



Miranda House

UNIVERSITY OF DELHI

Name: Dr. Malti Sharma

Department: Chemistry

Current Designation: Associate Professor

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Academic Qualifications: M. Sc.

Research Degree(s): Ph.D.

Researchgate: <https://www.researchgate.net/profile/Malti-Sharma-2>

Google scholar: https://scholar.google.com/citations?view_op=list_works&hl=en&user=8BHAswIAAAAJ

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Field of Specialization under the Subject/Discipline:

- Synthetic Inorganic and metallo-organic chemistry with more emphasis and synthesis of novel heterobi-, tri-, tetra-metallic alkoxide, -glycolate, -diethanolamine and -triethanolamine precursors for advanced ceramic materials and their characterization [by elemental analyses, molecular weight measurement and spectral (IR, NMR (^1H , ^{13}C , ^{27}Al and ^{117}Sn) studies)].
- Metal/metal oxide nanoparticles and its applications

Total Teaching Experience: 17 Years

Teaching at Miranda House since: July 2009

List of Publications:

- Sharma, R. K., **Sharma, M.** Singh, Y. (2021). Monoorganosilicon(IV) Complexes of 2-Aminocyclopentene-1-carbodithioic Acid and its N-/S-Alkyl Derivatives: Synthesis and Characterization. *Asian J. Chem.* 33 (12): 3134-3138.
- Chemistry (Volume VI) for B. Sc.(Prog.) students. Ratnani, S., Malik, S., Mandal, K. and **Sharma, M.** (2019). Manakin Press (New Delhi)-2019 (ISSN No. 78- 93- 88342- 18-6).
- Pathak, M., Sharma, D., Sharma, N. and **Sharma, M.** (2018). Spectroscopic and thermodynamic studies of the binding mechanism of metformin to pepsin. *J. Mol. Str.* 1166: 183-189.



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- **Sharma, M.**, Pathak, M. and Kapoor, P.N. (2018). The Sol-Gel Method: Pathway to ultrapure and homogeneous Mixed Metal Oxide Nanoparticles: A Review. *Asian J. Chem.* 30(7):1405-1412.
- **Sharma, M.**, Pathak, M., Ojha, H., Roy, B. (2017). Green synthesis of gold nanoparticles using Cinnamomum verum, Syzygium aromaticum and Piper nigrum extract. *Asian J. Chem.* 29(8):1693-1696.
- Pathak, M., **Sharma, M.**, Ojha, H., Kumari, R., Sharma, N., Roy, B. & Jain, G. (2016). Green synthesis, characterization and antibacterial activity of silver nanoparticles. *Green Chem. & Tech. Lett.* 2(2):103-109.
- **Sharma, M.**, Pathak, M., Roy, B., Chand, A., Dhanda, G., Abbasi, N. & Panchal, G. (2016). Green synthesis of Gold Nanoparticles and their characterization. *J. Mat. Nanosci.* 3(1): 8-10.
- Pathak, M., **Sharma, M.**, Roy, B., Verma, A., Kumar, C., Shah, M., Garg, P., Yadav, P. (2016). Estimation of Caffeine in different brands of soft drinks by UV-Vis spectroscopy. Proceedings of National conference in Chemistry "Environment & Harmonious Development (NCC-2016). April 7-8, Organised by Department of Chemistry, Shyam Lal College.
- **Sharma, M.**, Pathak, M., Roy, B., Jain, L., Yadav, N., Sarkar, B., Kaur, M. & Sharma, M. (2015). Quantitative estimation of aspirin in various drugs: UV-Vis absorption spectroscopy and colorimetric studies. *Journal of Undergraduate Research and Innovation.* 1(1):157-162.
- Pathak, M., **Sharma, M.**, Roy, B., Rajput, M., Singh, R., Mittal, Y., Gandhi, E., Kashyap, N., Sweetey. (2015). Comparative Evaluation of Plant based Natural pH Indicators. Proceedings of the India International Science Festival-Young Scientists' Meet. Department of Science and Technology, Government of India – Dec 4-8, IIT, Delhi. Paper Code: Ind Science 119:1-7.
- **Sharma, M.**, Bhagi, A. K., Sharma, H. K., Kansal, R., Kumar, R., Kapoor, P. N. (2005). Precursors for mixed metal oxide nanoparticles: Synthesis and characterization of oxoalkoxides of some bivalent metals and their β -diketonates. *Indian J. Chem.* 44A: 256-260.
- Ghadwal, R.S., **Sharma, M.**, Singh, A., Mehrotra, R.C. (2004). Synthesis and Characterization of six-coordinated complexes of oxovanadium (V). *Trans. Met. Chem.* 29: 419-424.
- Kapoor, P.N., Sharma, H.K., Bhagi, A.K., **Sharma, M.** (2004). Heterobimetallic mixed metal oxides (HMMO) nanoparticles and their applications. *J. Indian Chem. Soc.*, 81: 273-281.
- Sharma, K., **Sharma, M.**, Singh, A., Mehrotra, R.C. (2003). Synthesis, Characterization and Spectroscopic properties of Heterobimetallic Isopropoxides of Co, Ni and Cu containing diethanolamine moiety. *Indian J. Chem.* 42A: 493-498.
- Sharma, M. K., **Sharma, M.**, Singh, A., Mehrotra, R.C. (2003). Synthesis and Characterization of some Heterobimetallic Triethanolamine Derivatives of Alkaline Earth Metals with Niobium and Tantalum. *Indian J. Chem.* 42A: 1057-1060.
- **Sharma, M.**, Singh, A., Mehrotra, R.C. (2003). Synthesis and Spectroscopic Characterization of a new type of heterotrimetallic alkoxides of some bivalent metals. *J. Chem. Res.* 191-194.



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- Sharma, K., **Sharma, M.**, Singh, A., Mehrotra, R.C. (2003). Synthesis and Characterization of Homo-and Heterobi-metallic tri-and di-ethanolamine Derivatives containing Dibutyltin (IV) moiety. *Main Group Met. Chem.* 26:131-139.
- Mehrotra, R.C., Singh, A., **Sharma, M.** (2003). Golden Jubilee of the saga of Aluminium Isopropoxide. *J. Indian. Chem. Soc.* (Prof R.P. Rastogi Commemorative issue). 80:499-503.
- Sharma, K., **Sharma, M.**, Singh, A., Mehrotra, R.C. (2002). Synthesis and Characterization of some Diethanolamine complexes of Titanium and Zirconium with Alkaline Earth Metals. *Trans. Met. Chem.* 27: 326-328.
- **Sharma, M.**, Singh, A., Mehrotra, R.C. (2002). Synthesis, Characterization and Spectroscopic Studies of Homo- and Heterobi-metallic Pinacolate derivatives of Alkaline Earth Metals. *Synth. React. Org. Met. –Org. Chem.* 32(7): 1223-1233.
- Sharma, M.K., **Sharma, M.**, Singh, A., Mehrotra, R.C. (2001). Synthesis and Characterization of heterobimetallic Isopropoxides of Bismuth (III). *Indian. J. Chem.* 40A: 1226-1228.
- **Sharma, M.**, Singh, A., Mehrotra, R.C. (2000). Synthesis and Spectroscopic Properties of Homo- and Heterobi-metallic Diethanolamines of Alkaline Earth Metals. *Polyhedron.* 19: 77-83.
- **Sharma, M.**, Singh, A., Mehrotra, R.C. (2000). Synthesis and Spectroscopic properties of Homo- and Heterobi-metallic Triethanolamines of Ca, Sr and Ba. *Main Group Met. Chem.* 23(5): 285-289.
- **Sharma, M.**, Singh, A., Mehrotra, R.C. (2000). Synthesis and Characterization of a New Class of Heterotrimetallic Isopropoxides of Strontium and Barium. *Synth. React. Org. Met – Org. Chem.* 30(7): 1331-1345.
- Mehrotra, R.C., Singh, A., **Sharma, M.**, Godhwani, J. (1999). Heterometallic Alkoxides as Novel Coordination Systems. in *Advances in Metallorganic chemistry (An International Symposium March 16-18, 1998)*, RBSA Publisher, Jaipur (India). 238-252.
- **Sharma, M.**, Singh, A., Mehrotra, R.C. (1999). Synthesis, Characterization of Homo- and Heteroleptic Glycolates of Alkaline Earth Metals and Tin(II) with Aluminium. *Indian J. Chem.* 38A, 1209-1218.
- **Bhagat, M.**, Singh, A., Mehrotra, R.C. (1998). Synthesis and Characterization of Heterozirconium Chloride Alkoxides containing Bivalent Main group Metals. *Synth. React. Org. Met- Org. Chem.* 28(6): 997-1011.
- **Bhagat, M.**, Singh, A., Mehrotra, R.C. (1998). Preparation and Characterization of a Novel Class of Chloride Alkoxides of Beryllium(II), Magnesium(II), Zinc(II) and Tin(II) with Niobium(V). *Indian J. Chem.* 37A: 820-825.
- Mehrotra, R. C., Singh, A., **Bhagat, M.**, Godhwani, J. (1998). Molecular Design of Novel Heterometallic Alkoxide as Precursors. *J. Sol Gel Sc. & Tech.* 13, 45-49.
- **Bhagat, M.**, Singh, A., Mehrotra, R.C. (1997). Heterometallic Alkoxides of Alkaline Earth Metals: Synthesis, Spectroscopic and Chemical Properties of New Classes of Tetra- and Penta-nuclear heterometallic Alkoxides of Barium and Aluminium. *Main group Met. Chem.* 20(2): 89-96.



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Educational Resource Material Developed:

- Teacher's e-Kit (e-content in Four Quadrants Format) prepared in Chemistry at GAD-TLC of MHRD under the PMMMNMTT scheme on Covalent Bonding: Valence Bond Approach in 2020.

Research:

- Guide undergraduate students as Facilitator and Mentor at the summer experimental workshop (~2 months) "Flavor of Research" in multidisciplinary contexts organised by DS Kothari Centre for Research and Innovation in Science Education, Miranda House-May-July 2010, May-July 2012, June-July 2013, June-July 2014, June-July 2015, June-July 2016, June- July 2018, June-July 2019, June -July 2020, June-July 2021.

Research Projects:

- Innovation Project-Design of Affordable Water Purification devices using Green and ecofriendly Silver nanoparticles (MH-306) sponsored by University of Delhi, (6,00,000/-).2015-16.

Membership of Professional Bodies:

- Organisation for Women in Science for the Developing World (OWSD)
- International Association of Advanced Material (IAAM)
- Indian Science Congress Association
- Green Chemistry Network Centre (GCNC)
- Indian Biophysical Society
- Vijnana Bharti
- Society of Analytical Chemist

Invited talks/Session chair/Resource person:

- Conducted Hands on workshop sessions of Chemistry Experiments in G D Goenka Public School, East Delhi on 5 August 2019 and School of Excellence, Khichripur, Delhi on 14 January 2020.
- Conducted Practical session on Colours of Chemistry on 16 January 2019 in 5 days Science Camp in HI-Tech Institute, Ghaziabad.
- Resource person for the Bridge Course on Laboratory Safety and Handling of Equipment conducted by the department of Chemistry, Miranda House 2015-18, 2020 and 2021.
- Resource person for the workshop Green Chemistry and Environment organised by department of Chemistry, Miranda House on 6-7 February 2017.
- Resource person for the workshop "Nanoparticles: Effects on Seedling Biology" held on May 19, 2014 at Miranda House.

Conferences Organized:



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- International webinar on Empowering Diversity in Science organised by department of Chemistry, Miranda House, University of Delhi on 12 February 2021.
- College Coordinator of ACT-CONTECH 2018-19, 2019-20.
- Two days National Webinar on Learnings from the Corona Pandemic held at Miranda House, University of Delhi on 24-25 September 2020.
- National workshop Nano Road Show-2020 held on 01 February 2020 at Miranda House, University of Delhi.
- Resource Person for the Bridge Course on Laboratory Safety and Handling of equipment held on 2 and 3 August 2018 organised by Department of Chemistry, Miranda House, University of Delhi.
- Teacher Mentor in the INSPIRE (Innovation in Science Pursuit for Inspired Research) Internship Programme held at Miranda House 2010, 2012, 2013, 2015, 2017.
- Indo-Hungarian Symposium on Recent Advances in Chemistry and Biology in the department of Chemistry at Miranda House on 11 December 2017
- Indian Science & Engineering Fair (INSEF) Regional Fair held on 13 October, 2017 at Miranda House.
- Coordinator for the workshop Material Chemistry workshop for Beginners held at Miranda House on 27 July, 2016.
- Computational Chemistry and Bioinformatics organised by department of Chemistry, Miranda House on 26-28 August, 2015.
- Computational Methods in Drug discovery organized by department of Chemistry, Miranda House on 16-17 April, 2015.
- Nature at work: Studying biomolecules organised by department of Chemistry, Miranda House on 25 September, 2013
- Mimicking Nature: Using Plant and animal extracts for chemical reaction held on 5 March, 2013.
- International Symposium on Green Chemistry and Sustainable Development held at Miranda house on 30-31 March, 2012
- Quest 2011-12 organised by Centre for Science Education and Communication (CSEC).
- Computational Chemistry for Chemistry Educators held at Miranda House on 23-24 November, 2011.

Seminars/Workshops/Conferences/FDPs/Courses attended:

- Webinar on Green Approach to Chemistry Experiments” organized by Department of Chemistry, Guru Nanak College of Arts, Science & Commerce G.T.B Nagar, Sion, Mumbai on 18 December 2021.
- Webinar on Power your research with Scopus conducted by Delhi University Library, University of Delhi on 23 November 2021.
- RSC-IIT Desktop Seminar with Journal of Materials Chemistry A conducted by RSC Publishing Webinars (Royal Society of Chemistry) on 27-28 October 2021.
- Workshop on How to catch Fake/cloned/Predatory Journals in Academics conducted by



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PMMMNTT Centre, Mahatma Hansraj Faculty Development Centre Hansraj College, University of Delhi on 16 October 2021.

- FDP on Materials Characterization: Experimental and Theoretical Aspects conducted by PMMMNTT Centre, Mahatma Hansraj Faculty Development Centre Hansraj College, University of Delhi from 20-24 September 2021.
- Two days online workshop on Tools for Exploring Chemistry conducted by Rajdhani College, University of Delhi on 12-13 July 2021.
- Three days workshop on Designing and Development of e-Resources for Teaching and Learning conducted by Rajdhani College, university of Delhi from 22-24 June 2021.
- Two weeks online Faculty Development Programme on “Managing Online Classes & Co- Creating MOOCS (Level 2)” conducted by PMMMNMTT Teaching Learning Centre, Ramanujan College, University of Delhi from 02 - 16 June, 2021.
- Online National Workshop on Laboratory Safety Measures and Chemical Waste Management for Ecological and Environmental Shield conducted by Rajdhani College, University of Delhi on 16 April 2021.
- NIUS teacher workshop titled Designing meaningful problems for assessment in Chemistry conducted by Homi Bhabha Centre for Science Education (HBCSE, TIFR) from January 1-7, 2021.
- National workshop on “ICT Tools for online learning” from April 20-28, 2020 conducted by PMMMNMTT Teaching Learning centre, SNDT Women’s University, Mumbai.
- Two days International webinar on “Emerging Trends in Chemistry Education and Research (ETCER)” Organized by Wilson College in association with University of Mumbai and Association of Chemistry Teachers 25 & 26 June 2020.
- Webinar on “Moodle - Open Source Learning Platform” organized by Vignan Pharmacy College, Vadlamudi, Guntur (Dt) in collaboration with Indian Pharmaceutical Association on 02 June 2020.
- Three Days Webinar “Covid 19 : Challenges and Road Ahead” (7th – 9th May, 2020) organised by PMMMNMTT, Mahatma Hansraj Faculty Development Centre, Hansraj College, University of Delhi.
- Two weeks online Faculty Developing Programme (FDP) on “Managing online classes and co creating MOOCs (Level 1)” conducted by PMMMNMTT Teaching Learning Centre, Ramanujan College, University of Delhi from 20 April- 06 May, 2020.
- Webinar entitled “Molecular Visualisation Series I” on Learning Chemistry through ODYSSEY Software organized by the Department of Chemistry, Hindu College in collaboration with Wave function Inc., USA and Neotel System and Services on 6th April 2020.
- National conference on Relationship between chemical sciences and society (RCSS-2020) Organised by Shivaji College, University of Delhi on 16-17 January 2020.
- 1st International conference on Integrative Chemistry, Biology and Transitional Medicine held on 25-26 February 2019 organised by Centre for Global Health, Hansraj College & Loyola University Chicago.



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- One day workshop on Academic writing and Anti plagiarism held on 15 March 2019 organised by MHRD at Department of Education, University of Delhi.
- Online Refresher Course in Chemistry for Higher Education Faculty conducted by SWAYAM from 01 November 2018 to 28 February 2019 (exam conducted on 30.03.2019).
- One week Faculty development Programme on e-learning, MOOCs and ICT Tools for Blended Learning held at Guru Angad Dev Teaching Learning Centre of MHRD at SGTB Khalsa College, University of Delhi held from 02 July to 07 July 2018
- One day Faculty Empowerment workshop entitled “National Workshop on stress management and emotional intelligence in Teaching-Learning Environment” held at Guru Angad Dev Teaching Learning Centre of MHRD at SGTB Khalsa College, University of Delhi on 10 February, 2018.
- Two days Faculty Empowerment workshop entitled “National workshop on Application of Voice culture and Modulation” held at Guru Angad Dev Teaching Learning Centre of MHRD at SGTB Khalsa College, University of Delhi on 13-14 February, 2018
- Science Conclave: Research on the Frontiers organized under the aegis of the D S Kothari Centre for Research and Innovation in Science Education during 10 - 12 January, 2018 in Miranda House.
- Two weeks Faculty Development Programme on ‘Bhasha, Sahitya, Media and Paryavaran’ organized by Mahatma Hansraj Faculty Development Centre, Hansraj College and Faculty of Arts, University of Delhi from 10 December 2018 to 23 December 2018.
- Blended Learning through Learning Management Systems held at Guru Angad Dev Teaching Learning Centre of MHRD at SGTB Khalsa College, University of Delhi on 14 November, 2017
- BIRAC workshop on catalysing a cultural shift in Youth Entrepreneurship organised by Ds Kothari Centre for Science and Innovation in Science Education, Miranda House, University of Delhi on 9 November, 2017
- National Seminar on New Role of Teachers in technology-driven Higher Education held at Guru Angad Dev Teaching Learning Centre of MHRD at SGTB Khalsa College, University of Delhi on March 1, 2017.
- Massive open online course (4 weeks) course on Introduction to Scientific Writing offered by the American English Institute, University of Oregon from 27 February to 27 March, 2017.
- Massive open online course from on Introduction to Technology-Enabled Learning offered jointly by the Commonwealth of Learning and Athabasca University, Canada from 09 January to 10 February 2017 through the mooKIT Platform at <http://telmooc.org>.
- STEM Teachers Training Workshop on Research Based Pedagogical Tools held during 23-25 January, 2017 held at IISER Mohali.
- Faculty empowerment workshop WGB2: National workshop on subject specific ICT skills for Chemistry Educators held at Guru Angad Dev Teaching Learning Centre of MHRD at SGTB Khalsa College, University of Delhi on 19 January, 2017.
- International conference on Green Chemistry in Environment Sustainability & Chemical Education (ICGC-2016) on 17-18 November, 2016 at Daulat Ram College, University of Delhi.



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- Faculty empowerment workshop WGB1: Workshop on Basic ICT Skills for Educators (e-content Development and Assessment Tools) held at Guru Angad Dev Teaching Learning Centre of MHRD at SGTB Khalsa College, University of Delhi on 17 and 19 September, 2016
- Faculty Development Program in Research Project Management on Proposal to publication and beyond on 19 July, 2016 organised by CIC-Centre for Science Education and Communication, University of Delhi
- Refresher course on Folklore, Tradition and Culture in the Centre for Professional Development in Higher Education, University of Delhi from 18 February 2016 to 09 March 2016.
- UGC-HRDC sponsored workshop on ICT Usages in Teaching at CPDHE, University of Delhi from 01-08 September 2015.
- UGC-sponsored workshop on Disaster management conducted by CPDHE, University of Delhi from 20-22 December 2012.
- Training Workshop attended on Green Chemistry: Chemistry for Tomorrow's World organised by Green Chemistry Network Centre, Department of Chemistry, University of Delhi on 26 December 2011.
- Refresher course in Chemistry in the Centre for Professional Development in Higher Education(CPDHE), University of Delhi from 1-22 December 2011.
- Orientation Programme(OR-66) in the Centre for Professional Development in Higher Education, University of Delhi from from 3-30 March 2011.
- National Workshop on Renewable Energy and Environment held at Conference Centre, University of Delhi on 28-29 January 2011.
- 4th Indo-Italian Seminar on "Green Chemistry and Natural Products" at department of Chemistry, University of Delhi on 17 November 2010.
- ICT workshop (ILLL Workshop, Tier II) for Capacity Building of Delhi University Faculty from 5-10 April 2010 at Miranda House.
- UGC sponsored second International symposium on Green/Sustainable Chemistry held at Department of Chemistry, University of Delhi from 10-13 January 2006.
- IUPAC International Conference on Biodiversity and Natural Products: Chemistry and Medical Applications organised by the department of Chemistry, University of Delhi from 26-31 January 2004.