



DR. IDA TIWARI

PROFESSOR

**Centre of Advanced Study in Chemistry, Department of Chemistry,
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https://www.researchgate.net/profile/Ida_Tiwari2,
<https://scholar.google.co.in/citations?user=s7SoimoAAAAJ&hl=en>

Professional objective:

A challenging position with a reputed and progressive organization that will effectively utilize acquired expertise and experience.

Personality:

Strong communication, interpersonal, teaching, and leadership skills. Adaptable and efficient in work situations with responsibilities. Energetic, quick learner with ability to rapidly assimilate job requirements and show great results.

Career summary:

- **2017-present** **Professor**, Centre of Advanced Study in Chemistry, Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi, India
- **2019-present** **Coordinator**, Centre of Forensic Science, Institute of Science, Banaras Hindu University, Varanasi, India.
- **2016-2017** Associate Professor, Centre of Advanced Study in Chemistry, Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi, India.
- **2004-2016** Assistant Professor, Centre of Advanced Study in Chemistry, Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi, India.
- **2003-2004** Research Associate, CSIR (Direct), New Delhi, India.
- **2000-2003** Senior Research Fellow, CSIR (Direct), New Delhi, India.
- **1999-2000** BHU Fellow, Banaras Hindu University, Varanasi, India.

PROFESSIONAL EXPERIENCE

DEPARTMENT OF CHEMISTRY, INSTITUTE OF SCIENCE, BHU, VARANASI 2004- present

I was appointed as **Assistant Professor** on 15th May'2004(a.n.) and got promoted to **Associate Professor** on 16th May' 2016 under CAS. I joined as **Professor** (Open post) on 27th Sep 2017. I am enthusiastic, responsible, able to work independently with initiative and as a part of team with initiative. Proficient in teaching with innovative ideas and emphasis on problem solving skills. My research areas include Sensors, Biosensors, Composites, Nanocomposites, Sol-Gel Glass, Electrochemical sensors, Screen Printed Electrode based sensors, Sensor Arrays.

Selected Achievements for period 2004-present

- **Awarded Commonwealth Fellowship' 2015** to visit University of Surrey, U.K.

- Got **Young Scientist Award' 2013** from **Chemical Research Society, India** for contributions in Chemistry on 2nd Feb'2013.
- Awarded **12 major project grants** from various funding agencies.
- One patent granted Patent No. 340406.
- Six students awarded PhD. degree under my supervision, 1 post doc and 7 PhD students currently working. 35 M.Sc. final dissertations done under my supervision.
- Authored 85 papers in international peer reviewed journals ;(9 chapters in international peer reviewed books; 5 papers in conference proceedings). >50 presentations (invited, oral, poster) in international and national conferences.

DEPARTMENT OF CHEMISTRY, INSTITUTE OF SCIENCE, BHU, VARANASI 2003- 2004

Research Associate, Council of Scientific and Industrial Research, New Delhi

I was appointed to my first independent research position as a Research Associate, CSIR on 19th June 2003, after an open national competition. During this tenure of 11 months, I have worked on Sol-Gel material for the sensor development.

Selected Achievements

- Presented 1 paper in conference

DEPARTMENT OF CHEMISTRY, INSTITUTE OF SCIENCE, BHU, VARANASI 2000- 2003

Senior Research Fellow, Council of Scientific and Industrial Research, New Delhi

I was awarded senior research fellowship from CSIR, New Delhi on 18th June, 2003. During this tenure of 2 years, 7 and half months; worked with Prof. P.C. Pandey at Department of Chemistry, Banaras Hindu University Varanasi, India. During this period, I have worked on Electrochemical biosensors mainly mediated and non-mediated biosensors based on graphite paste electrode and Photo electrochemical biosensor based on ATO Electrode.

Selected Achievements

- Presented 1paper in conference
- 8 Co-authored papers in international peer reviewed journals.

TEACHING AND MANAGEMENT EXPERIENCE

Courses taught at graduate, post graduate and research level

- Sensors at research level.
- Automation, Chemometrics, Separation methods, X-ray techniques, Polarography, microanalytical techniques, environmental chemistry at post graduate level.
- Analytical chemistry, Environmental Chemistry at undergraduate level.
- Taking practical classes both at Undergraduate and Postgraduate levels.
- 35 M.Sc. final students completed dissertation project.
- Involved in paper setting and evaluation at Post graduate level for M.Sc. Ist Semester, IInd, IIIrd Semester and IVth Semester of M.Sc. Chemistry & M.Sc. Forensic Science, Banaras Hindu University, Varanasi, India. Also conducting practical exams and viva-voce at Undergraduate and Postgraduate levels of Banaras Hindu University, Varanasi, India.
- Involved in teaching and practicals for M.Sc. Forensic Science.

Administrative Responsibilities

- Co-ordinator, Centre of Forensic Science, Institute of Science, BHU from 7.8.2019 till date.
- Incharge Analytical Chemistry Division, Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi from 1.08.2019 till date.
- Nodal person, Institute of Science for International BHU Alumni Meet, 2020 from Institute of Science, Banaras Hindu University, Varanasi.
- Secretary, Teachers Council for Department of Chemistry, Institute of Science, Banaras Hindu University, Varanasi from Academic Session 2019-2022.

- Member of Policy Planning Committee, Institute of Science, BHU from 6.8.2019 till date.
 - Member of Steering Committee, Special Courses of Study, Institute of Science from 6.08.2019 till date.
 - Signed MOU between University of Surrey, UK and Institute of Science under my leadership.
 - Signing MOU between Truth Labs, Hyderabad and National Forensic Science University, Gandhinagar under my Co-ordinatorship., for Centre of Forensic Science, Institute of Science, BHU.
 - Member of Proctorial Board, Banaras Hindu University, Varanasi, India.
 - Member of Child Care Leave Committee, Institute of Science, Banaras Hindu University, Varanasi, India.
 - Member of Academic Board for Examinations for M.Sc. Forensic Science, Institute of Science, Banaras Hindu University, Varanasi, India for 2018.
 - Member of FAC, DRC, Project screening Committee in Department of Chemistry, Banaras Hindu University, Varanasi, India.
 - Member of Convocation Committee of Institute Of Science, Banaras Hindu University, Varanasi, India.
 - Member of Admission Committee (Under graduate, Post Graduate) of Institute Of Science, Banaras Hindu University, Varanasi, India.
 - Additional Superintendent of Exams for B.Sc. (Hons.), Institute Of Science, Banaras Hindu University, Varanasi, India in session 2011-2012.
 - Acted as University Observer for University entrance examinations (UET, PET) in 2017, 2018.
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PRIZES AND AWARDS

- Awarded Commonwealth Fellowship' 2015 to visit University of Surrey, U.K.
- Got Young Scientist Award' 2013 from Chemical Research Society, India for contributions in Chemistry on 2nd Feb'2013.
- IInd in Merit in M.Sc. Chemistry (1997), Banaras Hindu University, Varanasi, India.
- Ist in Merit in M.Sc in Analytical Chemistry in 1997, Banaras Hindu University, Varanasi, India.
- My research student, Ms. Manorama Singh awarded Senior Research Fellowship, CSIR, New Delhi.
- First prize to my research student, Ms. Manorama Singh for paper presented in National Seminar on Recent advances in analytical Sciences- Indian Perspective (RAASI) held in January 20-21, 2011 organized by Indian Society of Analytical Chemists, Hyderabad Chapter and Indian Institute of Chemical Technology, Hyderabad, India.
- My research student Ms. Manorama Singh appointed as Assistant Professor, Department of Applied Chemistry in Guru Ghasidas University, Bilaspur, India.
- Third prize for oral presentation to my research student, Ms. Mandakini Gupta for paper presented in National Symposium on Electrochemical Science and Technology held from August 19-20, 2011 organized by The Electrochemical Society of India, Indian Institute of Science Campus, Bengaluru, India.
- My research student Mr. Chandra Mouli Pandey awarded Senior Research Fellowship, CSIR, New Delhi.
- Best poster award for the paper entitled *Hierarchical Organic Structures for High-Performance Electrochemical Immunosensor* by Chandra Mouli Pandey, Gajjala Sumana, Ida Tiwari in International Conference on Recent Advances in Analytical Science (RAAS-2014) held from 27-29 March 2014 (Organized by : Department of Chemistry, IIT-BHU & Indian Society of Analytical Scientists (ISAS) Varanasi Chapter).
- My research student Mr. Chandra Mouli Pandey has been selected for reputed UGC-Dr. D.S. Kothari Post Doctoral Fellowship, 2015.
- My research student Mr. Chandra Mouli Pandey awarded reputed Inspire Fellowship under Inspire Faculty Scheme, 2015.
- My research student Ms. Nandita Jaiswal awarded Senior Research Fellowship, CSIR, New Delhi, 2018.
- Ms. Shruti Mishra awarded reputed UGC-Dr. D.S. Kothari Post Doctoral Fellowship, 2018 under my mentorship.

- Mr. Ravindra Kumar Gautam awarded reputed UGC-Dr. D.S. Kothari Post Doctoral Fellowship, 2018 under my mentorship and joined on 15th Oct, 2018.
- Ms. Darshana Chatterjee awarded DST-Inspire Fellowship 2022 under my guidance
- Ms. Darshana Chatterjee awarded Commonwealth Split Doctoral Fellowship for 1 year from Jan 2022 under my guidance to visit University of Surrey, UK.

FUNDINGS

- Council of Scientific and Industrial Research (CSIR), New Delhi; 15th Feb.' 2006 to 14th Feb.' 2009 (3 years), Rs.10,00,000; An electrocatalytic hydrogen peroxide sensor based on Horseradish peroxidase immobilized in ormosil and on gold nanoparticles, Principal Investigator.
 - BRNS, Department Of Atomic Energy, India; 7th March' 2010 till 6th March' 2013 (3 years) Rs. 19,41,400; A novel electrochemical organically modified sol-gel glass/ gold nanoparticles based biosensor for the detection of organophosphate /carbamate insecticides, Principal Investigator.
 - DRDO, Directorate of Extramural Research and intellectual property Rights, New Delhi; (3 years) Rs. 37,95,000; Design, Synthesis, Characterization of Metallo Receptors for the Recognition of Anions of Environmental and Biological relevance Co-PI with Prof. L. Mishra, Dept. Of Chem., Faculty of Science, B.H.U. as P.I.
 - Department of Biotechnology, New Delhi 28th May' 2012 to 27th Aug' 2015 (3 years, 3 months)Rs. 35,56,000; A Strategic Approach to Develop "Ideal" O₂ Sensor Platforms Based on Doped Ormosils, Principal Investigator.
 - UGC-UKIERI scheme (UK-INDIA Education and Research Initiative); 18th April' 2013 to 17th April '2015 (2 years) £34168; New Developments in Screen Printed Sensors: from the laboratory to the field; India Lead Partner - Dr. Ida Tiwari, UK Lead Partner-Prof. C.E. Banks.
 - Royal Society International Exchange Grants, UK 31st March 2017 to 30th June 2019 £11200; Carbon nanomaterial enhanced miniaturized hybrid electrochemical biosensors; India Lead Partner - Dr. Ida Tiwari, UK Lead Partner- Professor S. Ravi Silva, University of Surrey, UK.
 - Scheme for Promotion of Academic and Research Collaboration, MHRD 15th March 2019 to 31st March 2022, Rs. 47,53,775; Designing of integrated sensor arrays for multianalyte detection for higher quality of life OR for better human health monitoring; India Lead Partner - Prof. Ida Tiwari, UK Lead Partner- Professor S. Ravi Silva, University of Surrey, UK.
 - UKIERI SPARC Support Programme for SPARC Project; UKIERI, Rs 12,00,000 from 1 July 2019; Designing of integrated sensor arrays for multianalyte detection for higher quality of life OR for better human health monitoring; India Lead Partner - Prof. Ida Tiwari, UK Lead Partner- Professor S. Ravi Silva, University of Surrey, UK.
 - CRS (AICTE) Teqip 2019; Rs 12,00,000, Design and Development of miniaturized low cost sensor device for metal ions; Prof. Ida Tiwari, B.H.U. (co-PI) and Dr. Shailendra Pandey, HBTI
 - LSRB, DRDO, 2020; Rs. 40,68,328; Development of silver and gold nanoprobe for optical and electrochemical monitoring of H₂S, cysteine, glutathione in human blood; BHU& DIPAS, DRDO, Prof. Ida Tiwari, B.H.U. (co-PI).
 - Awarded IOE grant by BHU from 2021 to June 2024.
 - Awarded project from CSIR in 2022.
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POSITIONS OF RESPONSIBILITY/ INTERNATIONAL VISITS

- Chaired a session in National Symposium on Chemistry and Environment held in Department of Chemistry, Faculty of Science, B.H.U. from March 15-16, 2013.
- Member of Organising Committee: Overlooking registration for conferences held at the Department Of Chemistry, Banaras Hindu University, Varanasi from March, 2005 till date.
- Reviewer for journals/papers in conference: Analytical Letters, Sensor Letters, Sensors and Actuators, Ionics, Material Science and Engg. C, Material Research Bulletin, Biosensors and Bioelectronics, Analyst, Electrochimica Acta, International journal of Environmental Analytical chemistry, Conference papers of ISEAC, DST projects etc.
- Visited ATI, University of Surrey from 31st April 2019 to 15th June, 2019 under Royal Society of Chemistry International Grants.

- Visited ATI, University of Surrey from 23rd October 2017 to 22nd Nov, 2017 under Royal Society of Chemistry International Grants.
- Visited ATI, University of Surrey from 1st September 2015 to 30th Nov, 2015 under Commonwealth Professional Fellowship, 2015.
- Visited Prof. C.E. Banks in Manchester Metropolitan University, UK in April' 2015 under UGC-UKIERI Thematic Partnerships to participate in scientific activities as part of our British Council grant.
- Visited Prof. C.E. Banks in Manchester Metropolitan University, UK in Oct' 2013 under UGC-UKIERI Thematic Partnerships to learn advancements in screen printed sensors.
- Visited Rajamangala University of Technology Thanyaburi, Thailand from 9 - 13, Dec 2012 to attend the 15th International Conference of International Academy Physical Sciences: Focal Theme Recent Advances in Physical Sciences and Technology.
- Visited University of Mauritius, Mauritius during 2^{6th} to 3^{0th} July, 2010 to attend conference and interacted with various faculty members.

TRAININGS/WORKSHOPS

- Undergone training in photolithography at University of Surrey, UK from 1st Nov to 21th November 2015.
- Learned skills in the management of collaborative projects through examination of the "best practices" being utilised at the Advanced Technology Institute, UK and within the wider University of Surrey from 1st Sep 2015 to 30th Nov 2015.
- Undergone training in MMU, UK on screen printed electrodes from 30th Mar to 5th Apr 2015.
- Attended Refresher Course in Women Studies from 6th Aug to 26th Aug, 2014 organized by UGC Academic Staff College, BHU.
- Undergone training in MMU, UK on screen printed electrodes from 18th Oct to 24rd Oct 2013.
- Attended 4th Refresher course from 1st Oct to 21st Oct, 2011 in Environmental Sciences organized by UGC Academic Staff College, BHU.
- Participated in Faculty Improvement Programme organized by UGC Academic Staff College, BHU in collaboration with SMST, IT, BHU, Varanasi from 14th to 15th Feb, 2011.
- Attended 45th orientation course organized by UGC Academic Staff College, BHU from Feb.9th to March 8th, 2007.
- Undergone training in ICI Katalco, Kanpur on analytical instruments for 1 month in Oct'1996

PROFESSIONAL AFFILIATIONS

- Life time member of Indian Society for Electroanalytical Chemistry (Membership no.125) from 6-12- 2011.
- Life time member of Indian Chemical Society (Membership no. F/ 7255 (LM)) from 27-10-2010.
- Life time member of Chemical Research Society of India (Membership no. LM 863) from 01- 09-2007.
- Life time member of International Academy of Physical Sciences (Membership no. N 11156) from 1-08-2011.
- Life time member of Indian Science Congress (Membership no. L16627) from 27-10-2010.
- Life time member of the Indian Society of Analytical Chemists (Membership no. L 16033) from 01.02.2016
- Having International collaboration with Prof. C.E. Banks, Manchester Metropolitan University, Manchester, U.K.; Prof. R. Silva, Advanced Technology Institute, University of Surrey, U.K.
- Having national collaboration with Prof. S.K. Aggarwal, ex-Head, FCD Division, BARC, Mumbai; Prof. Rajiv Prakash, ex Co-ordinator, SMST, IIT(BHU), Varansi; Prof. P.C. Pandey, Ex-Head, Department of Applied Chemistry, IIT(BHU), Varansi; Prof. L. Mishra, Department of Chemistry, B.H.U. and Prof. Avinash Pandey, Director, IUAC, New Delhi; Dr. G. Sumana, Principal Scientist, NPL, New Delhi and Prof. B.D. Malhotra, DTU, New Delhi.

EDUCATION

- 1999-2001 **Department of Chemistry, Faculty of Science, BHU, Varanasi.**
 PhD in Chemistry; Thesis title: Studies on some electroanalytical sensors
 Supervisor: Prof. P.C. Pandey: presently in IIT, BHU, Varanasi

- 1995-1997 **Department of Chemistry, Faculty of Science, BHU, Varanasi.**
Masters in Chemistry [First class, merit holder]
- 1992-1995 **Women's College, BHU, Varanasi**
Bachelor of Science (Hons.), Chemistry (Hons.) [First class]
- 1990-1992 **St. John's School, D.L.W., Varanasi.**
ISC Exam [First class]
- 1988-1990 **St. John's School, Marhau, Varanasi.**
ICSE Exam [First class]

REFEREES

Prof. R.P. Silva, Director, Advanced Technology Institute, University of Surrey, Guildford, U.K.
 Prof. C.E. Banks, Dean of Research, Manchester Metropolitan University, Manchester, U.K.
 Prof. S. K. Aggarwal, ex-Head, FCD, BARC, Mumbai, INDIA
 Prof. P. C. Pandey, ex-Head, Department of Chemistry, IIT (B.H.U.), Varanasi, INDIA.
 Prof. V.B. Singh, ex-Head, Department of Chemistry, Institute of Science, B.H.U., Varanasi, INDIA.

APPENDIX A- PUBLICATIONS APPENDIX B – PRESENTATIONS APPENDIX C-RESEARCH OVERVIEW

APPENDIX A- SELECTED PUBLICATIONS

1. Graphene oxide supported Fe₃O₄-MnO₂ nanocomposites for adsorption and photocatalytic degradation of dye stuffs: ultrasound effect, surfactants role, and real sample analysis. Ankit Kumar Singh, Ravindra Kumar Gautam, Shreanshi Agrahari, Jyoti Prajapati and Ida Tiwari. International Journal of Environmental Analytical Chemistry (2022). <https://doi.org/10.1080/03067319.2022.2091930>
2. Fabrication of an innovative electrochemical sensor based on graphene coated silver nanoparticles decorated over graphitic carbon nitride for efficient determination of estradiol. Ankit Kumar Singh, Shreanshi Agrahari, Ravindra Kumar Gautam and Ida Tiwari. Environmental Science and Pollution Research (2022). <https://doi.org/10.1007/s11356-022-23410-0>
3. Fabrication of Gadolinium Decorated Spherical Zinc Oxide Attached on Carbon Nanotubes (Gd@ZnO-MWCNTs) for Electrochemical Detection of a Bisphenol Derivative BPSIP in Real Sample Matrices. Shreanshi Agrahari, Ankit Kumar Singh, Ravindra Kumar Gautam and Ida Tiwari. Journal of Applied Electrochemistry (2022). <https://doi.org/10.1007/s10800-022-01768-w>
4. Voltammetric analysis of epinephrine using glassy carbon electrode modified with nanocomposite prepared from Co-Nd bimetallic nanoparticles, alumina nanoparticles and functionalized multiwalled carbon nanotubes. Shreanshi Agrahari, Ankit Kumar Singh, Ravindra Kumar Gautam and Ida Tiwari. Environmental Science and Pollution Research (2022). <https://doi.org/10.1007/s11356-022-23660-y>
5. Oxidized g-C₃N₄ decorated with Cu-Al layered double hydroxide as a sustainable electrochemical sensing material for quantification of diclofenac. Ankit Kumar Singh, Ravindra Kumar Gautam, Shreanshi Agrahari and Ida Tiwari. Materials Chemistry and Physics, 294 (2023)127002. <https://doi.org/10.1016/j.matchemphys.2022.127002>
6. Electrochemical Biosensors based on Carbon Nanotube Microelectrodes on photolithographically patterned glass Substrate for Glucose Detection. Ankit Kumar Singh, Nandita Jaiswal, Ida Tiwari, Muhammad Ahmad and S. Ravi P. Silva. Microchimica Acta (2022) Accepted
7. RK Gautam, AK Singh, I Tiwari, Nanoscale layered double hydroxide modified hybrid nanomaterials for wastewater treatment: A review. *Journal of Molecular Liquids* 350, 118505, 2022.
8. Nanoscale materials-based hybrid frameworks modified electrochemical biosensors for early cancer diagnostics: An overview of current trends and challenges. **Shreanshi Agrahari, Ravindra Kumar Gautam, Ankit Kumar Singh, Ida Tiwari***, Microchemical Journal (Elsevier) 172 (2022) 106980. <https://doi.org/10.1016/j.microc.2021.106980>
9. Development of copper coordinated dithiooxamide metal organic framework functionalized graphitic carbon nitride (g-C₃N₄/Cu-DTO MOF) nanocomposite based electrochemical sensor towards sensitive determination of an endocrine disruptor BPSIP Ankit kumar Singh, Nandita Jaiswal, Ravindra Kumar Gautam, Ida Tiwari*, 2021, Journal of Electroanalytical Chemistry, JELECHEM-D-20-02267

10. Self-assembled Benzoic acid functionalized graphene oxide sheets with Zinc (II) ions: novel material for environmental sensing application, Nandita Jaiswal and Ida Tiwari, Synthetic Metals, 2021. SYNMET-D-20-00206
11. Sulphur nanodots decorated graphene oxide nanocomposite for electrochemical determination of norepinephrine in presence and absence of 4-aminophenol, acetaminophen and tryptophan, Nandita Jaiswal and Ida Tiwari *, Journal of Electroanalytical Chemistry, 2021. JEAC_JELECHEMA-D-20-01909
12. Functionalized magnetic nanomaterials for production of clean dye water under ultrasonication: Application in real water samples, recycling and reuse of nanosorbent Ravindra Kumar Gautam, Ida Tiwari*, Chemoshere, 245(2020)125553.
13. An impedimetric biosensor based on electrophoretically assembled ZnO nanorods and carboxylated graphene nanoflakes on indium tin oxide electrode for detection of DNA of *Escherichia coli* O157: H7, Nandita, C.M.D. Pandey, B.D. Malhotra, Shipra Sloanki, Ida Tiwari*, Microchimica Acta, 2020, 187:1
14. A selective hydrolytic and restructuring approach through a schiff base designed over coumarin platform for “turn-on” fluorogenic sensing of Zn^{2+} , Abha Pandey, Sharad Kumar Asthana, Anand Prakash, Jagat Kumar Roy, Ida Tiwari and K. K. Upadhyay, Dalton Transactions, DOI: 10.1039/C8DT03211D, 2019, **48**, 2068-2076.
15. Electrochemical genosensor based on carboxylated graphene for detection of water borne pathogen, Nandita Jaiswal, Chandra Mouli Pandey, Amrita Soni, Ida Tiwari, Martin Rosillo-Lopez, Christoph G. Salzmann, Bansi Dhar Malhotra, Gajjala Sumana, Sensors and Actuators, 275(2018)312-321.
16. Electrochemical Sensing of Hydrogen Peroxide Using Brominated Graphene as Mimetic Catalase; accepted Electrochimica Acta 227 (2017) 255–266, Shikha Singh, Monali Singh, Kheyanath Mitra, Rajshree Singh, S. K. Sen Gupta, Ida Tiwari, Biswajit Ray.
17. β -cyclodextrin functionalized graphene oxide decorated with cobalt oxide nanoparticles as new reliable sensing platform for herbicide bentazone; Ida Tiwari, Monali Singh, in revision, 2019.
18. Sensitive determination of cysteine on screen printed electrodes modified with functionalized graphene. **Ida Tiwari**, Monali Singh, Nandita Jaiswal, C.W. Foster and Craig E. Banks, J. Electroanalytical Chemistry, 829 (2018)230-240.
19. Highly sensitive and selective determination of dopamine using a screen printed electrode of -N'-phenyl-p-phenylenediamine/multiwalled carbon nanotubes; **Ida Tiwari**, Monali Singh, C.W. Foster and Craig E. Banks, Materials Research Bulletin 101 (2018) 253–263.
20. Highly sensitive electrochemical immunosensor based on graphene-wrapped copper oxide-cysteine hierarchical structure for detection of pathogenic bacteria Chandra Mouli Pandey, Ida Tiwari, Vidya Nand Singh, K.N. Sood, Gajjala Sumana, Bansi Dhar Malhotra, Sensors & Actuators: B. Chemical 238 (2017), 1060-1069
21. Recent build outs in electroanalytical biosensors based on carbon-nanomaterial modified screen-printed electrode platforms, Ida Tiwari, Nandita Jaiswal, Anal. Methods, 9(2017)3895 – 3907.
22. Highly sensitive amperometric sensing of nitrite utilizing bulk-modified MnO_2 decorated Graphene oxide nanocomposite screen-printed electrodes, Ida Tiwari, Nandita Jaiswal, Christopher Foster, Craig E. Banks, Electrochimica Acta, 227(2017)255-266
23. A naphthoxazole based highly sensitive cell permeable ratiometric chemodosimeter for hydrazine, K.K. Upadhyay, Ida Tiwari, Shweta, Ajit, Sharad, Neeraj, RSC Advances, 6(2016)94959-94966.
24. Decoration of GO with Fe spinel-Naf/DMAP: an electrochemical probe for sensing H_2O_2 reduction; Manorama Singh, Smita R. Bhardiya and I. Tiwari RSC Advances, 6(2016)104868-104874.
25. Graphene: A Unique constructional material for electroanalytical applications; **Ida Tiwari**, Manorama Singh; Book chapter in Advances in Sensors' Book Series, Vol.3 ,IFSA Publishing, S.L Passeo Lormont, 13, 4-408860 Castelldefels, Barcelona, Spain, chapter 6,135-146,2016; ISBN: 978-84-608-7705-9
26. Electrochemical detection of pathogenic *Escherichia coli* specific DNA sequence based on graphene oxide- chitosan composite decorated with nickel ferrite nanoparticles; **Ida Tiwari**, Monali Singh, Chandra Mouli Pandey, Gajjala Sumana, RSC Advances DOI: 10.1039/C5RA07298K, 5(2015)67115-67124.
27. Graphene sheets decorated gold nanoparticles-polypyrrole based nanocomposite: Synthesis, characterization and genosensing application; **Ida Tiwari**, Mandakini Gupta, Chandra Mouli Pandey, Dalton Transaction, 44(35),(2015)15557-15566; DOI: 10.1039/c5dt01193

28. Nanocomposite of ferrocenoyl glutaric acid hydrazone and multiwalled carbon nanotubes as a sensor of azide ion; **Ida Tiwari**, Mandakini Gupta, Abhishek Rai, Lallan Mishra, *Analytical Methods*, 2016, DOI: 10.1039/c6ay01282e. 8(2016) 7124-7134.
29. Design of screen-printed bulk modified electrodes using anthraquinone–cysteamine functionalized gold nanoparticles and their application to the detection of dissolved oxygen; **Ida Tiwari**, Monali Singh, Mandakini Gupta, Jonathan P. Metters and Craig E. Banks, *Analytical Methods*, DOI: 10.1039/c4ay02271h, 7(2015)2020-2027.
30. Copper Oxide Assisted Cysteine Hierarchical Structures for Immunosensor Application; Chandra Mouli Pandey, Gajjala Sumana, **Ida Tiwari**, *Applied Physics Letters* **105** (2014)103706; DOI: 10.1063/1.4895579.
31. Electrochemical genosensor based on graphene oxide modified iron oxide-chitosan hybrid nanocomposite for pathogen detection; **Ida Tiwari**, Monali Singh, Chandra Mouli Pandey, Gajjala Sumana, *Sensor and Actuators B*, 206(2015) 276-283.
32. Application of Cationic poly(lactic-co-glycolic acid) iron oxide/chitosan based nanocomposite for determination of paraoxon; **Ida Tiwari**, Mandakini Gupta, Chandra Mouli Pandey, *Chem Electrochem*, 2(2015)280–287, DOI: 10.1002/celc.201402255.
33. Anthraquinone moiety/cysteamine functionalized-gold nanoparticle/ Chitosan based nanostructured composite for the electroanalytical detection of dissolved oxygen within aqueous media; **Ida Tiwari**, Mandakini Gupta, R. Prakash, C.E. Banks, *Analytical Methods*, 6(2014) 8793-8801, DOI: 10.1039/c4ay01207k.
34. Hierarchical Cystine Flower Based Electrochemical Genosensor for Detection of Escherichia coli O157:H7; Chandra Mouli Pandey, Gajjala Sumana, **Ida Tiwari**, *RSC Advances*, DOI: 10.1039/c4ra04511d, 4(2014)31047–31055.
35. Nanostructuring of Hierarchical 3D Cystine Flowers for High-Performance Electrochemical Immunosensor; Chandra Mouli Pandey, Gajjala Sumana, **Ida Tiwari**, *Biosensors and Bioelectronics* 61 (2014) 328–335, DOI: <http://dx.doi.org/10.1016/j.bios.2014.05.015>
36. Fabrication characterization and application of carbon ceramic nanocomposite prepared by using multiwalled carbon nanotubes and organically modified sol-gel glasses, **Ida Tiwari**, Manorama Singh, K.P. Singh; *Journal of the Indian Chemical Society*, Oct 91(2014)1793-1798.
37. Simultaneous determination of hydrazine and phenyl hydrazine using 4'-(4-carboxyphenyl)-2,2':6',2''terpyridine diacetonitrile triphenylphosphine ruthenium(II) tetrafluoroborate complex / multiwalled carbon nanotubes nanocomposite modified electrode. **Ida Tiwari**, Mandakini Gupta, Priti. Sinha, *Material Research Bulletin* 60 (2014) 166–173.
38. Neutral red interlinked gold nanoparticle/multiwalled carbon nanotubes hybrid nanomaterial and its application in the detection of NADH; **Ida Tiwari**, Mandakini Gupta, *Material Research Bulletin* 49 (2014) 94–101.
39. Cationic Poly(lactic-co-glycolic acid) Iron Oxide Microspheres for Nucleic Acid Detection; Chandra Mouli Pandey, Aditya Sharma, Gajjala Sumana, Ida Tiwari, Bansi Dhar Malhotra, *Nanoscale*, DOI:10.1039/C3NR34355C, 5(2013) 3800-3807
40. Electro-oxidation of dopamine at N-(1, 3-dimethylbutyl) -N'-phenyl-p-phenylenediamine/multiwalled carbon nanotubes nanocomposite modified electrode; **Ida Tiwari**, Mandakini Gupta and Monali Singh, *J. Material Research* 28(2013)1777-1784.
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APPENDIX B: SELECTED PRESENTATIONS

Invited

- Invited talk “**Designing of nanomaterials for sensing applications**” in IIT (BHU), Varanasi, and Society for Interdisciplinary Research in Materials and Biology ([SIRMB](#)) organized international conference (virtual mode) on **Advanced Materials for Better Tomorrow: Impacting Energy, Health, and Environment** from **13th - 17th July 2021**.
 - Invited talk “Smart sensors based on nanomaterials for the detection of environmental pollutants of relevance” in International Symposium on Environmental, Educational and Biological Research for Human Welfare (EEBRHW-2018) organized by Society for Educational Development and Environmental Research, Varanasi held during 25-26 March, 2018.
 - Invited talk on “Functionalized carbon materials and their potential as electrochemical sensing devices” in 49th Annual convention of Chemists organized by Indian Chemical Society from Dec 12-15, 2012 at National Institute of Teacher’s Training and Research, Bhopal.
 - Invited talk in “Workshop on Electroactive Materials” held in School of Material Science and Technology, Institute of Technology, B.H.U. on 22nd and 23rd April, 2012.
 - Invited talk in International Conference “4th ISEAC International Discussion meet on electrochemistry and its applications” held in Hotel Mascot, Thiruvananthapuram Kerala, India from 6th to 10th Feb., 2011.
 - Invited talk in ISEAC International Symposium cum Workshop on Electrochemistry (ISEAC-WS-2011), held in India during December 7-10, 2011 at Hotel Cidade de Goa, Goa, India.
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APPENDIX C – RESEARCH OVERVIEW

We have focused on design, development and implementation of electrodes based on nanomaterials. In this direction, our group members have crossed the boundaries and have successfully developed different materials as ormosils, composites, nanocomposites using various precursors such as silanes, redox mediators, carbon nanotubes, nanoparticles, polymers etc. These materials have been employed in the fabrication of modified electrodes with innovative designs, which impart improvements in their electroanalytical performance and can form the basis of a plethora of biosensors/sensors technology. To extend our work further, it is being aimed by our research group to develop new generation photonics and electrochemical based chemical sensors and sensing technology by exploiting the benefits from sol-gel processing technology, nanotechnology and low-power detection schemes. Moreover, to generate new sensor array devices using photolithography that provides a diverse and selective sensor response for the target analytes. In particular, effort is being made to improve single and multianalyte sensing capabilities through advances in materials and array manipulation for detecting chemical and biological species of relevance. Finally, the effort is on to advance further screen printed sensors, designing and fabricating new and novel configurations, giving rise to improvements in their performance and test them in-the-field and benchmark against existing analytical protocols.