CURRICULUM VITAE

Dr. Pragati Kumar

Assistant Professor
Department of Nano Science and Materials
Central University of Jammu,
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Jammu, J&K, India
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B.Sc. (2002, M. J. P. Rohilkhand University, Bareilly), Physics, Chemistry, Mathematics
M.Sc. (2004, M. J. P. Rohilkhand University, Bareilly), Physics (Electronics)
CSIR-UGC NET (2007), Physical Sciences
Ph.D. (2014, M. J. P. Rohilkhand University, Bareilly and Inter University Accelerator Centre, New Delhi), Physics (Material Science)
Dr. D. S. Kothari Post Doctoral Fellow (Mar., 2014- Jul., 2016, University of Delhi, Delhi)
Assistant Professor (Jul., 2016 onwards, Central University of Jammu), Department of NanoScience and Materials

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Subject Taught:-

1. Quantum Mechanics	M.Sc. Ist SEM.
2. Experimental Techniques in Material Science I	M.Sc. IInd SEM.
3. Thin Films Deposition and Technology	M.Sc. IInd SEM.
4. Experimental Techniques in Material Science II	M.Sc.IVth SEM.
5. Ion Beams in Material Science	Ph.D.

Research/Research Interests: -

1. Semiconductor nanocrystals, thin films, composites and nanowires
2. Structural, optical and electrical characterization
3. Optoelectronic devices (Photodetectors, LEDs)
4. Sensing properties of nanostructures (Temperature, Gas, Ion, pH)
5. Ion beam induced synthesis, modification and characterizations
6. Programming and simulations

Ongoing Projects:

- ✓ "Development of Nanostructures Based Optical Sensor" – UGC Start up Grant (10 Lakhs).

- ✓ "Fabrication of Inorganic/Organic Heterojunctions for Optoelectronic Devices"- SERB Early Career Grant (40 Lakhs).
- ✓ Ion beam induce modification of luminescence activators doped CdS thin films- IUAC-UFR (6 Lakhs).
- ✓ Synthesis and Characterization of undoped/doped nanostructures- CUJ-Startup (2 Lakhs).

Professional Recognition:

International Travel Support to attend ICSNN, Germany by Department of Science and Technology, India in 2012
Dr. D. S. Kothari Post Doctoral Fellowship by University Grant Commission, India in 2014
Life Time Membership of Ion Beam Society of India by Inter University Accelerator Centre, New Delhi, India in 2016
Member of Editorial Board in American Journal of Nanosciences (AJN), Science Publishing Group New York, NY 10018 U.S.A. since 2016
Member of Reviewing Committee in American Journal of Nano Research and Applications (NANO), Science Publishing Group New York, NY 10018 U.S.A.since 2016
Member of Editorial Board in International Journal of Nanoparticle Research (IJNR), eScience Publishing Group New York, NY 10018 U.S.A. since 2017
Life Time Membership of Indian Physics Association by TIFR, Colamba, Bombay, India in 2017
Life Time Membership of Luminescence Society of India by Baroda University, Varodra, India in 2018
Guest Editor for special issue on "Advanced Nanotechnology-Based Strategies to Obtain Efficient Solid-State Lighting" in Journal of Nanomaterials, Hindawi Publisher

Publications: -

Structural study of CdS nanoparticles
Pragati Kumar, Nupur Saxena, F. Singh and Avinash Agarwal
Proceedings of the National Conference on Synthesis and Characterization of Smart Materials, SCSM – 2009, Bareilly, India. Sep. 12 – 14, 2009, pp-128

Lattice distortion in ion beam synthesized silicon nanocrystals in SiO_X thin films
Nupur Saxena, **Pragati Kumar**, Avinash Agarwal and D. Kanjilal
Physica Status Solidi A, 209 (2012) 283
Publisher: John Wiley & Sons***, ISSN:*** 1862-6319***, Impact Factor:*** 1.795

Nanotwinning in CdS quantum dots
Pragati Kumar, Nupur Saxena, F. Singh and Avinash Agarwal
Physica B: Condensed Matter, 407 (2012) 3347
Publisher: Elsevier***, ISSN:*** 0921-4526***, Impact Factor:*** 1.453

Opto-structural studies of well dispersed silicon nanocrystals grown by atom beam sputtering

Nupur Saxena, **Pragati Kumar**, D. Kabiraj and D. Kanjilal
Nanoscale Research Letters, 7 (2012) 547
Publisher: Springer***, ISSN:*** 1556-276X***, Impact Factor:*** 3.125

Nanotwinning and structural phase transition in CdS quantum dots Highly accessed
Pragati Kumar, Nupur Saxena, Ramesh Chandra, Vinay Gupta, Avinash Agarwal and D. Kanjilal
Nanoscale Research Letters, 7 (2012) 584
Publisher: Springer***, ISSN:*** 1556-276X***, Impact Factor:*** 3.125

SHI induced enhancement in green emission from nanocrystalline CdS thin films for photonic applications
Pragati Kumar, Nupur Saxena, Ramesh Chandra, Kun Gao, Shengqaing Zhou, Avinash Agarwal, Fouran Singh, Vinay Gupta and D. Kanjilal
J. Luminescence, 147 (2014) 184
Publisher: Elsevier***, ISSN:*** 0022-2313***, Impact Factor:*** 2.732

Effect of swift heavy ions on pulsed laser deposited Ag doped CdS nanocrystalline thin films
Pragati Kumar, Nupur Saxena, Vinay Gupta, Kun Gao, Fouran Singh and Avinash Agarwal
Advanced Science Letters 20 (2014) 977
Publisher: American Scientific Publishers***, ISSN:*** 1936-6612***, Impact Factor:*** 1.253

Correlation between surface phonon mode and luminescence in nanocrystalline CdS thin films: an effect of ion beam irradiation
Pragati Kumar, Nupur Saxena, Vinay Gupta, F. Singh and Avinash Agarwal
Journal of Applied Physics 116 (2014)043517
Publisher: American Institute of Physics, ***ISSN:*** 0021-8979, ***Impact Factor:*** 2.176

PLD grown Si nanocrystals for memory and optical applications
Nupur Saxena, **Pragati Kumar** and Vinay Gupta
Proceeding of the National Conference on Nanotechnology and Renewable Energy (NCNRE-14), Jamia Milia Islamia University, Delhi, 2014, pp-318-321. ISBN-978-93-81212-65-3

Thermal activated structural phase transition and its effect on emission
Pragati Kumar, Nupur Saxena, F. Singh, Avinash Agarwal and Vinay Gupta
Proceeding of the National Conference on Nanotechnology and Renewable Energy (NCNRE-14), Jamia Milia Islamia University, Delhi, 2014, pp-229-232. ISBN-978-93-81212-65-3

Swift heavy ion induced functionality in nanocrystalline CdS thin films: Role of growth temperature
Pragati Kumar, Nupur Saxena, F. Singh, Avinash Agarwal and Vinay Gupta
Advanced Materials Letters 6 (2015) 820
Publisher: VBRI Press***, ISSN:*** 0976-3961***, Impact Factor:*** 1.90

CdS:SiO_2 nanocomposite as luminescence based wide range temperature sensor
Nupur Saxena, **Pragati Kumar**, and Vinay Gupta
RSC Advances, 5 (2015) 73545

Publisher: Royal Society of Chemistry***, ISSN:*** 2046-2069***, Impact Factor:*** 2.936

Effect of rapid thermal annealing temperature on the dispersion of Si nanocrystals in SiO_2 matrix
Nupur Saxena, **Pragati Kumar**, Vinay Gupta
AIP Conference Proceedings 1661, 080026 (2015), ISSN: 0094-243X

Influence of Ag doping concentration on structural and optical properties of CdS thin films
Pragati Kumar, Nupur Saxena, Avinash Agarwal and Vinay Gupta
AIP Conference Proceedings 1661, 080017 (2015), ISSN: 0094-243X

Giant UV-sensitivity in ion beam irradiated nanocrystalline CdS thin films
Pragati Kumar, Nupur Saxena, Sheetal Dewan, Fouran Singh, and Vinay Gupta
RSC Advances, 6(2016) 3641
Publisher: Royal Society of Chemistry***, ISSN:*** 2046-2069***, Impact Factor:*** 2.936

SHI induced structural phase generation and enhanced luminescence from CdS based nanocomposites
Pragati Kumar, Nupur Saxena, Fouran Singh, and Vinay Gupta
Surface and Coating Technology, 306 (2016)305
Publisher: Elsevier***, ISSN:*** 0257-8972***, Impact Factor:*** *2*.906

Formation of luminescent Si nanocrystals by ion irradiation
Nupur Saxena, **Pragati Kumar**, Vinay Gupta, D. Kabiraj and D. Kanjilal
Surface and Coatings Technology, 306 (2016)295
Publisher: Elsevier***, ISSN:*** 0257-8972***, Impact Factor:*** *2*.906

Target swapping in PLD: An efficient approach for CdS/SiO_2 and $CdS:Ag(1\%)/SiO_2$ nanocomposite thin films with enhanced luminescent properties.
Nupur Saxena*, **Pragati Kumar***, Vinay Gupta;
Journal of Luminescence 186 (2017) 62
Publisher: Elsevier***, ISSN:*** 0022-2313***, Impact Factor:*** 2.732

Radiation stability of CBD grown nanocrystalline CdS films against ion beam irradiation for solar cell applications.
Nupur Saxena*, **Pragati Kumar***, Vinay Gupta, D. Kanjilal;
Journal of Materials Science: Materials in Electronics 29 (2018) 11013
Publisher: Springer***, ISSN:*** 1573-482X***, Impact Factor:*** 2.448

Ion beam assisted fortification of photoconduction and photosensitivity.
Pragati Kumar*, Nupur Saxena*, F. Singh, Vinay Gupta***;***
Sensors and Actuators A 279 (2018)343
Publisher: Elsevier, ISSN: 0924-4247, Impact Factor: 2.311

Morphological evolution in nanocrystalline CdS thin films from flowers to salt rock like structures.

Nupur Saxena* , Tania Kalsi, Prateek Uttam, **Pragati Kumar***;
Optical Materials 84 (2018) 625–630
Publisher: Elsevier***, ISSN:*** 0925-3467***, Impact Factor:*** 2.320

Papers presented in International Conferences/National Conferences/ Symposium: -

1. Structural study of CdS nanoparticles
   Pragati Kumar, Nupur Saxena, F. Singh and Avinash Agarwal
   Presented at: - **National Conference on Synthesis and Characterization of Smart Materials, SCSM – 2009**, Bareilly, India. Sep. 12 – 14, 2009, *pp-128*

2. Ion beam induced formation of nanocrystalline silicon in pulsed laser deposited SiO_X thin films
   Nupur Saxena, **Pragati Kumar**, Avinash Agarwal and D. Kanjilal
   Presented at**: - 10th European Conference on Accelerators in Applied Research and Technology (ECAART-10),** Athens, Greece, Sep.13 – 17, 2010, *pp-117.*

3. Silicon nanocrystals formation in phase separated SiO_X films by 100 MeV Ag
   Nupur Saxena, **Pragati Kumar**, Avinash Agarwal and D. Kanjilal
   Presented at: - **Conference on Swift Heavy Ions in Materials Engineering and Characterization (SHIMEC – 10)** IUAC, New Delhi, India, Oct. 6 – 9, 2010, *pp-91.*

4. TEM and Raman studies of chemically synthesized CdS nanoparticles
   P. Kumar, Nupur Saxena, F. Singh and Avinash Agarwal
   Presented at: - **National Conference on Advancements and Futuristic Trends in Material Science (AFTMS – 2011)** M. J. P. R. U. Bareilly, India, Mar. 26 – 27, 2011, *pp-54.*

5. Alignment of Ag doped CdS nanoparticles by swift heavy ion beam
   Nupur Saxena, **Pragati Kumar**, Vinay Gupta and D. Kanjilal
   Presented at: - **International Conference on Swift Heavy Ions in Materials Engineering and Characterization (SHIMEC – 12)** IUAC, New Delhi, India, Oct. 9 – 12, 2012, *pp-86.*

6. Ion beam induced structural phase transition in chemically grown CdS thin films
   Pragati Kumar, Nupur Saxena, F. Singh and Avinash Agarwal
   Presented at: - **International Conference on Swift Heavy Ions in Materials Engineering and Characterization (SHIMEC – 12)** IUAC, New Delhi, India, Oct. 9 – 12, 2012, *pp-88.*

7. Effect of swift heavy ion on PLD grown Ag doped nanocrystalline CdS thin films
   Pragati Kumar, Nupur Saxena, Vinay Gupta, Fouran Singh, and Avinash Agarwal
   Presented at: - **International Conference on Nanoscience and Nanotechnology (ICNN-2013)**, Lucknow, India, Nov. 18 – 20, 2013, *pp-164.*

8. Effect of particle size distribution on the photoluminescence of silicon nanocrystals
   Nupur Saxena, **Pragati Kumar**, Vinay Gupta, and D. Kanjilal
   Presented at: - **International Conference on Nanoscience and Nanotechnology (ICNN-2013)**, Lucknow, India, Nov. 18 – 20, 2013, *pp-238.*

9. PLD grown Si nanocrystals for memory and optical applications

Nupur Saxena, **Pragati Kumar** and Vinay Gupta
Presented at: - **National Conference on Nanotechnology and Renewable Energy (NCNRE-14),** Jamia Milia Islamia University, Delhi, India, Apr. 28-29, 2014, *pp-318-321*.

10. Thermal activated structural phase transition and its effect on emission
Pragati Kumar, Nupur Saxena, F. Singh, Avinash Agarwal and Vinay Gupta
Presented at: - **National Conference on Nanotechnology and Renewable Energy (NCNRE-14),** Jamia Milia Islamia University, Delhi, India, Apr. 28-29, 2014, *pp-229-232.*

11. SEM and Raman studies of silicon nanowire grown by PLD
Nupur Saxena, **Pragati Kumar**, Vinay Gupta
Presented at: - **International Conference on Electron Microscopy and 35th Annual Meeting of Electron Microscope Society of India (EMSI-14),** University of Delhi, Delhi, India, July 9-11, 2014.

12. Doping induced shape control of CdS quantum dots and enhancement in luminescence
Pragati Kumar, Nupur Saxena, Avinash Agarwal and Vinay Gupta
Presented at: - **International Conference on Electron Microscopy and 35th Annual Meeting of Electron Microscope Society of India (EMSI-14),** University of Delhi, Delhi, India, July 9-11, 2014.

13. Studies of SHI induced distortion in Raman lineshape: A non-destructive approach
Nupur Saxena, **Pragati Kumar**, Fouran Singh, Vinay Gupta
Presented at: - **International Conference on Swift Heavy Ions in Materials Engineering and Characterization (SHIMEC – 14),** IUAC, New Delhi, India, Oct. 14 – 16, 2014.

14. SHI on PLD grown CdS thin films-an approach for stable green luminescence
Pragati Kumar, Nupur Saxena, Shengquiang Zhou, Avinash Agarwal, Fouran Singh, D. Kanjilal and Vinay Gupta
Presented at: - **International Conference on Swift Heavy Ions in Materials Engineering and Characterization (SHIMEC – 14),** IUAC, New Delhi, India, Oct. 14 – 16, 2014.

15. Effect of rapid thermal annealing temperature on the dispersion of Si nanocrystals in SiO_2 matrix
Nupur Saxena, **Pragati Kumar**, Vinay Gupta
Presented at: - **International Conference on Condensed Matter Physics (ICCMP-14),** Himachal Pradesh University, Shimla, India, Nov. 4-6, 2014.

16. Influence of Ag doping concentration on structural and optical properties of CdS thin films
Pragati Kumar, Nupur Saxena, Avinash Agarwal and Vinay Gupta
Presented at: - **International Conference on Condensed Matter Physics (ICCMP-14),** Himachal Pradesh University, Shimla, India, Nov. 4-6, 2014.

17. SHI Induced Structural Phase Generation and Enhanced Luminescence from CdS Based Nanocomposites
Pragati Kumar, Nupur Saxena, Fouran Singh, and Vinay Gupta
Presented at: **The 19th International Conference on Surface Modification of Materials by Ion Beams (SMMIB-19),** Chiang Mai, Thailand, Nov. 22-27, 2015.

18. Formation of Luminescent Si Nanocrystals by Ion Irradiation
Nupur Saxena, **Pragati Kumar**, Siddharatha, Vinay Gupta, D. Kabiraj and D. Kanjilal
Presented at: **The 19th International Conference on Surface Modification of Materials by Ion Beams (SMMIB-19),** Chiang Mai, Thailand, Nov. 22-27, 2015.

19. Temperature sensor based on $CdS:SiO_2$ and $Cd_{0.99}Ag_{0.01}S:SiO_2$ nanocomposites
Nupur Saxena, **Pragati Kumar**, Vinay Gupta
Presented at: **National Conference on Semiconductor Material and Devices (NCSMD-2016),** IIT Jodhpur, Rajasthan, India, March 4-6, 2016.

20. Ion beam irradiated nanocrystalline CdS thin films: An approach for better photosensitivity
Pragati Kumar, Nupur Saxena, Monika Tomar, Vinay Gupta
Presented at: **National Conference on Semiconductor Material and Devices (NCSMD-2016),** IIT Jodhpur, Rajasthan, India, March 4-6, 2016.

21. Ion beam irradiation: A booster for optoelectronic properties
Invited talk at: ***International and Inter University Centre for Nanoscience and Nanotechnology (IIUCNN),*** Mahatma Gandhi University Priyadarsini Hills Kottayam-686 560, Kerala, India, 10-12 February 2017

22. CdS based nanocomposite thin films: An advance material for luminescence based temperature sensors
Pragati Kumar, Nupur Saxena and Vinay Gupta
Invited talk at: **International Conference on Nanotechnology: Ideas, Innovations and Initiatives (ICN3I-2017),** IIT Roorkee, Uttarakhand, India, December 06 - 08, 2017.

23. Optical and structural studies of chemically synthesize silicon nanowires
Tania Kalsi, Nupur Saxena, and Pragati Kumar
Presented at: **International Conference on Nanotechnology: Ideas, Innovations and Initiatives (ICN3I-2017),** IIT Roorkee, Uttarakhand, India, December 06 - 08, 2017.

24. Ar-ambient pressure induced bleaching of multiphonon Raman mode
Pragati Kumar, Nupur Saxena, andVinay Gupta
Presented at: "**International Conference on Nanoscience and Nanotechnology (ICONN-2019)"** at SRM University, Chennai, India, January **28 - 30, 2019**

Workshops/Seminar attended/Participated: -

1. School on Optical Characterization
   Held at: Inter University Accelerator Centre (IUAC), New Delhi-110067, During June 30-July 2, 2008.

2. Ion beam based research in India and acquaintance programme on ion beam facilities at IUAC New Delhi
   Held at: Department of Physics, Bareilly College, Bareilly on March 3, 2012.

3. DST Sponsored workshop on Indigenously Developed Low Cost Surface Plasomon Resonance Techniques and its Application
   Held at: Department of Physics & Astrophysics, University of Delhi, Delhi-110007, During May 8-9, 2014.

4. International workshop on Futuristic Material: Characterization, Properties & Application in Technology (FMCPAT-14)
   Held at: Department of Physics, Faculty of Engineering & Technology, Mahatma Jyotiba Phule Rohilkhand University, Bareilly-243001, During July 17-22, 2014.

5. National Seminar on Atomic Energy in the service of the Nation (AESN-2015)
   Held at: Department of Physics, Bareilly College, Bareilly in association with Bhabha Atomic Research Centre, Mumbai on March 1, 2015.

International/National Collaborations: -

- ✓ Dr. Shengqiang Zhou, Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Dresden, Germany.
- ✓ Prof. Gwomei Wu, Institute of Electro-Optical Engineering, Department of Electronic Engineering, Chang Gung University, Taoyuan, Taiwan.
- ✓ Prof. Zhaoxiang Chen, College of Mechanical Engineering, Yanshan University, Qinhuangdao, China.
- ✓ Prof. Ramesh Chandra, Institute Instrumentation Centre, Indian Institute of Technology Roorkee (IITR), India.
- ✓ Dr. D. Kanjilal and Dr. Fouran Singh, Inter University Accelerator Center (IUAC), New Delhi, India.
- ✓ Prof. Shyam Kumar and Dr. Suman, University of Kurukshetra, Kurukshetra, India.
- ✓ Prof. Vinay Gupta, Department of Physics & Astrophysics, University of Delhi, Delhi, India.

Potential Reviewer of Journals:

- ➢ Nanoscale Research Letters (Springer)
- ➢ Analytical Methods (Royal Society of Chemistry)
- ➢ RSC Advances (Royal Society of Chemistry)
- ➢ Material Science and Engineering C (Elsevier)
- ➢ Radiation effects and defects (Taylor and Francis)
- ➢ American Journal of NanoSciences (Science PG)
- ➢ J. Physical Chemistry (American Chemical Society)
- ➢ Surface and Interface Analysis (Wiley)