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#### **RESEARCH INTEREST:**

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Application of nanomaterials (graphene, carbon nanotubes, quantum dots, magnetic nanoparticles and metal nanoparticles for sensing, electronic, optoelectronic and healthcare applications).

#### **ACADEMIC PROFILE:**

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- **Ph.D. in Physics** (2013) from Central Scientific Instruments Organisation, Chandigarh, India and Panjab University, Chandigarh, India.
- **M.Sc. Physics** with first division in 2006 from Panjab University, Chandigarh (India).
- **B.Sc. with** Physics Chemistry and Mathematics with first division in 2003 from Himachal Pradesh University Shimla (India).

#### **AWARDS AND FELLOWSHIPS:**

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- Qualified the prestigious all India UGC-CSIR-JRF/NET exam of the Council of Scientific and Industrial Research, Government of India in June 2007.
- Qualified Graduate Aptitude Test in Engineering (GATE) in 2007.
- **Junior Research Fellowship (UGC-JRF)** in Central Scientific Instruments Organization Chandigarh, India from August 13, 2007 –August 12, 2009.
- **Senior Research Fellowship (UGC-SRF)** in Central Scientific Instruments Organization Chandigarh, India from August 13, 2009 to August, 2012.
- **Dr. D S Kothari Post Doctoral Fellowship at Department of Physics Indian Institute of Science, Bangalore (under Prof. A. K. Sood) from March, 2013 to August, 2014.**

## **PUBLISHED SCIENTIFIC RESEARCH PAPERS:**

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1. Magnetic field-guided orientation of carbon nanotubes through their Conjugation with magnetic nanoparticles. Suresh Kumar, Harsimran Kaur, Harkiran Kaur, Inderpreet Kaur, Keya Dharamvir, Lalit M. Bharadwaj. *Journal of Materials Science* 2012, 47,1489-1496. (Impact Factor: 4.68).
2. Controlling the density and site of attachment of gold nanoparticles onto the surface of carbon nanotubes. Suresh Kumar, Inderpreet Kaur, Keya Dharamvir, Lalit M. Bharadwaj. *Journal of Colloid and Interface Science*. 369 (1), 2012, Pages 23-27 (Impact Factor: 9.96).
3. Conductivity modulation of carbon nanotubes through hybridization with quantum dots and gold nanoparticles. Suresh Kumar, Mridula Mittal, Inderpreet Kaur, Keya Dharamvir, Banshi Dhar Pant and Lalit M. Bharadwaj. *The European Physical Journal Applied Physics* 2013, 64, 20401. (Impact Factor: 1.02).
4. Divalent Cation Induced Actin Ring Formation. Harsimran Kaur, Suresh Kumar, Inderpreet Kaur, Kashmir Singh, Lalit M. Bharadwaj. *International Journal of Biological Macromolecules*. Volume 48, Issue 5, 1 June 2011, Pages 793-797. (Impact Factor: 8.02).
5. Low-Intensity Magnetic Fields Assisted Alignment of Actin Filaments. Kaur, H.; Kumar, S.; Kaur, I.; Singh, K.; Bharadwaj, L. M. *International Journal of Biological Macromolecules*, Volume 47, Issue 3, 2010, Pages 371-374 (Impact Factor: 8.02).
6. Transportation of Drug-(Polystyrene Bead) Conjugate by Actomyosin Motor System. Harsimran Kaur, ; Suresh Kumar, ; Deepak Kukkar, ; Inderpreet Kaur, ; Kashmir Singh, ; Lalit M. Bharadwaj, *Journal of Biomedical Nanotechnology*, 6(3),2010, 279-286. (Impact Factor: 4.48)
7. Graphene Oxide–MnFe<sub>2</sub>O<sub>4</sub> Magnetic Nanohybrids for Efficient Removal of Lead and Arsenic from Water. Graphene Oxide–MnFe<sub>2</sub>O<sub>4</sub> Magnetic Nanohybrids for Efficient Removal of Lead and Arsenic from Water. *ACS Applied Materials & Interfaces* 2014, 6, 20, 17426-17436. (Impact Factor: 10.38).
8. Amperometric sensing of urea using edge activated Graphene Nanoplatelets. Vanish Kumar, Aditi Chopra, Shweta Arora, Shriniwas Yadav, Suresh Kumar and Inderpreet Kaur. *RSC Advances*, 2015, 5, 13278–13284 (Impact Factor 4.036).
9. Synergistic effect of graphene and carbon nanotubes on mechanical and thermal performance of polystyrene. Suneev Anil Bansal, Amrinder Pal Singh, Suresh Kumar. *Material Research Express*. 5, 2018, 075602. (Impact factor: 2.02)

10. Improved mechanical performance of bisphenol-A graphene-oxide nano-composites. Suneev Anil Bansal, Amrinder Pal Singh, Anil Kumar, Suresh Kumar, Naveen Kumar, J.K. Goswamy. *Journal of Composite Materials* 52 (16), 2018, 2179-2188. (Impact factor: 3.19)
11. High strain rate behavior of epoxy graphene oxide nano-composites. Suneev Anil Bansal, Amrinder Pal Singh, Suresh Kumar. *International Journal of Applied Mechanics*. 10 (07), 2018, 1850072. (Impact factor: 3.9).
12. Reinforcing Graphene Oxide Nano Particles to Enhance Visco-Elastic Performance of Epoxy Nano-Composites. Suneev Anil Bansal, Amrinder Pal Singh and Suresh Kumar, *Journal of Nanoscience and Nanotechnology*, 19(7), 2019, 4000-4006). (Impact factor: 1.3).
13. Metal organic frameworks as potent treatment media for odorants and volatiles. Vanish Kumar, Suresh Kumar, Ki-Hyun Kim, Daniel C.W. Tsang, Sang-Soo Lee. *Environmental Research* 168, 2018, 336-356. (Impact factor 8.43)
14. Scale Minimization in Sugar Industry Evaporators using Nanoporous Industrial Bio-solid Waste Bagasse Fly Ash Rajeev Nath Tiwari, Choudhary Akshay Gandharv, Keya Dharamvir, Suresh Kumar, Gaurav Verma. *Sugar Tech*. 21(2), 2019,301–311. (Impact factor 1.8).
15. Multifunctional graphitic tracks on flexible polymer sheet as strain, acoustic vibration and human motion sensor. Vaibhav Khurana, Manpreet Kaur, Suresh Kumar, Dipti Gupta, J.K.Goswamy. *Measurement*. Volume 146, November 2019, Pages 9-14. (**Impact factor 5.13**).
16. Graphene oxide (GO)/Copper doped Hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>) nanoparticles for organic pollutants degradation applications at room temperature and neutral pH. Twinkle, Karamjit Singh, Suneev Anil Bansal and Suresh Kumar. *Materials Research Express* 6 (2019) 115026. (Impact factor: 2.02)
17. In-situ one pot Synthesis of Graphene-ZnO Nanohybrid and its application to UV light detection." by Rattan, Sonal; Kumar, Suresh; Goswamy, J. K. Goswamy. *Materials Research Express*. (Impact factor: 2.02)
18. Synthesis and Characterization of CNT/PVDF paper for electronic and energy storage applications. Twinkle, Manpreet Kaur , J. K. Gowsamy, Parveen Kumar, Suresh Kumar. *Emergent Materials*. (Impact factor: 3.7)
19. Mechanical performance of covalently attached graphene oxide (GO)-poly allylamine (PAA) nanocomposite: Theoretical and Experiment study. Suneev Anil Bansal, Sukhbir Singh, Anurag Srivastava, Amrinder Pal Singh, Suresh Kumar. *Polymer*, Volume 213, 20 January 2021, 123195. (Impact factor: 4.43)

20. Tarun Singla, Amrinder Pal Singh, Suresh Kumar, Gagandeep Singh, Navin Kumar, Characterization of MWCNTs-polystyrene nanocomposite based strain sensor, Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering, Volume: 235 issue: 2, page(s): 463-469. (Impact factor: 1.6)
21. Sonal Rattan, Suresh Kumar, , J. K. Goswamy, Microwave-Aided Exfoliation and Reduction of Graphene Oxide, Journal of Nanoscience and Nanotechnology, Volume 21, Number 3, March 2021, pp. 1667-1671(5). (Impact factor: 1.3)
22. Nihal, SonalRattan, Manpreet, Anjali, Harjot, SureshKumar, MamtaSharma, S.K.Tripathi, J.K.Goswamy, Synthesis and characterization of Ag metal doped SnO<sub>2</sub>, WO<sub>3</sub> and WO<sub>3</sub>-SnO<sub>2</sub> for propan-2-ol sensing, Results in Materials, Volume 9, March 2021, 100127.
23. KalyanVaid, Jasmeen Dhiman, Suresh Kumar, Ki-HyunKim, Vanish Kumar, Mixed metal (cobalt/molybdenum) based metal-organic frameworks for highly sensitive and specific sensing of arsenic (V): Spectroscopic versus paper-based approaches, Chemical Engineering Journal, Volume 426, 15 December 2021, 131243. (Impact factor: 16.74)
24. Suresh Kumar, Twinkle, Manpreet Kaur, Carbon nanotube-derived highly conductive graphene nanoribbons for electronic applications, Materials Chemistry and Physics, Volume 259, 1 February 2021, 123967. (Impact factor: 4.7)
25. Kalyan Vaid, Jasmeen Dhiman, Suresh Kumar, Ki-Hyun Kim, and Vanish Kumar, A Novel Approach for Effective Alteration of Morphological Features of Polyaniline through Interfacial Polymerization for Versatile Applications, Nanomaterials 2020, 10(12), 2404. (Impact factor: 5.7)
26. Twinkle, Manpreet Kaur, Anjali, Parveen Kumar, BhanuPrakash, J.K.Gowsamy, Suresh Kumar, Multi-walled carbon nanotubes derived graphene nanoribbons for high performance supercapacitor applications, Materials Chemistry and Physics, Volume 296, 15 February 2023, 127204. (Impact factor: 4.7)
27. Twinkle' Anjali' Sudhir Kumar, J.K. Goswamy' Parveen Kumar, Suresh Kumar, materials today proceedings, Volume 50, Part 5, 2022, Pages 1511-1515.
28. Sonal Rattan, Suresh Kumar, J.K. Goswamy, Gold nanoparticle decorated graphene for efficient sensing of NO<sub>2</sub> gas, Sensors International, Volume 3, 2022, 100147.
29. Anjali, Twinkle, Sonal Rattan, Manpreet Kaur, Suresh Kumar & J. K. Goswamy, Synergistic effect of reduced graphene oxide and carbon nanotubes for improved supercapacitive performance electrodes, Journal of Materials Science: Materials in Electronics volume 33, pages26841–26851 (2022). (Impact factor: 2.7)

30. Suneev Anil Bansal, Amrinder Pal Singh, Sukhbir Singh, Suresh Kumar, Bisphenol-A–Carbon Nanotube Nanocomposite: Interfacial DFT Prediction and Experimental Strength Testing, *Langmuir* ( IF 4.331 ) **Pub Date: 2023-01-11** , DOI:10.1021/acs.langmuir.2c02723.

31. Kalyan Vaid, ' Jasmeen Dhiman, 'Suresh Kumar, Vanish Kumar, Citrate and glutathione capped gold nanoparticles for electrochemical immunosensing of atrazine: Effect of conjugation chemistry, *Environmental Research*, Volume 217, 15 January 2023, 114855. (Impact factor: 8.43)

### Conference Proceedings

1. Kalyan Vaid, Jasmeen Dhiman, Nikita Sarawagi, Suresh Kumar and Vanish Kumar, Development of Metal Nanoparticles Based Sensing Platform for Lead in Aqueous Samples, *Mater. Proc.* **2021**, 4(1), 61; <https://doi.org/10.3390/IOCN2020-07852>.

2. Sonal Rattan, Anjali Leal, Mamta Sharma, Suresh Kumar and J K Goswamy, Comparative Study of Gold Nanoparticles Synthesized via Wet Chemical and Green Chemistry approach, *IOP Conf. Ser.: 2021, Mater. Sci. Eng.* **1033** 012051.

3. Manpreet Kaur, Twinkle, Rahul Sharma, Anjali, Harjot, Gh Mustafa, Suresh Kumar and J.K. Goswamy, 2021 *IOP Conf. Ser.: Mater. Sci. Eng.* **1033** 012053.

4. Suneev Anil Bansal, Virat Khanna, Twinkle, Amrinder Pal Singh, Suresh Kumar, Small percentage reinforcement of carbon nanotubes (CNTs) in epoxy (bisphenol-A) for enhanced mechanical performance, <https://doi.org/10.1016/j.matpr.2021.09.225>, Materials today proceedings.

5. Twinkle, Anjali, Sudhir Kumar, J.K.Goswamy, Parveen Kumar, Chemically derived graphene nanoribbons from carbon nanotubes for supercapacitor application, *Materials Today: Proceedings*, Volume 50, Part 5, 2022, Pages 1511-1515.

6. Manpreet Kaur, Twinkle, Suresh Kumar, and J. K. Gowsamy, Graphene-PVDF flexible nanohybrids for supercapacitor application, *AIP Conference Proceedings* **2220**, 020197 (2020).

7. In Vitro Transportation of 5-ASA by Actin Myosin Motor System. Harsimran Kaur, Suresh Kumar, Inderpreet Kaur, Kashmir Singh, Lalit M. Bharadwaj. *IFMBE Proceedings*, 2009, 23, 902-905. (Impact Factor not available ,Conference proceeding).

8. Sonal Rattan, Suresh Kumar, J.K.Gowamy. *Materials today proceedings*. Volume 26, Part 3, 2020, Pages 3327-3331 Graphene oxide reduction using green chemistry.

9. 2D materials: Graphene and others Suneev Anil Bansal, Suresh Kumar, Amrinder Pal Singh. *AIP Conference Proceedings* 1728 (020459), 2016, 020459-1 to 020459-6.

10. Electric Field Induces Alignment of Actin Filaments. Harsimran Kaur, Suresh Kumar, Lalit M. Bharadwaj. *Procedia Engineering*, **44**, 2012, Pages 892-895.

11. Anjali, Sonal Rattan, Rahul Sharma, Twinkle, Manpreet Kaur, Harjot Singh, Nihal, Mamta Sharma, Suresh Kumar, J K Goswamy. Reduced Graphene Oxide-Copper Nanocomposites Synthesis via Green Chemistry, Proceedings of the International Conference on Atomic, Molecular, Optical & Nano Physics with Applications pp 315–322.

12. Development of Metal Nanoparticles Based Sensing Platform for Lead in Aqueous Samples, Kalyan Vaid, Jasmeen Dhiman, Nikita Sarawagi ,Suresh Kumar and Vanish Kumar, *Mater. Proc.* **2021**, 4(1), 61; <https://doi.org/10.3390/IOC2020-07852>.

### Book Chapters

1. Twinkle, Manpreet Kaur, Anjali, Rahul Sharma, Harjot Singh, Vikas Choudary, Sonal Rattan, Nihal, J. K. Gowsamy, Parveen Kumar & Suresh Kumar, Simple and Efficient Approach to Fabricate Fe<sub>3</sub>O<sub>4</sub>/CNT Based Electrode for Supercapacitor Application, Springer Proceedings in Physics book series (SPPHY, volume 271) DOI: 10.1007/978-981-16-7691-8\_27. (Book Chapter)

2. Suneev Anil Bansal, Javad Karimi, Amrinder Pal Singh, Suresh Kumar, Carbon Fibers, Surface Modification Strategies and Biomedical Applications, Advanced Manufacturing and Processing Technology, Carbon Fibers, Surface Modification Strategies and Biomedical Applications. (Book Chapter)

### PRESENTATIONS:

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- **Suresh Kumar**, Inderpreet Kaur, Keya Dharamvir and Lalit M Bharadwaj. Controlling the immobilization of quantum dots onto the surface of carbon nanotubes. International conference on nanomaterials and nanotechnology. Delhi University, New Delhi India from 18<sup>th</sup> – 21<sup>st</sup> December 2011.
- **Suresh kumar**, Inderpreet kaur, Keya Dharamvir and Lalit M Bharadwaj. Selective assembly of quantum nanocrystals onto carbon nanotubes. International Conference on Nano Sensors & Technology (ICNST-2010) is being organized at Central Scientific Instruments Organisation (CSIO), Chandigarh from October 28-30, 2010.
- **Suresh Kumar**, Harsimran Kaur, Deepak Kukkar Inderpreet Kaur and Lalit M. Bharadwaj (2008). Transport of Quantum Dots Using Biomolecular Motors for Diagnostic Applications. (NANOSENSORS 2008: National Workshop on Nano Sensors & Devices 22-23 December, IIT DELHI).
- Harsimran Kaur, **Suresh Kumar**, Inderpreet Kaur, Kashmir Singh and Lalit M. Bharadwaj (2008). In Vitro Transportation of 5-ASA by Actin Myosin Motor System

(Symposium of ICBME 2008, International Conference on Biomedical Engineering, 3-6<sup>th</sup> December, SINGAPORE).

- Deepak Kukkar, Harsimran Kaur, **Suresh Kumar**, Inderpreet Kaur and L M. Bharadwaj (2008). Nanocalorimetric Study of Myosin Catalyzed ATP Hydrolysis by Isothermal Titration Calorimetry. (International Conference on Nanomaterials And Devices: Processing and Applications, IIT Roorkee. 11-13<sup>th</sup> December, 2008).
- Deepak Kukkar, Gagandeep Kaur. Harsimran Kaur, **Suresh Kumar**, Inderpreet Kaur, Parveen Kumar, Jagtar Singh and L M. Bharadwaj (2009). Preparation and characterization of polystyrene microreactors for drug delivery and diagnosis application. (Workshop cum conference on Nanoscience and nanotechnology; Ansal Institute of technology, Gurgoan 12-16<sup>th</sup> October, 2009).
- Deepak Kukkar, **Harsimran Kaur**, Suresh Kumar, Inderpreet Kaur and L M. Bharadwaj (2008). Nanocalorimetric Study of Actomyosin Motor System. (National Review and Co-Ordination Meeting-2009- NANOMISSION DST, Kolkata).
- **Microwave assisted exfoliation and reduction of graphene oxide**  
**Sonal Rattan**, J K Goswamy, **Suresh Kumar**, 5th International Conference on Nanoscience and Nanotechnology (ICONN 2019) 28-30 January 2019, SRM Institute of Science and Technology, Kattankulathur, Chennai, India.
- **Sonal Rattan**, J K Goswamy, **Suresh Kumar**, Graphene oxide reduction using green chemistry. 07-08 June 2019. International Conference on Functional Materials and Simulation Techniques ICFMST-2019. Chandigarh University, Mohali, Punjab, India.