



Name: Dr. Pooja Rani.

Designation: Assistant Professor

Specialization: Material Science and Nanotechnology

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Education

M.Sc, Ph.D, UGC(NET)

M.Sc. Physics (2008, Panjab University, Chandigarh),

UGC NET-JRF-2007

Ph.D. (7th Nov., 2014, Panjab University, Chandigarh)

Title of Ph. D Thesis- Stability. Structure and Electronic properties of Hetero-graphenes

Professional Experience:

Department of Physics, M.M. Modi College, Patiala, India (2nd Feb., 2016 to till date)

Department of Physics, D.A.V College, Sec-10, Chandgarh, India (15 July 2015 to 27 January 2016)

Department of Physics, D.A.V College Sec-10, Chandigarh, India(21 July, 2014 to 28 February 2015)

Department of Physics, G.G.D.S.D College Chandigarh (11 September 2013 to 28 February 2014)

Teaching Interests:

- Condensed Matter Physics
- Waves and Vibrations
- Nuclear Physics

Research Interest:

Material Science and Nanotechnology (Graphene and other 2-D materisls, Density Functional theory (DFT)

Achievements, Awards and Recognitions

- Awarded UGC-JRF fellowship to carry out research during Ph.D

- Awarded DST travel grant for presenting Research paper accepted in MRS Spring Meeting & Exhibit 2014, **San Francisco, USA**.

Membership

- Indian Physics Association
- High Energy and Materials Society of India (HEMSI)

Publications

Papers in refereed international journals

1. Designing band gap of graphene by B and N dopant atoms,
Pooja Rani and V.K. Jindal RSC Advances, 802-812 (2013). Impact factor 3.8
ISSN- 2046-2069, <https://doi.org/10.1039/C2RA22664B>
2. Stability and electronic properties of isomers of B/N co-doped graphene
Pooja Rani and V.K. Jindal, Appl Nanosci., 4, 989-996 (2014).
ISSN 2190-5509, <https://doi.org/10.1007/s13204-013-0280-3>
3. DFT Study of optical properties of pure and doped graphene
Pooja Rani, Girija S. Dubey and V.K. Jindal, Physica E 62, 28–35 (2014).
ISSN-13869477, <https://doi.org/10.1016/j.physe.2014.04.010>
4. Structural and electronic properties of sulphur-doped boron nitride nanotubes
Sheetal Sharma, Pooja Rani, A.S. Verma, V.K. Jindal, Solid State Commu.152, 802–805
(2012).
ISSN-0038-1098, <https://doi.org/10.1016/j.ssc.2012.01.038>
5. Band gap modulation of B/Li doped Graphene
Pooja Rani, Rajiv Bhandari and V.K. Jindal, Adv. Sci. Lett. 21, 2826-2829 (2015)
ISSN: 1936-6612, <https://doi.org/10.1166/asl.2015.6363>
6. Theoretical investigation of structures and energetics of sodium adatom and its dimer on graphene: DFT study
Gagandeep Kaur, Shuchi Gupta, Pooja Rani, Keya Dharamvir, PhysicaE, 74(2015)87–92.
ISSN-13869477, <https://doi.org/10.1016/j.physe.2015.06.014>

7. Thermodynamic properties of pure and doped (B, N) graphene

Sarita Mann, Pooja Rani, Ranjan Kumar, Girija S. Dubey and V.K. Jindal

RSC Adv., 2016, 6, 12158-12168,

ISSN- 2046-2069 <https://doi.org/10.1039/C5RA25239C>,

2. Articles in Books

1. Semiconductor Nanostructures and Synthesis Techniques, Kavita & Pooja Rani Current and Future Developments in Nanomaterials, 2023, Vol. 4, 1-28 Synthesis and Applications of Semiconductor Nanostructures” Edited by Karamjit Singh Dhaliwal, ISBN (Print): 978-981-5080-12-4
2. Opening and Manipulating the Gap in Graphene, Pooja Rani; Kavita Research Highlights in Science and Technology Vol. 1, 22 April 2023, Page 24-44, ISBN 978-81-19217-18-2 (Print)
3. Global Warming -Internatiobal Collaboration, Pooja Rani Environmental Issues: Causes and Resolutions, Dec., 2022ISBN/ISSN:978-93-954567-9-1, Redshine Publication, India.
4. Al/P Codoping in graphene, Pooja Rani and Sheetal Sharma, NANOSCITECH-2012 Emerging Paradigms in Nanoscience, 851-855, Pearson ISBN: 978-81-317-8991-9 Edits- Ranbir Chander sobti, Anupama Kaushik, Surya Kant Tripathi
5. H2S adsorption on Graphene – A Density Functional Theory Study, Pooja Rani and Sheetal Sharma, NANOSCITECH-2012 Emerging Paradigms in Nanoscience,828-832, Pearson ISBN: 978-81-317-8991-9 Edits- Ranbir Chander sobti, Anupama Kaushik, Surya Kant Tripathi

3. Papers in referred Conferences/Symposia proceedings

1. DFT study of Phonon Dispersion in Pure Graphene AIP Conference Proceedings **1675**, 030035 (2015); doi: 10.1063/1.4929251.
2. DFT Study of B, N, and BN doped graphene, MRS Proceedings, 2014. **ISSN**: 1946-4274
3. Adsorption of silver dimer on Graphene- A DFT study, Gagandeep Kaur, Suchi Gupta, Pooja Rani and Keya Dharmvir, AIP Conf. 1591, 339 (2014)
4. DFT Study of Defects in Graphene, Pooja Rani and Rajiv Bhandari, Proceedings of the International Conference on Advanced Nanomaterials and Emerging Engineering Technologies (ICANMEET 2013) ISBN: 978-1-4799-1377-0
5. Toluene Adsorption on Na-Graphene Interface- A DFT Study, Pooja Rani and V. K. Jindal, Recent Trends in Applied Physics and Material Science (RAM 2013), AIP Conf. Proc. 1536, 389 (2013).

6. Study of B and N doped graphene by varying dopant positions, Pooja Rani and V. K. Jindal, 56th DAE Symposium 2012, AIP Conf. Proc. 1512, 262 (2013); doi: 10.1063/1.4791011
7. Structure and Stability of Pure and Doped Lithium Clusters (Lin and LinX, n = 2–8, X = B, Al) A DFT study, Pooja Rani, Sheetal Sharma, and V. K. Jindal, ICACNM 2011, AIP Conf. Proc. 1393, 191 (2011); doi: 0.1063/1.3653674, ISSN: 0094-243X

Invited Lectures/Papers Presented

1. Presented a paper on " 2-D Materials Changing the World" in AEMTA-2024, organized by SLIET (Longowal) on 15 March, 2024.
2. Presented paper on " Importance of Interdisciplinary Studies" in National Seminar Higher Education in India: A Roadmap for Future" organized by Interdisciplinary Studies" on 20 January, 2024
3. Delivered an invited talk on the topic entitled "Graphene the Wonder Material of 21st Century" at 2nd International Conference on Recent Trends in Materials Science & Devices 2023 (ICRTMD-2023) held in Online Mode from 29-31 December 2023 organized by Research Plateau Publishers in association with Sat Kabir Institute of Technology & Management, Bahadurgarh, Haryana, India.
4. Presented a paper on “Mxenes-New addition to 2-D materials” in 11th National conference
5. on “Recent Advances on “Chemical, Biological and Environmental Sciences (RACES-2023) on 12 April, 2023
6. Delivered an Invited lecture on “Accelerators in Nuclear Physics” in PGGC, Patiala on 02.03.2023.
7. Presented a paper titled "Graphene from Garbage" on 24-11-22 in One Day National Conference on “Through The Instruments” international organized by Shri Shivayogi Murughendra Swamiji Arts, Science and Commerce College, Athani on 22 Dec., 2022.
8. Presented a paper titled " Opening and Manipulating the gap in graphene" in 2nd international e-Conference on Nanoscience and Nanotechnology in Energy, Environment and Bio-Medical organized by Vinayaka Missions Kirupananda Variyar Arts and Science College, India in association with Gyeongsang National University, Republic of Indo-South Korea-Thailand on 24-11-22.
9. Presented paper titled “Decay of a Medium Mass Compound---Induced Reaction” at UGC Sponsored 10th National conference on Recent Advances in Chemical & Environmental Sciences (RACES-2019) held from April11-12, 2019 at MM Modi College Patiala, Punjab.
10. Presented paper titled “Measurements of L3M resonant Raman scattering cross sections, at National Conference on Recent Trends in Physical, Chemical, Biological & Environmental Science, 21 March, 2016, Advance College of Science and Commerce, Ujjain, MP, India
11. Presented paper titled “Altering the Optical Properties of Graphene by (B, N) Doping. 8th National conference on Recent Advances in Chemical, Biological & Environmental Sciences (RACES), Feb 19-20, 2016, MM Modi College Patiala, Punjab, India

12. Presented paper titled “Band Gap Modulation of Graphene with Increasing Concentration of Li/B Doping” at IWCCMP-2014 (Workshop cum Conference) ABV-IITM, Gwalior, India on 25-30th Nov., 2015
13. Presented a paper titled “Structural, Electronic and Optical Properties of Doped Graphene” in Physics and Applied Mathematics Researchers Meet (PAMRM 2015) at ISI Kolkata on 15-17 March 2015.
14. Presented paper titled “. DFT Study of B, N, and BN doped graphene” in MRS Spring Meeting and Exhibit 2014 at **Moscone Convention Centre, San Francisco, USA on 21-25th April, 2014**
15. Presented paper titled “Toluene Adsorption on Na-Graphene Interface- A DFT Study” Recent Trend in Applied Physics and Material Science (RAM 2013) held at Govt. College of Engg. and Tech, Bikaner, India on 1st -2ndst Feb. 2013
16. Presented paper titled “Study of B and N doped graphene by varying dopant positions” in 57th DAE Solid State symposium held at IIT Bombay, Mumbai, India
17. Presented Paper titled “Al/P Co-doping in graphene” in International Conference on “Frontiers in Nanoscience, Nanotechnology and their applications” (NanosciTech 2012) held at UICET, P.U, Chandigarh, India on Feb 16-18, 2012
18. Presented poster in international conference on Nanotechnology and nanomaterials held in Conference Centre, Delhi University, New Delhi, India on 18-21th Dec.2011
19. Presented paper titled “Structure and Stability of Pure and Doped Lithium Clusters (Lin and LinX, n = 2–8, X = B, Al) A DFT study” in International Conference on Advances in Condensed Matter Physics and Nanotechnology (ICACNM 2011) on Feb22, 23-26th 2011

Workshops/Training Courses/ Orientation Programme/Refresher Courses Attended

1. Attended NEP 2020 Orientation & Sensitization Programme under” Malviya Mission Teacher Training Programme’of University Grants Commission Organized by Punjabi University, Patiala held from 5thFeb-14th Feb., 2024.
2. Attended a 10-day workshop on “30 Hours Sanskrit Speaking Certificate Course” held from 30-10-2023 to 10-11-2023 organized by Multani Mal Modi College, Patiala in Collaboration with Central Sanskrit University, Delhi.
3. Attended course on Classical Mechanics-II by Centre for continuing Education, IIT Kanpur (August 15- December 25, 2022).
4. Attended Refresher course on Physical Sciences & Nanosciences during 10th January-22 January, 2022 organized by University Grants Commission, HRDC, JNU, New Delhi.
5. Attended course on " The Theory of Photoelectric Effect" organized by "Centre for continuing Education" Indian Institute of Technology, Kanpur, during July15- August 17, 2021.

6. Participated in the course Classical Electromagnetism-I by Centre for continuing Education, IIT Kanpur (August15-Dec13, 2020).
7. Completed a One Week online faculty development programme on “Exploring Science and Technology Interconnections “organized by Department of Applied Sciences, UIET Panjab University, Chandigarh (August3-8, 2020)
8. Attended One Week Faculty Development Program on Advancements in Science and its Applications in Engineering organized by Department of Science & Humanities, Hyderabad Institute of Technology & Management, Hyderabad (June 22-26, 2020).
9. Completed a 2-Week online faculty development programme on “Advanced Concepts for Developing MOOCS” organized by Teaching Learning Centre (TLC), Ramanujan College in association with Research Development and Services Cell, Ramanujan College, University of Delhi (July 2-17, 2020)
10. Participated in Science Leadership Workshop organized by Central University of Punjab, Bathinda (June 22-28, 2020).
11. Completed a 4-Week Induction/ Orientation Programme for Faculty in Universities/ Colleges/ Institutes of Higher Education organized by Ramanujan College, University of Delhi (June 4- July 1, 2020).
12. Completed the course “Learning Physics through Simple Experiments” from Centre for continuing education, IIT Kanpur from April 2 to June 10, 2019.
13. Faculty Development Program on Contemporary Issues in Higher Education held at MM Modi College Patiala, July 20th -26th 2018.
14. Attended International Workshop on “Shock Waves in Science, Engineering and Medicine on 23-24th Feb, 2018 at Post Graduate Govt. College for Girls, Sec-11, Chandigarh.
15. Attended UGC Sponsored Faculty Development Program at Multani Mal Modi College, Patiala. (9-16 January, 2017)
16. Attended workshop on “Workshop on “Integrated computational Material Engineering” at Dept. of Material Science and Engg. IISc Bangalore, India on 23-27th Dec. 2013
17. Attended Workshop on “Parallel Computing Using HPCC held at Dept. of Physics, Panjab University, Chandigarh, India on 21-22 March 2013
18. Attended workshop on “Scientific Applications of the IUAC HPC facility” held at Inter University Accelerator Centre (IUAC), New Delhi, India in No. 2012
19. Attended Workshop on “High Performance Computing, held at Inter University Accelerator Centre Chandigarh on 27-28th April, 2010
20. Attended Seminar cum Workshop on First Principles and other simulation Methods in Condensed Matter Physics. Held in HPU Shimla, -22-29th March 2010
21. Attended Technology Workshop on Optimizing Performances of Parallel Programs on Emerging Multi-Core Processors, GPUs, held in IIT Madras Chennai, June 2009

Conferences/Seminars/Webinars Attended

1. Attended webinar on “Virtual Labs” organized at Punjabi University Patiala through Online Mode on 17-04-2023

Attended National Webinar on " Intellectual Property Rights" organised by Human Resources Development Centre, S.L.Bawa D. A. V College Batala on July 28, 2021.

2. Attended "International Conference on Light Matter Interaction ICLMIN 2021) organised by Indira Gandhi Centre for Atomic Research (IGCAR) during May 19-21, 2021.
3. Attended Five Day Online Lecture Series organized by P.G Department of Physics, Khalsa College, Patiala (Dec 22-26, 2020).
4. Participated in National Webinar on Recent Advances in Material Sciences and Nano-Technology organized by Department of Physics, Ch. Chhotu Ram (P.G.) College, Muzaffarnagar, Uttar Pradesh (October 01, 2020).
5. Attended One day National Webinar on the theme Hind di Chadar : Sri Guru Teg Bahadur organized by Punjabi University, Patiala (August 26, 2020).
6. Participated in Internation Conference on Emerging Smart Materials in Applied Chemistry (ESCAM-2020) (August 10-12, 2020).
7. Participated in One Day Capacity Building Program on Basic Tools and Techniques for Online Teaching organized by Punjabi University, Patiala (August 09, 2020).
8. Attended National Webinar on Frontiers of Science & Technology in Defense organized by PG Department of Physics, Khalsa College, Patiala (August 07, 2020).
9. Participated in One day National Webinar on " The social and religious context of the martyrdom of Sri Guru Teg Bahadur Ji" organized by Multani Mal Modi College Patiala (July 16, 2020).
10. Participated in Webinar on Nanotechnology: A Multidisciplinary Technology of 21st Century organized by Department of Physics, S.D. College, Barnala (July 10, 2020).
11. Participated in "National Capability Enhancement Conference: Education for Meaningful Life Part-3" organized by Punjab Commerce and Management Association (July 2, 2020)
12. Participated in International Virtual Conference on Advanced Materials for Energy and Environmental Applications (ICAMEEA-2020) organized at International Relationship Centre, Bharathidasan University, Tiruchirappalli, Tamil Nadu (June 26-27, 2020).
13. Participated in the National Webinar on International Yoga Day organized by Gargi College under the aegis of IQAC, University of Delhi (June 21, 2020)
14. Participated in International seminar on "Current trends in Quantum gases, BEC and Solitons" held at Department of Physics, Panjab University Chandigarh from 3rd-6th March, 2014
15. Attended One day Seminar on "Material science and Nanomaterials at G.G.D. S.D College, Sec-32, Chandigarh, on Ist Feb, 2014India
16. Attended 6th Chandigarh Science Congress (CHASCON 2012) held at Panjab University, Chandigarh, India on 26-28th Feb. 2012
17. Attended 2nd Chandigarh Science Congress and Presented a poster on 14-15th March 2008 held at Panjab University Chandigarh