KIRORI MAL COLLEGE, UNIVERSITY OF DELHI

Title	Dr.	First Name	Vinod	Last Name	Kumar	Photograph
Designation		Assistant Professor				
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Web-Page						

Educational Qualifications

Degree	Institution	Year
Ph.D.	University of Delhi	2014
M. Sc. Chemistry	Kirori Mal College, University of Delhi	2008
B. Sc. (H) Chemistry	Kirori Mal College, University of Delhi	2006

Career Profile

Teaching and Research in Kirori Mal College as Assistant Professor (Permanent), Delhi from July 2013 till date
Worked as Quality Assurance Officer in Asian Paints Lmt. Kasna, Greater Noida, UP July 2008 to January 2009

Administrative Assignments

- **Convener Adventure Society, Kirori Mal College (May 2019 – Dec 2019)**
- **Convener Purchase Committee, Department of Chemistry Kirori Mal College (May 2017 – April 2019)**
- **Convener Seminar Committee, Department of Chemistry Kirori Mal College (May 2015 – April 2017)**
- **Member Standing Committee, Kirori Mal College (2014-2016)**
- **Public Information Officer, Kirori Mal College (July 2014-July 2015)**
- **Member Equal Opportunity Cell, Kirori Mal College (2016 – 2017)**
- **Convener Equal Opportunity Cell, Kirori Mal College (May 2017 –April 2019)**

Areas of Interest / Specialization

Inorganic Chemistry, Nano Sciences, water splitting, optical properties, degradation of toxic organic pollutants, electrode materials of Li-ion batteries, SAW based sensors, water purification etc. Computation and molecular dynamics study of biomolecules and drug interactions.

Subjects Taught

Nanomaterials, Atomic Structure, Chemical Bonding, Organometallic Compounds, Bioinorganic Chemistry, Novel Inorganic Solids, Analytical Chemistry, Analytical Instruments, Environmental Chemistry, Qualitative and Quantitative Analysis

Research Guidance

Ms. Babita Kushwaha, JRF SERB Funded Project 2016
Ms. Bhawna, Ph.D. Scholar, 2018
Mr. Sanjeev Kumar, Ph.D. Scholar, 2018

Publications Profile

a. Research Paper

1. "Photocatalytic-Sorption Processes for the Removal of Pollutants from Wastewater using Polymer Metal Oxide Nanocomposites and Associated Environmental Risks" B. Pandey, P. Singh, Vinod Kumar, Environmental Nanotechnology, Monitoring and Management, 2021, Under Review.
2. "Layered Double Hydroxide Nanomaterials: Biomedical Applications, Current Status and Challenges" R.Sharma, Bhawna, S. Kumar, P. Singh, A. Gupta, Vinod Kumar Nano LIFE. 2021 Sep 18;11(03):2130008.
3. "Promising iron(II) complexes of curcumins: designing, density functional theory, and molecular docking" A. Kumar, Vinod Kumar, K. Kumari, P. ,N. K. Kaushik, P. Singh, Journal of Organic Physical Chemistry, 2021 https://doi.org/10.1002/poc.4196
4. "Synthesis, Antimicrobial Activity and Photocatalytic Performance of Ce doped SnO_2 Nanoparticles" Bhawna, A. K. Choudhary, A. Gupta, S. Kumar, P. Kumar, R. P. Singh, P. Singh, Vinod Kumar Frontiers in Nanotechnology 2020, 2, Article 595352 https://doi.org/10.3389/fnano.2020.595352
5. "COVID-19: Emergence of Infectious Diseases, Nanotechnology Aspects, Challenges and Future Perspectives" A. Gupta, S. Kumar, R. Kumar, A. K. Choudhary, K. Kumari, P. Singh, Vinod Kumar, ChemistrySelect, 2020, 5, 1–14 DOI:10.1002/slct.202001709.
6. "Xanthene based hybrid analogues to inhibit protease of novel corona Virus: Molecular docking and ADMET studie", V.K. Vishvakarma, B. Nand, Vinod Kumar, K. Kumari, I Bahadur, P Singh, Computational Toxicology, 2020, 16, 100140. doi: 10.1016/j.comtox.2020.100140.
7. "GC-SAW and GC-FID performance comparison for fast analysis of volatile organic compounds" J Kumar, Vinod Kumar, VK Singh, U Mittal, BDS Fahim, Indian Journal of Science and Technology, 2020, 13, 4672-4678.
8. "Novel Synthesis of N doped SnO_2 nanoparticles: A promising cocatalyst free photocatalyst for hydrogen generation" Bhawna, A. Gupta, P. Kumar, A. Tyagi, R. Kumar, A. Kumar, P. Singh, R.P. Singh, Vinod Kumar, ChemistrySelect, 2020, DOI:10.1002/slct.202001301.
9. "Understanding the binding affinity of noscapines with protease of COVID-19 using MD simulation at different temperature" D. Kumar, K. Kumari, A. Jayaraj, Vinod Kumar, R. V. Kumar, S. K. Dass, R. Chandra, P. Singh, Journal of Biomolecular Structure and Dynamics, 2020, https://doi.org/10.1080/07391102.2020.1752310.
10. "Promising inhibitors of main protease of novel corona virus to prevent the spread of COVID-19 using docking and molecular dynamics simulation" D. Kumar, K. Kumari, V. Kumar, Vishvakarma, A. Jayaraj, D. Kumar, V. K. Ramappa, Rajan Patel, Vinod Kumar, S. K. Dass, R. Chandra, Prashant Singh, 2020, Journal of Biomolecular Structure and Dynamics https://doi.org/10.1080/07391102.2020.1779131
11. "Nano-structured Dilute Magnetic Semiconductors for efficient spintronics at room temperature" A. Gupta, R. Zhang, P. Kumar, Vinod Kumar, Anup Kumar, Magnetochemistry 6(1), 15, 2020. https://doi.org/10.3390/magnetochemistry6010015.
12. "Nanotechnology: Nanomedicine, Nanotoxicity and Future Challenges" Vinod Kumar, A. K. Chaudhary, P. Kumar, S. Sharma, Nanoscience and Nanotechnology-Asia, 2019, 26, 1-15.
13. "Facile synthesis of Ce doped SnO_2 nanoparticles: A promising photocatalyst for hydrogen evolution and dyes degradation" Vinod Kumar, Bhawna, S. K. Yadav, A. Gupta, B. Dwivedi, A. Kumar, P. Singh and K. Deori, ChemistrySelect, 2019, 4, 3722 –3729.
14. " A Theoretical Model to Study the Interaction of Erythro-Noscapines with Chikungunya Virus" D. Kumar, P. Singh, A. Jayaraj, Vinod Kumar, K. Kumari, R. Patel, ChemistrySelect, 2019, 4, 4892 –4900.
15. " Pyrrolothiazolones as Potential Inhibitors for the nsP2B-nsP3 Protease of Dengue Virus and Their Mechanism of Synthesis" V.K. Vishvakarma, P. Singh, Vinod Kumar, K. Kumari, R. Patel, R. Chandra, ChemistrySelect, 2019, 4, 9410-9419.
16. "Interesting cationic ($Li^+/Fe^{3+}/Te^{6+}$) variations in new rocksalt ordered structures" A. Gupta, Vinod Kumar, S. Uma, J. Chem. Sci. 2015, 127, 225–233.

17. "Optical and magnetic properties of (Er, F) co-doped SnO_2 nanocrystals" Vinod Kumar, S. Uma, R. Nagarajan, Turk. J. Phys. 2014, 38, 450-462.
18. "Formation of honeycomb ordered monoclinic $Li_2M_2TeO_6$ (M=Cu, Ni) and disordered orthorhombic Li2Ni2TeO6 oxides" Vinod Kumar, A. Gupta, S. Uma, Dalton Trans 2013, 42, 14992–14998.
19. "Anion doped binary oxides, SnO_2, TiO_2 and ZnO: Fabrication procedures, fascinating properties and future prospects" R Nagarajan, Vinod Kumar, Shahzad Ahmad, Indian J. Chem. Sec. A 2012, 51A, 145-154.
20. "Novel Lithium-Containing Honeycomb Structures" Vinod Kumar, Neha Bhardwaj, Nobel Tomar, Vaishali Thakral, and S. Uma, Inorg. Chem. 2012, 51, 10471−10473.
21. "Thermoluminescence in heavily F - doped of SnO_2 nanocrystals" Vinod Kumar, R. Nagarajan, Chem. Phys. Lett. 2012, 530, 98–101.
22. "Investigation of cation (Sn^{2+}) and anion (N^{3-}) substitution in favor of visible light photocatalytic activity in the layered perovskite $K_2La_2Ti_3O_{10}$" Vinod Kumar, Govind, S. Uma, J. Hazard. Mater. 2011, 511, 502-508.
23. "Optical and Photo catalytic properties of heavily F^- -doped SnO_2 nanoparticles by a novel single source precursor approach" Vinod Kumar, Govind and R. Nagarajan, Inorg. Chem. 2011, 50, 5637–5645.

b. Books

c. Chapter in books

- A. Gupta, S. Kumar, S. Ahmed, S. Gautam, Vinod Kumar*, Impact of Nanotechnology in the Development of Smart Cities. In: Ahmed S., Abbas S., Zia H. (eds) Smart Cities—Opportunities and Challenges. Lecture Notes in Civil Engineering, Springer Nature Singapore Pte Ltd., DOI , 10.1007/978-981-15-2545-2, 2020, pp 845-857.
- "Challenges for assessing toxicity of nanomaterials" Book: Biochemical Toxicology - Heavy Metals and Nanomaterials. A. Gupta, S. Kumar, Vinod Kumar, Intechopen Science, 2019.

d. Articles/Research Paper in Books

e. Conference Proceedings

- *Sensitivity enhancement of SAW based chemical Sensor using Thermo Electric Cooler*" *Jitender Kumar, **Vinod Kumar**, V. K. Singh, U. Mittal, Fahim, A. T. Nimal, Pallav Kumar Tripathi, M. U. Sharma*, IEEE Conference Proceedings, International Conference on Electrical, Electronics, Computers, Communication, Mechanical and Computing-2018.

Conference / Workshops/Training Organized

1. Webinar organized On 9th and 10th June, 2020, organized two-day Webinar as a Convener on Nanoscience and Nanotechnology in the Present Scenario jointly organized by SPS and SCNS, JNU.
2. On 27th and 28th July, 2020, organized two-day Webinar as a Member on Recent Advances in Nanoscience and Its Applications organized by SCNS, JNU.
3. Organized two-day Webinar as a Member on Recent Advances in Nanoscience and It's Applications jointly organized by SCNS, JNU, on 27th and 28th July, 2020.
4. Organized two-day Webinar as a Convener on Nanoscience and Nanotechnology in the Present Scenario jointly organized by SPS and SCNS, JNU, on 9th and 10th June, 2020.
5. Organized two day Annual Chemistry Fest Khrusos-2017 on 8th-9th March, 2017
6. Organized a lecture on Invention reactions: Role of Transition Metal Catalysis on 13th January 2017
7. Organized a lecture on Influence of reactive oxygen and nitrogen species on water purification and cancer treatment on 10th January 2017
8. Organized a lecture on Green Methods in Chemistry on 09th August 2016
9. Organized a one day Seminar on Career Perspective on Recent Trends on 16th March 2016
10. Organized a two day National Conference on Emerging Trends and Future Challenges in Chemical Sciences (ETFC-2016) to be held on 3rd & 4th February 2016
11. A talk on Nanotechnology was organized on 23rd January 2016
12. A one day seminar on Career Perspective in Recent Trends was organized on 29th September 2015
13. A one day seminar on Cancer Awareness Program was organized on 27th October 2015

14. Conducted National level Concept Test in Chemistry (CONTECH-15)
15. An educational Science lecture series were organized on August 12 and 13, 2015
16. A talk on Ayurveda was organized on February 12, 2015

Creation of ICT Mediated Teaching Learning Pedagogy and Content

- Lesson Plan: The Water Cycle in a Sustainable World (https://tropicsu.org/lesson-plan-water-cycle/) Climate Change Education Across the Curricula, Across the Globe.

Conference/Workshops/Training attended as Faculty Member

1. Coronavirus Outbreaks: Nanomedicine and Future Perspectives, 17th September 2020, 6th Vancouver Nanomedicine Day 2020, University of British Colombia, Vancouver, BC, Canada.
2. "Band gap engineering of anion doped and anion-anion codoped SnO_2 nanoparticles for hydrogen generation" in 107th Indian Science Congress (Science & Technology: Rural Development), University of Agricultural Sciences, Bangalore, 07-12 January **2020**.
3. "Impact of Nanotechnology in the development of Smart Cities"

Vinod Kumar*, A. Gupta, S. Ahmad, International Conference, Smart Cities, March 14-16, 2019 at Jamia Millia Islamia, New Delhi.

4. "Photocatalytic H_2 generation using Ce doped SnO_2 nanoparticles"

Vinod Kumar*, Bhawna, S.K. Yadav, A. Gupta, B. Dwivedi, K. Deori, DAE-BRNS 7th Interdisciplinary Symposium on Materials Chemistry, December 04-08, 2018 at BARC Mumbai

5. "Exploration of V doped SnO_2 nanocrystals for thermochemical H_2 generation"

Vinod Kumar*, D. Gupta, S. K. Sharma, Oral presentation at International conference MRS Fall Meeting & Exhibit 2018, Boston, Massachusetts, USA, November 25-30, 2018.

6. "Photocatalytic activity of Ce doped SnO_2 nanoparticles for the degradation of organic toxic pollutants"

A. Gupta, S. K. Yadav, P. Saini, A. Seth, **Vinod Kumar***, International conference MRS Fall Meeting & Exhibit 2018, Boston, Massachusetts, USA, November 25-30, 2018.

7. "Investigation of doped SnO_2 nanocrystals for thermochemical H_2 generation"

Vinod Kumar,* Bhawna, D. Gupta, A. Gupta, International Conference on Advances in Analytical Sciences (ICAAS) from 15-17 March 2018 at CSIR-IIP, Dehradun.

8. "Exploration of doped SnO_2 nanocrystals for H_2 generation"

Vinod Kumar,* Adish Tyagi, M. R. Pai, Prashant Kumar, Babita Kushwaha, Advances in Catalysis for Energy and Environment (CACEE-2018) from 10-12 January, **2018** at TIFR, Mumbai.

9. "Exploration of SnO_2 nanocrystals for contaminated water treatment"

Vinod Kumar*, Manoj, Young Investigator talk in National Seminar on Biophysics (BIOPHYSIKA -2017) on March 16, **2017** at Jamia Millia Islamia, Delhi

10. "Nanomedicine, Nanotoxicity and Future Prospects"

Vinod Kumar*, A. K. Choudhary, Prashant Kumar, 2 day National seminar entitled "Recent Innovations in Chemical Science and Environment Technology" on March 3-4, **2017** at Sri Aurobindo College, University of Delhi

11. "Heavily F doped SnO_2 nanocrystals: A potential heavy toxic metal removal"

Vinod Kumar*, B. Kushwaha, 5th International Conference on Nano and Materials Science (ICNMS 2017) was successfully held in San Diego, USA during January 19-21, **2017**.

12. "SnO_2 Nanocrystals: A Potential Toxic Metal Cr, Co Removal"

Vinod Kumar*, B. Kushwaha, National Seminar on " Emerging Issues of Climate Change: Sustainability and Economic Implications" March 22nd-23rd, **2016** at Sri Aurobindo College.

13. "Nano Materials in Water Splitting"

Vinod Kumar*, B. Kushwaha, National Seminar on "Emerging Economics and Challenges to Sustainability towards Developing Nations" March 29th-30th, **2016** at Sri Aurobindo College.

14. "Multifunctional properties of (Er, F) codoped SnO_2 nanocrystals obtained by one pot synthesis" **Vinod Kumar**, S. Uma, R. Nagarajan* Interdisciplinary Symposium of Materials Chemistry (ISMC-2012) held at Bhabha Atomic Research Center (BARC), Mumbai, December **2014**.
15. FDP cum Workshop on "Climate Across The Curriculum: Resources For Integrating Climate Topics In

Discipline-Specific Teaching" Sri Venkateswara College, New Delhi from 13-14 October 2018.

16. Regional workshop on Research-Based Pedagogical Tools held at Kumaun University, Nainital from 31st July - 2ndAugust, 2018
17. DAE-BRNS 4th National Workshop on Materials Chemistry (Energy and Bio Materials) NWMC-2017 from 15-16 December, 2017
18. Two Days Seminar on "Recent Trends in Technical Terminology in Science" held from 16-17 Feb. 2016 at Sri Aurobindo College, University of Delhi, Delhi
19. Oral Talk in National Symposium on Recent Advances in Analytical Sciences and Applications Held from February 9-10, 2015 at Jamia Hamdard, New Delhi.
20. Advance Workshop on Broad Band Dielectric Spectroscopy Held From 17th – 18th January 2014 at USIC, University of Delhi, Delhi.
21. One Day Workshop on "Surface Analytical Techniques" Held On 24th August 2013 at Hotel Comfort Inn, Faridabad.

Invited Lectures/Resource Persons

1. 20 September – 04 October 2021, Resource Person for Two-week online Interdisciplinary Refresher Course on "Natural Sciences" organized by Rajdhani College, University of Delhi in collaboration with Teaching Learning Center (TLC), Ramanujan College, University of Delhi under the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) scheme of Ministry of Education (erstwhile, Ministry of Human Resource Development), Government of India.
2. On 11th Oct, 2020, delivered an invited lecture on Sustainable landfill in the future framework of waste management: local-level challenges and solutions held in Ram Lal Anand College University of Delhi, Delhi.
3. On 18th-19th June 2020, Resource Person in Virtual Workshop on Collating, Chemistry Resources for Teachers in Higher Education, organized by National Institute of Educational Planning and Administration (NIEPA), one of the main components of the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT), Delhi.
4. On February 04, 2020; delivered an invited lecture on "A Big World of Smaller Things" held in Department of Chemistry, SRM Institute of Management and Technology, Modi Nagar, UP.
5. On 21th November, 2020, delivered an invited lecture on Municipl Solid Waste Management Practices, Potential Solutions, Challenges and Opportunities held in Kirori Mal College University of Delhi, Delhi.
6. On March 04, 2020; delivered an invited lecture on "Nanotechnology: Big Things of Tiny World" held in Department of Chemistry, Gargi College, University of Delhi.
7. On 28th May 2020, Resource Person for one week FDP on Spectroscopic and Analytical Techniques: Applications, organized by Dev Teaching Learning Centre SGTB Khalsa College under Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNTT) and J.C. Bose University of Science and Technology YMCA, Faridabad.
8. Rare Earth doped Tin Dioxide: A potential photocatalyst for water splitting and degradation of toxic organic pollutants, Vinod Kumar, Bhawna, S. K. Sharma, National Seminar on Biophysics (Biophysika -2019) on 04 October, 2019 at CIRBS Jamia Millia Islamia, Delhi.
9. Resource Person at DST Inspire Science Camp-2019 sponsored by Ministry of Science & Technology, Department of Science & Technology on 24 July 2019 at HI-TECH Institute of Engineering & Technology, Delhi-Meerut Bypass, Ghaziabad.
10. Investigation of V Doped SnO_2 Nanocrystals for Energy Conversion and Environmental Remediation, Vinod Kumar, Bhawna, S. K. Sharma, National Seminar on Biophysics (Biophysika -2018) On Nov 20, 2018 at Jamia Millia Islamia, Delhi.
11. Resource Person at DU-Pre Entrance Summer School-2018, June 2018, Lifelong Learning, University of Delhi.
12. Resource Person for Service Course at KVS Delhi Cantt No. 1, 25 December 2016.

Research Projects (Major Grants/Research Collaboration)

1. **SERB Start-Up Research Grant (Young Scientists) 2015-2018 "Designation and Strategies of Metal Oxides Nanocrystals for Photocatalytic Water Splitting"**
2. **UGC Startup Grant (2015-2017) "Exploration of Nanocrystalline Metal Oxides for Photocatalytic Degradation of Organic Pollutants"**

Awards and Distinctions

INSA Visiting Scientist 2021

Association with Professional Bodies

1. **Lifetime Member Indian Science Congress, India**
2. **Member of Materials Research Society, USA (2017-2018)**
3. **Lifetime Member of Society for Materials Chemistry, Bhabha Atomic Research Centre, India.**
4. **Lifetime Member of Indian Society of Analytical Scientists, C/O Indian Oil, Faridabad, India.**
5. **Lifetime Member of Vijnana Bharti (VIBHA)**

Other Activities