre, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad – 431 004 (MS) INDIA May 2018 to Augsut 15, 2018
Registrar	:	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad – 431 004 (MS) INDIA Sept 16, 2015 to Feb 01, 2016
Head	:	Department of Physics, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad – 431 004 (MS) INDIA February 2, 2013 to February 1, 2016
Director	:	UGC-Academic Staff College, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad – 431 004 (MS) INDIA April 7, 2011 to March 20, 2013

V. Training (Leadership) programme attended:

- LEAP (Leadership for Academician Programme) Jan 19-25, 2020, **Judge Business School, University of Cambridge, UK**
- LEAP (Leadership for Academician Programme) December 08-21, 2019, **Indian Institute of Technology (IIT BHU) Varansi, India**
- Vocational Education and Leadership Training (VELT) Program organized by AICTE and TAFE Australia @ **AICTE, New Delhi India : Phase II during April 05-07, 2017**
- Vocational Education and Leadership Training (VELT) Program organized by AICTE and TAFE Australia @ **AICTE, New Delhi, India : Phase I during November 21-25, 2016**
- Vocational Education and Leadership Training (VELT) Program organized by AICTE and TAFE **Australia @ TAFE Australia : Phase II during Feb 26 to March 04, 2017**

VI. Overseas University / Institute Visits

- University of Wollongong, Australia (2006)
- University of California, Riverside, USA (During 2007-2009)
- North Western University, Evanston (Chicago), USA (2008)
- Arizona State University, Tempe, USA (Visited in 2008)
- University of Tokushima, Tokushima, Japan (2011, 2012, 2013, 2015 and 2016)
- Hanyang University, Seoul, South Korea (2013 and 2015)
- Pusan National University, Busan, South Korea (2015)

- Korea Maritime University, Busan, South Korea (2015)
- University of Paris, Paris, France (2015)
- National Taiwan University of Science and Technology, Taipei, Taiwan (2016)
- Southern Taiwan University of Science and Technology, Tainan, Taiwan (2016)
- TAFE Tasmania, Australia (2017)
- National Taiwan University of Science and Technology, Taipei, Taiwan (2018)
- Judge Business School, University of Cambridge, UK (2020)
- National Taiwan University of Science and Technology, Taipei, Taiwan (2022)
- Comenius University, Bratislava, Slovak Republic, Europe (2023)

VIII .Funding: Research Project and Infrastructural Grants:

National:

1. Science, Technology and Innovation Hub for empowerment of SC/ST Community; **Funded by SEED, DST, New Delhi Rs. 2.62 Cr (2019-2022)**
2. Peptides functionalized Conducting Polymer-Graphene OFETs for detection of Aqueous Phase Pollutants; **Funded by SERB, DST, New Delhi Rs. 50.00 Lakhs (2018-2021)**
3. Influence of SHI irradiation on Metal Organic Frameworks / Graphene Oxide (MOF-GO) composite for Sensing Applications
Funded by IUAC, New Delhi Rs. 6.70 lakhs (2021-2024)
4. Metal Oxide doped graphene for detection of Hazardous gases (2022-2025);
Funded by UGC-DAE CSR Indore (Chracterization facility + Contingency of Rs. 45,000)
5. Impedimetric / Chemiresistive Sensor based on Metal Organic Framework; **Funded by UGC-DAE-CSR Indore Rs. 7.00 Lakhs (2018-2021)**
6. Field Effect Transistors based on SHI Irradiated MOF for sensing Applications; **Funded by Inter University Accelerator Centre, New Delhi Beam Time + Rs 6.70 Lakhs (2018-2021)**
7. SHI Irradiated Organic Field Effect Transistors for Detection of Heavy Metal Ions; **Funded by Inter University Accelerator Centre, New Delhi Beam Time (2018-2021)**
8. Heavy Metal Ion Sensor: Chelating Ligand Modified Carbon Nanotubes (CNTs)-Conducting Polymer (CP) Composite Structure (2014-2018)
Funded by DST, New Delhi, IndiaRs 51.29 Lakhs
9. Development of smart sensing platform for air quality monitoring (2016-17)
Funded by RUSA, Govt of Maharashtra, India; Rs. 25.00 Lakhs
10. Effects of SHI Irradiation on SWNT/ Organic Conducting Polymer(OCP) Nanocomposite : Sensitive Detection of Heavy Metal Ions (2010-2013)
Funded by IUAC, New Delhi, IndiaBeam Time + Rs 6.70 Lakhs

11. Optoelectronics (NLO) Crystal Growth and Characterization (2012-2015)
Funded by UGC, New Delhi 16.49 Lakhs
12. Nanosensor Array based on Conducting Polymer Functionalized SWNTs for Real-Time Monitoring of Toxic Air (2010-2014),
Funded by TSD, DST, New Delhi Rs 44.65 lakhs
13. Nanosensor Array based on Metalloporphyrins Functionalized SWNTs for Real-Time Monitoring of Toxic Volatile Organic Compounds (2009-2013).
Funded by Nano Mission, DST, New Delhi, India Rs 49.08 Lakhs
14. A Pursuit towards Highly Selective Toxic Vapour Nano Sensor Array: Investigation on Effect of Metal Ion Irradiation on Pristine and Conducting Polymer Functionalized SWNTs (2010-2013)
Funded by IUAC, New Delhi, India Beam Time+ Rs 6.70 Lakhs
15. Synthesis and characterization of conducting polymer / carbon nanotubes Nanocomposite for hazardous gas sensor applications.
Funded by CSIR, New Delhi, India. (2007-2010) Rs 16.58 Lakhs
16. Fabrication Of Carbon Nanotubes (CNTs) and Metal Oxide Nano Particles Modified Chemically Sensitive Field Effect Transistors (CHEMFETs) for the Development Of Hazardous Gas Sensors.
Funded by UGC, New Delhi, India during. (2008-2011) Rs 12.0 Lakhs.
17. 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**
18. 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) Rs 1.2 Lakhs**
19. Study of Radial profiles in the Copper Vapour Laser Discharge.
Funded by University Grants Commission, New Delhi, India during 1999-2000 (Minor Research Project) Rs 1.2 Lakhs
20. DST INSPIRE (2 camps) (2012 and 2013): **19.52 Lakhs**

Infrastructural Projects (07): Rs. 11.33 Crores

1. RUSA Centre for Advanced Sensor Technology (Govt of Maharashtra, India) : **Rs. 1.5 Crores (2016-17)**
2. DST FIST, DST, New Delhi : **Rs. 1.15 Crores (2018-2023)**
3. UGC –DDU KAUSHAL Kendra (UGC, New Delhi, India) : **Rs. 4.0 Crores (2015)**
4. UGC: B.Voc (UGC, New Delhi, India) :**Rs 1.85 crores (2014)**
5. Incubation Centre : **Rs. 1.50 Crores (2016)**
6. UGC-Community College (UGC, New Delhi, India) : **Rs. 83 lakhs (2015)**
7. UGC-SAP(UGC, New Delhi, India): **Rs. 50.00 lakhs (2017-2022)**

International:

1. Wearable Nanosensor Array for Real-Time Monitoring of Diesel and Gasoline Exhaust, **Funded by National Institute of Environmental Health Sciences, USA along with Professor Ashok Mulchandani, University of California, Riverside, USA (USD 240,000) during 2008-09.**

IX : Research / Academic Collaborations (International)

1. University of Wollongong, Wollongong, Australia (Visited in 2006)
2. University of California, Riverside, CA, USA (Visited during 2007-09)
3. Hanyang University, Seoul, South Korea (Visited in 2013)
4. National Taiwan University of Science and Technology, Taiwan (Visited in 2016)
5. Southern Taiwan University of Science and Technology, Taiwan (Visited in 2016)
6. Arizona State University, Tempe, USA (Visited in 2008)
7. University of Tokushima, Japan (Visited in 2011, 2012, 2013, 2015 and 2016)
8. University of Paris, France (Visited in 2015)
9. TAFE Tasmania, Australia (Visited in 2017)
10. Comenius University, Bratislava, Slovak Republic, Europe (Visited in 2023)

X : Research / Academic Collaborations (National)

1. Bhabha Atomic Research Centre (BARC), Mumbai, India
2. Indian Institute of Technology (IIT), New Delhi, India
3. Inter University Accelerator Centre (IUAC), New Delhi, India
4. Delhi University, New Delhi, India
5. Crystal Growth Centre, Anna University, Chennai, India

XI. Expertise / Areas of specialization

- Chemical Sensors based on various Nanostructured materials viz Carbon Nanotubes, Graphene, Conducting Polymers, and functional materials viz Porphyrins, Metal Organic Frameworks, Metal Oxide etc and their composites.
- Optical Fiber sensors,
- Non Linear Optical (NLO) Material Crystals,
- Optoelectronics Devices
- Microprocessors and their interfacing applications
- Microcontrollers and their interfacing applications

XII. Synergic Activities

1. Organizing Co-ordinator

- DST sponsored INSPIRE programme organized by Department of Physics, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad during February 11-15, 2013.
- DST sponsored INSPIRE programme organized by Department of Physics, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad during December 16-20, 2013.

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:

- International Conference on Functional Materials and Microwaves (ICFMM-2015) organized by Dept of Physics and Computer Science, Dr Babasaheb Ambedkar Marathwada University, Aurangabad (MS), India during December 28-30, 2015
- 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

- ACS Sensors, ACS Applied Nonomaterials, ACS Interface, Sensors and Actuators B : Chemical, Sensors and Actuators A : Physical, Chemical 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.

XIII : Contribution on Statutory Bodies :

- Chairman, Board Studies in Electronics, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) India.
- Member, Academic Council, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) India.
- Member Secretary, Management Council, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) India.
- Member, Senate, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) India.
- Chairman, Ad-hoc Board of Studies for Vocational Studies, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) India.

- Chairman, Board Studies in Physics, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS) India.
- Member, BOS in Physics and Electronics (Dr. Babasaheb Ambedkar Marathwada University, Aurangabad and SRTM University, Nanded);
- Member of Board of College and University Development (BCUD) of Dr. Babasaheb Ambedkar Marathwada University, Aurangabad;
- Member of Academic Council of Govt. Engineering College, Aurangabad (MS) India
- Member of RRC in Physics and Electronics (Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, SRTM University, Nanded and RTM Nagpur University, Nagpur, MS, India)
- Member, Board of School of Physical Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow (UP), 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 of Academic Advisory Committee, ASC, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad (MS), India.

XIV : Brief account of research interests with special focus on Nano Science and Technology :

Professor **Mahendra D. Shirsat** leads an active research group working in the domains of **Sensors and Non-Linear Optical (NLO) Material Crystals**. His group has extensively explored a wide range of advanced materials, including **Single-Walled Carbon Nanotubes (SWNTs), Organic Conducting Polymers (OCPs), Graphene, Metal Nanoparticles, Porphyrins, and Metal–Organic Frameworks (MOFs)** for diverse sensing applications.

The group's early focus was on developing **thin-film-based sensors** using conducting polymers, which led to the successful development of several **biosensors and gas sensors**. Since 2006, the group transitioned towards **one-dimensional nanostructured devices**, driven by the need for improved sensing performance in terms of **detection limits, sensitivity, and response/recovery times**.

Professor Shirsat's global research exposure is significant:

- **Post-Doctoral Fellow**, Department of Chemical & Environmental Engineering, University of California, Riverside, USA (BOYSCAST Fellowship, DST, New Delhi) – where he worked on **Nano-framework Electrode Junctions for Resistive Sensors**.
- **Principal Visiting Fellow**, ARC Centre of Excellence for Electromaterials Science, University of Wollongong, Australia – worked on **Conducting Polymer/Carbon Nanotube composites for biosensing**.
- **Visiting Scientist**, University of California, Riverside, USA (NIH, USA) – developed **nanosensor arrays using porphyrins for real-time monitoring of VOCs**.
- **Visiting Professor**, Hanyang University, Seoul, South Korea (2013).
- Delivered **invited lectures** at Tokushima University, Japan (2014, 2015), and National Taiwan University of Science and Technology, Taipei (2016, 2018, 2022).
- **Visiting Professor/Researcher**, Comenius University, Bratislava, Slovakia (2023) under the National Scholarship Program of the Slovak Republic.

Research Projects and Funding

Professor Shirsat has successfully executed **20 major research projects** (completed and ongoing) with funding support of **₹5.86 Crores** from premier agencies including **UGC, CSIR, DST-SERB, DST-Nanomission, DST-TSD, and IUAC**. In addition, he mobilized **₹11.33 Crores** for infrastructural development projects, including:

- RUSA Centre for Advanced Sensor Technology – ₹1.5 Crores
- DST-FIST, New Delhi – ₹1.15 Crores
- UGC-DDU KAUSHAL Kendra – ₹4.0 Crores
- UGC-B.Voc Programme – ₹1.85 Crores
- UGC-Community College – ₹0.83 Crores
- Incubation Centre – ₹1.5 Crores
- UGC-SAP – ₹0.50 Crores

While a few UGC projects addressed **growth of NLO material crystals**, the majority of his projects are dedicated to **design and development of nanostructured sensor materials**. His group has also pioneered the use of **Swift Heavy Ion (SHI) irradiation** to enhance the sensing capabilities of nanostructured materials. Their research has been widely published in **high-impact peer-reviewed journals**.

Institution Building and Research Infrastructure

Professor Shirsat played a pioneering role in establishing the **Centre for Vocational Education and Training (CVET) / Deen Dayal Upadhyay KAUSHAL Kendra** as its Founder Director. He also established the **RUSA Centre for Advanced Sensor Technology**, which houses **state-of-the-art facilities**, including:

- Class 10000 Cleanroom
- Mask Aligner (Suss MicroTec)
- Wire Bonder (West Bond 7476D)
- Thermal & E-beam Coater (Hind Hivac BC300)
- Spin Coating System, 16-channel DAQ (NI)
- Chemical Vapour Deposition System
- Probe Station (Ecopia EPS-1000)
- Semiconductor Parameter Analyzer (Keithley)
- DC Source–Measure Unit (Keithley 2400)
- CH Electrochemical Workstation
- BET Surface Area Analyzer
- Bruker D8 Advance X-Ray Diffractometer
- UV-Visible Spectrophotometer
- FTIR Spectrometer (Bruker Alpha)
- Atomic Force Microscope (AFM)
- Scanning Tunneling Microscope (STM)
- Raman Spectrometer

A team of **trained and experienced researchers** supports the group, ensuring optimum use of these advanced facilities and delivering impactful research outcomes.

Key note address / invited talk delivered at various International / National Conferences / Summer School programme

1. Delivered lectures on Advanced Sensor Technology at **Comenius University, Bratislava, Slovakia, Europe during March 15 – November 30, 2023.**
2. Delivered one course Module on Sensor Technology at **National Taiwan University of Science and Technology (NTUST), Taipei, Taiwan during Nov 15- Dec 10, 2022**
3. Delivered Invited Talk on Sensor Technology at **Department of Physics, National Dong Hwa University, Hualien, Taiwan on December 05, 2022.**
4. Delivered Invited Talk on Sensor Technology at **Department of Electronics Engineering, Chung Yuan Christian University, Taoyuan, Taiwan on November 23, 2022.**
5. Delivered one course Module on Sensor Technology at **National Taiwan University of Science and Technology (NTUST), Taipei, Taiwan during April 08-18, 2018**
6. Invited Talk delivered at **International Conference on Advanced Materials Development and Performance (AMDP - 2017) organized by Savitribai Phule Pune University, Pune, India during July 12-15, 2017**
7. Invited Talk delivered at **International Conference on Material Research & Technology (ICMRT-2017) at Aggarwal College, Faridabad, India during July 10-11, 2017**
8. Invited Talk delivered at **International Conference on Functional Oxides and Nanomaterials (ICFONM 2016) at Saurashtra University, Rajkot during November 11-13, 2016**
9. Invited Talk delivered at **Southern Taiwan University of Science and Technology (STUST), Tainan, Taiwan on May 11, 2016**
10. Invited Talk delivered at **National Taiwan University of Science and Technology (NTUST), Taipei, Taiwan on May 10, 2016**
11. Invited Talk delivered at National Conference on “EMERGING TRENDS AND TECHNOLOGIES IN SCIENCES (NCETTS-2016)” **organized by Aggarwal College Ballabgarh, Haryana, India during March 25-26, 2016.**
12. March 25-26, 2016. Invited Talk delivered during International Symposium Global Engineering Education organized by the **University of Tokushima, Japan during March 07-08, 2016.**
13. Invited Talk delivered at Workshop on nanotechnology and wireless technology organized by **Government Polytechnic College, Aurangabad (MS) India during February 18, 2016.**
14. Invited Talk delivered during International Conference on Materials Science and Ionizing Radiations Safety and Awareness (ICMSIRSA-2016) organized by **Department of Physics, Shivaji University, Kolhapur (MS) India during Jan 28-30, 2016.**
15. Invited Talk delivered during International Symposium Global Engineering Education organized by the **University of Tokushima, Japan during March 20-21, 2015.**
16. Invited talk delivered on “Chemiresistive and ChemFET sensor array based of Porphyrins functionalized SWNTs: Electronic Nose” during Indo- French Seminar on Semiconductor Gas Sensors organized by **University of Paris, at Reims, France (February 10-13, 2015).**

17. Invited talk delivered on “Porphyrins functionalized SWNTs VOC Sensors” at National Conference organized by Adarsh College, Omerga, Osmanabad, India on January 27, 2015.
18. Invited talk delivered on “Formulation of Research Proposals” at Mahila Kala Mahavidyalaya, Beed, India on April 19, 2015.
19. Invited talk delivered on Nano Sensor Array during Indo-Japan Work Shop on “Nanotechnology: Synthesis and Sensing Applications” organized by **C-MET, Pune, India on October 16, 2014.**
20. Invited talk delivered on “Nano Materials for Chemical Sensors” at National Conference on Materials Science and Technology organized by Milliyya College, Beed, India on December 23, 2014.
21. Series of talk delivered during Summer School Programme organized by **University of Tokushima, Tokushima, Japan on July 22-23, 2014.**
22. Key Note Address delivered during International Conference on Advanced Materials Development and Performance (AMDP - 2014) organized by **University of Tokushima, Japan during July 17-20, 2014.**
23. Special talk delivered at **Hanyang University, Seoul, South Korea on July 15, 2014.**
24. National Conference National Conference on “Organic Device: Future Ahead” organized by **Bhabha Atomic Research Centre (BARC), Mumbai (India) during March 3-6, 2014.**
25. National Conference National Conference on “Material Characterization and their Applications” organized by Anand Niketan College of Art, Commerce & Science, Anandwan Warora, Dist. Chandrapur (M.S.) (India) on 6th Feb. 2014
26. Invited talk delivered at National Conference on Material Science and Technology organized by Milliyya College, Beed during December 23-24, 2014.
27. National Conference on “ The Polymer Chemistry for Mankind” organized by Govt College, Aurangabad (MS) India on Dec 28, 2013.
28. National Conference on Microwave Techniques and Applications at Maulana Azad College, Aurangabad (MS) India on Nov 29, 2013
29. 18th National Symposium on Solid State Nuclear Track Detectors and Their Applications (SSNTDs-18), at Faridabad, India on October 20, 2013
30. National Conference on Emerging Trends in Lasers and Advanced Materials (NCETLAM-2013) at Abasaheb Garware College, Pune (MS) India on October 29, 2013.
31. Special Lecture Delivered at **Korea Maritime University, Busan, South Korea on April 22, 2013**
32. Special Lecture Delivered Pusan National University, **College of Nanoscience and Nanotechnology, Busan, South Korea on April 19, 2013**
33. National Conference on Lasers and Their Applications Organized by B.B. Arts, N. B. Commerce and B. P. Science College, Digra, Yavatamal (MS) India on December 28, 2012.
34. Closing Symposium (International) on Double Degree Programme organized by the **University of Tokushima, Japan during March 1, 2012.**
35. International Conference on Recent Trends in Advanced Materials ICRAM – 2012 organized by **VIT University Vellore (Tamilnadu) India during Feb 20-22, 2012**
36. 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.

37. International Conference on Advanced Materials Development and Performance (AMDP - 2011) organized by **University of Tokushima, Japan during July 15-18, 2011.**
38. National Seminar on Recent Trends in Material Science, organized by Mutizapur, Akola (MS) India on Dec 3, 2011
39. 17th National Symposium on Solid State Nuclear Track Detectors and Their Applications (SSNTD-11) organized by Dept of **Physics MS University Baroda, Gujrat, India during October 17-19, 2011.**
40. International Conference on MEMS and Optoelectronics Technologies (ICMOT -2010) organized by **Swarnandhra College of Engineering and Technology, Narsapur (Affiliated JNTU) (AP) India during January 22-23, 2010**
41. National Conference on Recent Trends In Materials Research (RTMR-11) organized by Birla College of Arts, Science and Commerce, Kalyan (MS) India during Jan 29-30, 2011.
42. International Conference on Lasers and Advanced Materials (ICLAM) -2010 organised by Abasaheb Garware College, Pune (MS) India during March 6-8, 2010.
43. National Conference on Chemi-Physics organized by Shivaji College, Morshi, Amaravti (MS) India on February 28, 2010.
44. National Conference on Advances in Material Research organized by Shankarlal Khandelwal Arts, Science and Commerce College, Akola (MS) India during February 26-27, 2010.
45. National Conference on Effect of Drugs on Human Metabolism organized by Department of Biotechnology, Osmanabad Sub Centre of Dr. BAM University, Aurangabad (MS) India on Feb 2008.
46. National conference on Advances in Computer Science and Informational Technology organized by College of Computer Applications, Latur, India (Feb 2008).
47. National Symposium on Genomics, Proteomics and Bioinformatics, Department of Biotechnology, Osmanabad Sub Centre of Dr. BAM University, Aurangabad (MS) India in Feb 2007.
48. National Conference on Microwaves and Optoelectronics at Deptt of Physics, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, India on June 30, 2004.

XV. List of Ph D Awarded Student (31 students awarded with Ph D)

Sr. No.	Student	Thesis title	Year of Ph.D Award
1.	Dr. D. J. Shirale	Design and Fabrication of Conducting Polymer Based Biosensors by Galvanostatic Method in Various pH Aqueous solutions	September 2006
2.	Dr. P. D. Gaikwad	Fabrication of Potentiometric Biosensors on Polyaniline Semiconductor Films	December 2006
3.	Dr. V. K. Gade	Electrochemical Synthesis and Characterization of Polypyrrole and Their Co-polymer Films for the Development of Biosensors	January 2007
4.	Dr. P. A. Savale	Optimization of Sensor Parameters for Conducting Polymer based Amperometric Biosensors	June 2008

5.	Dr. K. P. Kakde	Optical Fiber Based Chemical Sensors for Remote Sensing	May 2008
6.	Dr. H. J. Kharat	Designing of Optical Bio-Sensors for Biomedical applications	May 2008
7.	Dr. S. S. Hussaini	Growth and Characterization of NLO(Non-Linear Optics) Material Crystals	May 2008
8.	Dr. N. R. Dhumane	Growth and Characterization of Semi-Organic Non-linear Optical (NLO) Material Crystals for Opto-Electronics Applications	August 2009
9.	Dr. Santosh B. Kadam	Synthesis and Characterization of polypyrrole Poly (N-Methylpyrrole) Composite structure for Glucose Biosensor Applications	October 2010
10.	Dr. Kunal Datta	Fabrication of Chemically Sensitive Field Effect Transistors (CHEMFETs) for Gas sensing Applications	October 2013
11.	Dr. Prashant Ghosh	Fabrication of Carbon Nanotubes (CNTs) Modified Conducting Polymer Nanowires Based Field Effect Transistors for Chemical Sensing Applications	November 2013
12.	Dr. N. N. Shejwal	Influence of Amino acids on Metal Complexes Crystals	December 2016
13.	Dr. Arti Rushi	Study of VOC Sensor Platform based on Macrocyclic Compound Functionalized Carbon Nanotubes	July 2016
14.	Dr. Sumedh Gaikwad	Sensors based on Conducting Polymer modified Carbon Nanotubes for the Detection of Air Pollution	February 2017
15.	Dr. Megha Deshmukh	Carbon Nanotubes - Organic Conducting Polymers Nano Composites for Heavy Metal Ion Sensing	February 15, 2018
16.	Dr. Swati Kulkarni	Hybrid Solar Cells: An Investigation towards Novel Photovoltaic Materials	May 2019
17.	Dr. Rupali Kulkarni	Influence of Organic/Inorganic Additives on Thiourea / Thiosemicarbazide Metal Complex Crystals	May 2019
18.	Dr. Harshada Patil	Effects of SHI Irradiation on Organic Conducting Polymers - Carbon Nanotubes Nanocomposite for Detection of Water Pollutants	October 2019
19.	Dr. Gajanan A. Bodkhe	Metal Organic Frameworks for Detection of Environmental Pollutants	January 12, 2021
20.	Nikesh Ingle	Field Effect Transistor based on Swift Heavy Ion irradiated Metal Organic Frameworks for detection of Air Pollutants	October 2021
21.	Sayyad Pasha	Peptides functionalized Conducting Polymer-Graphene OFETs for detection of Aqueous Phase Pollutants	October 2021
22.	Manasi Mahadik	Organic Field Effect Transistor For Detection of Heavy Metal Ions	October 2021
23.	Mr. Theeazen Fadhl Hassan Ali AL-Gahouari	Chemical sensor based on carbon nanomaterials	April 2022

24.	Mr. Kumbhar Deepak Shivram	Study and Analysis of Maturity Measurement Methods in Evaluating the Concrete Strength for the Civil Structure and Development of Concrete Maturity Measurement System Using Embedded Technology and Upgrades	May 2022
25.	Hamed Yaseen Mohammed Mutahhar	Fabrication of Chemical Sensor Based on Conducting Polymer Composites for Detection of Environmental Pollutants	November 2023
26.	Maamon Omar Ahmed Farea	Fabrication of gas sensor on a composite of (CPs - rGO) for sensing of environmental pollutants	November 2023
27.	Abhaysinh Khune	Porphyrins Based Chemical Sensors	February 2025
28.	Mayuri More	Detection of Air Pollutants using Metal Organic Frameworks	April 2025
29.	Shubham Patil	Heavy Metal Ions Detection Using Chelating Ligands Modified Porous Coordination Polymer Metal Nanoparticles Composites	April 2025
30.	Kamlesh Deore	Metal Organic Frameworks and Metal Nanoparticles Composite for Detection of Heavy Metal Ions	June 2025
31.	Yogita Waghmare	Porphyrins Functionalized Graphene for Detection of Environmental Pollutants	July 2025

XVI. List of Publications (432)

- Edited Books: 03
- Peer-reviewed International / National Journals : 236
(Peer-reviewed SCI, SCOPUS, Web of Science indexed Journals)
- Research Papers Published in non SCI Journals : 84
- Research Papers presented in International Conferences: 45
- Research Papers presented in National Conferences: 64
- Range of Impact factor : 0.49 to 16.74 (Thomson Reuters)
- Average Impact Factor : 3.1 (Thomson Reuters)
- Cumulative Impact factor : 673 (Thomson Reuters)
- h- index : 43 ; i10 index : 148 (Google Scholar) and h- index : 39 (Scopus) :
Total number of citations : 6800 (Google Scholar); 5558 (Scopus)
- Patents: 02 (01 Granted ; 01 Published)

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
4. **Book Chapter : The Detection Biomarkers (Past, Present and future Prospects) : Elsevier Academic Press – 2022; Chapter 15 (Conducting polymers—versatile tools in analytical**

systems for the determination of biomarkers and biologically active compounds, Simonas Ramanavicius, Megha A. Deshmukh, Roxana-Mihaela Apetrei, Almira Ramanaviciene, Ieva Plikusiene, Inga Morkvenaite-Vilkonciene, Hanuman N. Thorat, **Mahendra D. Shirsat** and Arunas Ramanavicius

List of Patents:

1. A method for synthesizing l-glutathione (lgsh) functionalized poly(3,4-ethylenedioxythiophene) poly(styrenesulfonate)/ Multi-walled carbon nanotubes-carboxylic acid (pedot:pss/mwcnts-cooh) nanocomposite (**Patent Number 2022/05531**) **Date of Grant : 21/12/2022 (Republic of South Africa)**
2. In-situ IOT Cloud based Concrete Maturity- Strength Measurement system for real time concrete strength monitoring and Prediction (**Patent Number 20221016227**) **Date of Publication: 23/03/2022**

List of Designs:

1. Automatic Hand Sanitizer Dispenser (**Design Number 332440-001**) **Date of Grant : 06/03/2025**

Research Papers Published in SCI, SCOPUS and Web of Science Indexed Journals (236)

1. Shubham S. Patil, Vijaykiran N. Narwade, Farhat U. Shaikh, Rajendra S. Sonkawade, Meng-Lin Tsai, Tibor Hianik, **Mahendra D. Shirsat**, “Impact of guest metals interaction on the electrochemical behavior of La-TMA for selective and sensitive detection of heavy metal Ions: Surface adsorptive reaction mechanism”, **Microchemical Journal**, Volume 215, **August 2025**, 114267 (**Thomson Reuters Impact Factor: 5.1**)
2. Kamlesh B Deore, Shrinivas B Sitawar, Nikesh N Ingale, Gajanan A Bodke, Meng-Lin Tsai, Tibor Hainik, **Mahendra D. Shirsat**, Synergistic enhancement of electrochemical sensing: EDTA@ AgNP's_UIO-66 composite for sensitive and selective detection of toxic Hg (II) ions. **Microchemical Journal**, **2025**: p. 112766. (**Thomson Reuters Impact Factor: 4.90**)
3. Priyanka C. Zine, Vijaykiran N. Narwade, Shubham S. Patil, Meng-Lin Tsai, Tibor Hianik, **Mahendra D. Shirsat**, Amino-functionalized graphene oxide/polyaniline nanocomposite: a versatile platform for ultrasensitive Pb²⁺ ion sensing, **Emergent Materials** (**2025**) **8**:2131–2142 <https://doi.org/10.1007/s42247-024-00870-3> (**Thomson Reuters Impact Factor: 4.1**)
4. Mahesh A. Takte, Gopal M. Chavhan, Akash V. Fulari, Meng-Lin Tsai, Tibor Hianik, **Mahendra D. Shirsat**, A morphology-dependent study of V₂O₅@rGO nanocomposite-based chemiresistive room temperature gas sensor for

- detecting NO₂, **Synthetic Metals**, Volume 313, **August 2025**, 117891 (**Thomson Reuters Impact Factor: 4.0**)
5. Shubham S Patil, Farhat U Shaikh, Vijaykiran N Narwade, Priyanka C Zine, Pragati R Kagne, Rajendra S Sonkawade, Meng-Lin Tsai, Tibor Hianik, **Mahendra D. Shirsat**, Flexo-electrochemical Hg (II) sensor based on Ag/Nd-TMA MOF modified carbon cloth electrode: Surface adsorptive reaction mechanism utilizing X-ray photoelectron spectroscopy. **Synthetic Metals**, **2025**: p. 117833. (**Thomson Reuters Impact Factor: 4.0**)
 6. Yogita A Waghmare, Nikesh N Ingle, Meng-Lin Tsai, Tibor Hianik, **Mahendra D. Shirsat**, Highly Selective and Sensitive Chemiresistive NO₂ Sensor Using Reduced Graphene Oxide/Metal-Base Porphyrin Composite. **Sensors and Actuators A: Physical**, **2025**: p. 116628. (**Thomson Reuters Impact Factor: 4.10**)
 7. Gajanan A. Bodkhe, Bhavna Hedau, Mayuri S. More, Myunghee Kim, and **Mahendra D. Shirsat**, Electrochemical Sensing of Hg²⁺ Ions Using an SWNTs/Ag@ZnBDC Composite with Ultra-Low Detection Limit, **Chemosensors** **2025**, *13*(7), 259; <https://doi.org/10.3390/chemosensors13070259> (**Thomson Reuters Impact Factor: 3.70**)
 8. Priyanka C Zine, Vijaykiran N Narwade, Shubham S Patil, Masira T Qureshi, Meng-Lin Tsai, Tibor Hianik, **Mahendra D Shirsat**, Sensitive Electrochemical Sensor Based on Amino-Functionalized Graphene Oxide/Polypyrrole Composite for Detection of Pb²⁺ Ions. **Chemosensors**, **2025**: p. 34. (**Thomson Reuters Impact Factor: 3.70**)
 9. Mahesh A Takte, Shubham S Patil, Akash V Fulari, Tibor Hianik, **Mahendra D. Shirsat**, Electrochemical Sensor Based on DNA Aptamers Immobilized on V₂O₅/rGO Nanocomposite for the Sensitive Detection of Hg(II). **Sensors**, **2025**: p. 2334. (**Thomson Reuters Impact Factor: 3.40**)
 10. Nana N Shejwal, Shubham S Patil, Himanshu R Lanke, Ramesh B Kamble, Pritesh V Gole, **Mahendra D. Shirsat**, Ag-modified La-succinate composite as a novel electrochemical sensor for Hg²⁺ ion detection. **Journal of Solid State Electrochemistry**, **2025**: p. 1-12. (**Thomson Reuters Impact Factor: 2.60**)
 11. Manasi Mahadik, Gajanan A Bodkhe, Nikeshkumar Ingle, Harshada Patil, **Mahendra D. Shirsat**, Selective and sensitive detection of Pb (II) from aqueous solutions at optimized pH and analyzed for repeatability and reproducibility. **Applied Physics A**, **2025**: p. 125. (**Thomson Reuters Impact Factor: 2.50**)
 12. DV Dake, ND Raskar, VA Mane, RB Sonpir, K Asokan, **MD Shirsat**, M Vasundhara, VD Mote, BN Dole, Defect Engineering in Bilayer N-Doped Tungsten-Modified GO/RGO Hybrid Composite: A Comparative Study with Tungsten Carbide for Supercapacitor Applications. **Journal of Molecular Structure**, **2025**: p. 141617. (**Thomson Reuters Impact Factor: 4.00**)
 13. ND Raskar, DV Dake, VA Mane, RB Sonpir, VD Mote, M Vasundhara, PC Zine, **MD Shirsat**, KP Gattu, BN Dole, MXene/Tungsten-Functionalized Graphene Oxide Nanosheets as Conductive Platforms for FeNi-Co-Doped MnO₂ Nanocomposites: Toward High-Performance Supercapacitor Electrodes. **Solid State Sciences**, **2025**: p. 107974. (**Thomson Reuters Impact Factor: 3.40**)
 14. Milind Dharmraj Kamble, Mahesh Gaikwad, Rajendra Marathe, **Mahendra Shirsat** and Ganesh Tapadiya, Formulation Optimization and Characterization of Tizanidine Hydrochloride-loaded Gold Nanoparticles Using Quality by Design Approach, **Pharmaceutical Nanotechnology**, Volume 13, Issue 2, **2025**, 328 – 340

(DOI: 10.2174/0122117385279456240329041704) (Thomson Reuters Impact Factor: 2.09)

15. Shubham S. Patil, Aniket C. Khandare, Buddhabhushan S. Khillare, Pragati R. Kagne, Vijaykiran N. Narwade, Tibor Hianik, **Mahendra D. Shirsat**, Incorporating Ag into Nd-Succinate MOF: Tuned Electrochemical Supercapacitor Behaviour of Ag modified Nd-Succinate and Electrochemical Reaction Mechanism. **Colloids and Surfaces A: Physicochemical and Engineering Aspects**, 2024: p. 135215. (Thomson Reuters Impact Factor: 4.90)
16. Abhaysinh S. Khune, Nikesh N. Ingle, Buddhabhushan S. Khillare, Rameshwar P. Bongane, Aniket C. Khandare, Amarjeet Singh, **Mahendra D. Shirsat**, Chemiresistive NO₂ Sensor: A comparative study of rGO/MCPTTP and rGO/TPTP/MCPTTP Composite. **Sensors and Actuators A: Physical**, 2024: p. 115818. (Thomson Reuters Impact Factor: 4.10)
17. Sumita S. Gaikwad, Abhaysinh S. Khune, Nikesh N. Ingle, **Mahendra D. Shirsat**, Chemiresistive sensor based on PMMA/rGO composite for detection ammonia. **Sensors and Actuators A: Physical**, 2024. 377: p. 115665. (Thomson Reuters Impact Factor: 4.10)
18. V.A. Mane, D.V. Dake, N.D. Raskar, R.B. Sonpir, **M.D. Shirsat**, B.N. Dole, Optimization, kinetic analysis, and photocatalytic degradation of rhodamine B using manganese doped nanoscale nickel oxide nanoparticles. **Ceramics International**, Vol 50, Issue 20, 2024, pages 38871-38883. (Thomson Reuters Impact Factor: 5.10)
19. Yogita Waghmare, N. N. Ingle, V. N. Narwade, M. L Tsai, T. Hianik, **M. D. Shirsat**, Reduced graphene oxide functionalized zinc octaethyl porphyrin (rGO/Zn OEP) for selective detection of carbon monoxide in chemiresistive modality. **Journal of Materials Science: Materials in Electronics**, 2024. 35(23): p. 1-16. (Thomson Reuters Impact Factor: 2.8)
20. GA Bodkhe, S Siva, DK Gaikwad, ML Tsai, T Hianik, M Kim, **MD Shirsat**, “Ag Nanoparticles Incorporated Metal Organic Framework (Ag@ ZnBDC): Highly Sensitive and Selective detection of Hg²⁺ Ions, **Journal of Physics and Chemistry of Solids**, 2024: p. 112142. (Thomson Reuters Impact Factor: 4.30)
21. V.A. Mane, D.V. Dake, N.D. Raskar, R.B. Sonpir, K.P. Gattu, **M.D. Shirsat**, B.N. Dole, “ Harnessing the synergistic effects of graphene oxide based Sn/Fe codoped Bi₂O₃ nanocomposites for superior supercapacitor performance, **Journal of Energy Storage**, 2024. 96: p. 112636. (Thomson Reuters Impact Factor: 8.9)
22. Mayuri S. More, Gajanan A. Bodkhe, Fouran Singh, Babasaheb N. Dole, Meng-Lin Tsai, Tibor Hianik, **Mahendra D. Shirsat**, “ Hydrogen sulfide chemiresistive sensor based on swift heavy ion irradiated cerium-based metal–organic framework/graphene oxide composite”, **Synthetic Metals**, 2024. 306: p. 117622. (Thomson Reuters Impact Factor: 4.00)
23. Gajanan A. Bodkhe, Mayuri S. More, Ahmad Umar , Ahmed A. Ibrahim, Subramanian Siva, Megha A. Deshmukh, Nikesh N. Ingle, Dhammajyot K. Gaikwad , Meng-Lin Tsai, Tibor Hianik, Myunghee Kim , **Mahendra D. Shirsat**, “Enhanced detection of heavy metal ions using Ag nanoparticles and single-walled carbon nanotubes within Cu-based metal-organic frameworks”, **Journal of Environmental Chemical Engineering**, 2024. 12(3): p. 113024. (Thomson Reuters Impact Factor: 7.40)
24. Yogita A. Waghmare, Vijaykiran N. Narwade, Ahmad Umar, Ahmed A. Ibrahim, **Mahendra D. Shirsat**, Enhanced CO sensing with highly sensitive and

- selective rGO-Ru OEP chemiresistive sensor. **Chemical Physics Impact**, 2024. 8: p. 100419 (*Thomson Reuters Impact Factor: 2.20*)
25. Bodkhe, G.A., Shirsat, A., Hianik, T., Kim, M., **Shirsat, M.D.**, Highly sensitive and selective chemiresistive sensor for detection of carbon monoxide based on iron substituted octaethylporphyrin-functionalized reduced graphene oxide. **Chemical Physics**, 2024. 580: p. 112156. (*Thomson Reuters Impact Factor: 4.4*)
 26. AS Khune, RP Bongane, VN Narwade, NN Ingle, BN Dole, ML Tsai, T Hianik, **MD Shirsat**, Highly sensitive, selective, repeatable and flexible chemiresistive NO₂ sensor based on reduced graphene oxide/free based porphyrin composite. **Journal of Materials Science: Materials in Electronics**, 2024. 35(9): p. 672. (*Thomson Reuters Impact Factor: 2.80*)
 27. Mohammed, H.Y., Farea, M.A., Albuhairi, M.H., **Shirsat, M.D.**, Nanoscale engineering of polypyrrole-silver oxide composites for rapid and ultrasensitive room temperature carbon monoxide detection. **Synthetic Metals**, 2024. 302: p. 117546. (*Thomson Reuters Impact Factor: 4.40*)
 28. Jambhale, P.M., Narwade, V.N., Shariq, M., Bogle, K.A., **Shirsat, M.D.**, Waste to Wealth: Upcycling Waste Toner into Magnetic Fe₃O₄ and Conducting Polymer Hybrids for Enhanced Energy Storage Application. **Journal of Electronic Materials**, 2024: p. 1-11. (*Thomson Reuters Impact Factor: 1.93*)
 29. Patil, S.S., Narwade, V.N., Sontakke, K.S., Hianik, T., **Shirsat, M.D.**, Layer-by-Layer Immobilization of DNA Aptamers on Ag-Incorporated Co-Succinate Metal–Organic Framework for Hg (II) Detection. **Sensors**, 2024. 24(2): p. 346. (*Thomson Reuters Impact Factor: 3.90*)
 30. SS Gaikwad, MS More, AS Khune, HY Mohammed, ML Tsai, T Hianik, **MD Shirsat**, Polyvinyl chloride-reduced graphene oxide based chemiresistive sensor for sensitive detection of ammonia. **Journal of Materials Science: Materials in Electronics**, 2024. 35(3): p. 1-18. (*Thomson Reuters Impact Factor: 2.80*)
 31. Abhaysinh S. Khune, Vijaykiran N. Narwade, B. N. Dole, Nikesh N. Ingle, Meng-Lin Tsai, Tibor Hianik and **Mahendra D. Shirsat**, Reduced graphene oxide (rGO) and 5, 10, 15, 20-tetra-p-tolyl-21 H, 23 H-porphine (TPTP) composite: highly reproducible and repeatable chemiresistive SO₂ sensor. **Applied Physics A**, 2024. 130(1): p. 60. (*Thomson Reuters Impact Factor: 2.98*)
 32. Hamed Y. Mohammed, Madhuri S. Birare, Maamon A. Farea, Mohammad N. Murshed, Mohamed E. El Sayed, Ahmed Samir, B. N. Dole and **Mahendra D. Shirsat**, Accelerated kinetics for room temperature carbon monoxide sensing enabled by silver chloride-modified protonated polyaniline/graphene oxide. **Applied Physics A**, 2024. 130(1): p. 1-12 (*Thomson Reuters Impact Factor: 2.98*)
 33. VN Narwade, GK Rahane, KA Bogle, ML Tsai, SR Rondiya, **MD Shirsat**, Bifunctional Supercapacitor and Photocatalytic Properties of Cuboid Ni-TMA MOF Synthesized Using a Facile Hydrothermal Approach. **J. Electron. Mater.** 53, 16–29 (2024). <https://doi.org/10.1007/s11664-023-10766-3>. (*Thomson Reuters Impact Factor: 2.04*)
 34. Jambhale, P.M., Narwade, V.N., Shariq, M., Bogle, K.A., **Shirsat, M.D.**, "In-detailed investigation of Fe₃O₄ powder derived from waste toner material for supercapacitor electrode application" in **AIP Conference Proceedings**. 2024. AIP Publishing.
 35. Kendre, V.N., Narwade, V.N., Shariq, M., Bogle, K.A., **Shirsat, M.D.**, "Investigation of possible effects of electrolyte molarity on Ni-based MOF as an electrode material

- for highly efficient supercapacitors” in **AIP Conference Proceedings**. 2024. AIP Publishing.
36. Kasare, P.K., Narwade, V.N., Shariq, M., Bogle, K.A., **Shirsat, M.D.**, “ Development of high-performance supercapacitor using faceted ZIF-67 MOF synthesized by facile chemical route” in **AIP Conference Proceedings**. 2024. AIP Publishing.
 37. **Mahendra D. Shirsat** and Tibor Hianik, Electrochemical Detection of Heavy Metal Ions Based on Nanocomposite Materials. *J. Compos. Sci.* **2023**, 7(11), 473; <https://doi.org/10.3390/jcs7110473>. (*Thomson Reuters Impact Factor: 3.67*)
 38. MS More, GA Bodkhe, F Singh, M Kim, **MD Shirsat**, Metal–organic framework-reduced graphene oxide (Zn-BDC@rGO) composite for selective discrimination among ammonia, carbon monoxide, and sulfur dioxide. **Appl. Phys. A** 129, 828 (2023). <https://doi.org/10.1007/s00339-023-07103-0>. (*Thomson Reuters Impact Factor: 2.7*)
 39. Abhaysinh S. Khune, Vikky Padghan, Rameshwar Bongane, Vijaykiran N. Narwade, B. N. Dole, Nikesh N. Ingle, Meng-Lin Tsai, Tibor Hianik & **Mahendra D. Shirsat**, Highly Selective Chemiresistive SO₂ Sensor Based on a Reduced Graphene Oxide/Porphyrin (rGO/TAPP) Composite. **J. Electron. Mater.** 52, 8108–8123 (2023). <https://doi.org/10.1007/s11664-023-10711-4>. (*Thomson Reuters Impact Factor: 2.04*)
 40. Kamlesh B. Deore, Vijaykiran N. Narwade, Shubham S. Patil, Sachin R. Rondiya, Kashinath A. Bogle, Meng-Lin Tsai, Tibor Hianik, **Mahendra D. Shirsat**, "Fabrication of 3D bi-functional binder-free electrode by hydrothermal growth of MIL-101 (Fe) framework on nickel foam: A supersensitive electrochemical sensor and highly stable supercapacitor," **Journal of Alloys and Compounds**, vol. 958, p. 170412, 2023. (*Thomson Reuters Impact Factor: 6.3*)
 41. S. S. Patil, K. B. Deore, V. N. Narwade, W. P. Peng, T. Hianik, and **M. D. Shirsat**, "Ultrasensitive and Selective Electrochemical Sensor Based on Yttrium Benzenetricarboxylate Porous Coordination Polymer (Y-BTC) for Detection of Pb²⁺ from Bio-Analytes," **ECS Journal of Solid State Science and Technology**, vol. 12, no. 5, p. 057002, 2023. (*Thomson Reuters Impact Factor: 2.48*)
 42. Kamlesh B. Deore, Shubham S. Patil, Vijaykiran N. Narwade, Mahesh A. Takte, Abhaysinh S. Khune, Hamed Y. Mohammed, Maamon A. Farea, Pasha W. Sayyad, Meng-Lin Tsai and **Mahendra D. Shirsat**, "Chromium-benzenedicarboxylates metal organic framework for supersensitive and selective electrochemical sensor of toxic Cd²⁺, Pb²⁺, and Hg²⁺ metal ions: study of their interactive mechanism," **Journal of The Electrochemical Society**, vol. 170, no. 4, p. 046505, 2023. (*Thomson Reuters Impact Factor: 4.3*)
 43. More, Mayuri S ; Bodkhe, Gajanan A.; Singh, Fouran ; Dole, Babasaheb.N.; Tsai, Meng-Lin ; Hianik, Tibor ; **Shirsat, Mahendra** , "Chemiresistive and chem-FET Sensor: π -d conjugated metal-organic framework for ultra-sensitive and selective carbon monoxide detection," **Synthetic Metals**, Article vol. 296, 2023, Art no. 117357, doi: 10.1016/j.synthmet.2023.117357. (*Thomson Reuters Impact Factor: 4.0*)
 44. Takte, M.A.; Ingle, N.N.; Dole, B.N.; Tsai, M.-L.; Hianik, T.; **Shirsat, M.D.** A stable and highly-sensitive flexible gas sensor based on Ceria (CeO₂) nano-cube decorated rGO nanosheets for selective detection of NO₂ at room temperature. **Synthetic Metals** 2023, 297, 117411. (*Thomson Reuters Impact Factor: 4.0*)
 45. Deshmukh, Megha A. ; Park, Sang-Joon; Thorat, Hanuman N.; Bodkhe, Gajanan A. ; Ramanavicius, Arunas; Ramanavicius, Simonas; **Shirsat, Mahendra D.** ; Ha, Tae-Jun, "Advanced energy materials: Current trends and challenges in electro- and photo-

- catalysts for H₂O splitting," **Journal of Industrial and Engineering Chemistry, Review** vol. 119, pp. 90-111, **2023**, doi: 10.1016/j.jiec.2022.11.054. (*Thomson Reuters Impact Factor: 6.76*)
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