

## Curriculum Vitae: Dr. Tanuj Kumar



Citizenship: Indian  
Birthdate: Nov. 09, 1985  
Religion: Hindu, Caste: GEN  
Email id: [tkdeswal@gmail.com](mailto:tkdeswal@gmail.com),  
[tanuj.nsm@cujiammu.ac.in](mailto:tanuj.nsm@cujiammu.ac.in)  
Phone : +91-9992910750,

Assistant Professor  
Dept. of Nanosciences & Materials  
Central University of Jammu,  
Jammu-181143

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### Projects

1. A project on “Importance of amorphous/crystalline (a/c) interface in nanoscale surface patterning of Si (100) using ion beam” got sanctioned from IUAC, New Delhi

**Fund Sanctioned ~ 10.5 lac**

2. A project on “Fabrication and electron transport characteristics of silicon nanowires” got sanctioned from SERB-DST, New Delhi

**Fund Sanctioned ~ 36.74 lac**

### EDUCATION

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*Ph.D. in Physics*

*Awarded 09-April-2014*

*(Inter-University Accelerator Centre, New Delhi)*

*Jawaharlal Nehru University, New Delhi*

*(Awarded 09-April-2014, submission date: 02 Dec. 2013)*

*Advisor: Dr. D. Kanjilal, Director, IUAC, New Delhi.*

*Thesis Title: Controlled creation of nanostructures on semiconductor surface using energetic ion beam*

**Master of Philosophy**

2009

*Department of Physics,*

**76.6%**

*Kurukshetra University, Kurukshetra, India*

**Master of Science**

2008

*Department of Physics,*

**70.4%**

*Kurukshetra University, Kurukshetra, India*

**Bachelor of Science**

2006

*Govt. College Safidon,*

**80.08%**

*Kurukshetra University, Kurukshetra, India*

**Class- 10+2**

2003

*Board of School Education Haryana,*

**68.0%**

*Haryana, India*

**Class- 10**

2001

*Board of School Education Haryana,*

**70.5% Haryana, India**

## **PAST EMPLOYMENT**

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**Assistant Professor:** Physics (Contractual) **Nature of work:** Teaching (Post Graduate)

**Employer Name:** Central University of Haryana

**Since:** 31/07/2014 to till date

**Pay:** 48,500 Rs (Fix)

**Designation** : Research Associate **Nature of work:** Research

**Employer Name:** Inter University Accelerator Centre (New Delhi)

**Since:** 25/04/2014 to 30/07/2014

**Pay:** 22,000 Rs + 30% HRA

## **AWARDS & Achievements**

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- I. National Eligibility Test for Junior Research Fellowship**  
(NET/JRF) Conducted by UGC-CSIR, India  
Dec. 2008
  - II. Graduate Aptitude test (GATE)----AIR-102(98.06**  
percentile)  
July 2008
  - III. State Teachers Eligibility Test (STET)**  
July 2008
  - IV. National Cadet Corps (NCC)- “C” Certificate**
  - V. National Cadet Corps (NCC)- “B” Certificate**
  - VI. First position in B.Sc. (Govt. College Safidon)**
  - VII. 2<sup>nd</sup> prize in Science Quiz, Kurukshetra University,**  
**Kurukshetra**
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**NO. OF PHD STUDENTS: 03 (THESIS SUBMITTED: 01, PURSUING: 02)**

**NO. OF POST DOC FELLOW: NIL**

**PUBLICATIONS**

	Title	Author name	Volume/page no.	ISSN no.
1	Ion beam-generated surface ripples: new insight in the underlying mechanism	T Kumar, A Kumar, DC Agarwal, NP Lalla, D Kanjilal	Nanoscale research letters 8 (1), 336	1556-276X
2	Fractal characterization of the silicon surfaces produced by ion beam irradiation of varying fluences	RP Yadav, T Kumar, AK Mittal, S Dwivedi, D Kanjilal	Applied Surface Science 347, 706-712	0169-4332
3	Tuning of ripple patterns and wetting dynamics of Si (100) surface using ion beam irradiation	T Kumar, UB Singh, M Kumar, S Ojha, D Kanjilal	Current Applied Physics 14 (3), 312-317	1567-1739
4	Formation of nanodots on GaAs by 50keV Ar <sup>+</sup> ion irradiation	T Kumar, SA Khan, UB Singh, S Verma, D Kanjilal	Applied Surface Science 258 (9), 4148-4151	0169-4332
5	An approach to tune the amplitude of surface ripple patterns	T Kumar, A Kumar, D Kanjilal	Applied Physics Letters 103 (13), 131604	0169-4332
6	Study of electronic sputtering of CaF <sub>2</sub> thin films	Ratnesh K Pandey, Manvendra Kumar, Saif A Khan, Tanuj Kumar, Ambuj Tripathi, DK Avasthi, Avinash C Pandey	Applied Surface Science 289, 77-80	0169-4332
7	Role of ion beam induced solid flow in surface patterning of Si (100) using Ar ion beam irradiation	T Kumar, A Kumar, NP Lalla, S Hooda, S Ojha, S Verma, D Kanjilal	Applied Surface Science 283, 417-421	0169-4332
8	Fabrication of ordered ripple patterns on GaAs(100) surface using 60 keV Ar <sup>+</sup> beam irradiation	T Kumar, M Kumar, S Verma, D Kanjilal	Surface Engineering 29 (7), 543-546	0267-0844
9	Dynamics of modification of Ni/n-GaN Schottky barrier diodes irradiated at low temperature by 200 MeV Ag <sup>14+</sup> ions	A Kumar, T Kumar, A Hähnel, D Kanjilal, R Singh	Applied Physics Letters 104 (3), 033507	0169-4332
10	Dynamic scaling of swift heavy ion induced surface restructuring of BaF <sub>2</sub> thin film	Ratnesh K Pandey, Manvendra Kumar, Tanuj Kumar, Avinash C Yadav, Udai B Singh, Saif A Khan, Ambuj Tripathi, DK Avasthi, Avinash C Pandey	Materials Letters 143, 309-311	0167-577X
11	Energy-separated sequential irradiation for ripple pattern tailoring on silicon surfaces	Tanuj Kumar, Manish Kumar, Vandana Panchal, PK Sahoo, D Kanjilal	Applied Surface Science 357, 184-188	0169-4332
12	Nano-pits on GaAs (100) surface: Preferential sputtering and diffusion	T Kumar, V Panchal, A Kumar, D Kanjilal	Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms 379, 52-56	0168-583X
13	Self-organized nanopatterning of Si (100) surface using ion beam irradiation	Vandana, Tanuj Kumar, Jyoti, Amit Tomar, Indra Sulania, D Kanjilal, Shyam Kumar	AIP Conference Proceedings 2006 (1), 030048	0094-243X (print); 1551-7616 (web)

14	Instabilities in magnetized inhomogeneous plasmas with the effect of recombination	Jyoti, V Joshi, T Kumar	AIP Conference Proceedings 1824 (1), 030009	0094-243X (print); 1551-7616 (web)
15	Nano structuring of GaAs (100) surface using low energy ion irradiation	T Kumar, SA Khan, S Verma, D Kanjilal	AIP Conference Proceedings 1447 (1), 703-704	0094-243X (print); 1551-7616 (web)
16	Silicon Photonics Interfaced with Microelectronics for Integrated Photonic Quantum Technologies: A New Era in Advanced Quantum Computers and Quantum Communications?	Rajeev Gupta, Rajesh Singh, Anita Gehlot, Shaik Vaseem Akram, Neha Yadav, Ranjeet Brajpuriya, Ashish Kumar Yadav, Yongling Wu, Hongyu Zheng, Abhijit Biswas, Ephraim Suhir, Vikram Singh Yadav, Ajay Singh Verma, Tanuj Kumar	Nanoscale, 2023 <a href="https://doi.org/10.1039/D2NR05610K">https://doi.org/10.1039/D2NR05610K</a>	
17	Structural, optical, and electrical properties of V <sub>2</sub> O <sub>5</sub> thin films: Nitrogen implantation and role of different substrates	Tanuj Kumar, Bhanu Priya, Priya Jasrotia, Arun Kumar, Vinamrita Singh, Jehova Jire, Raj Kumar, Pawan Kumar Kulriya	Frontiers in Materials <a href="https://doi.org/10.3389/fmats.2022.1049189">https://doi.org/10.3389/fmats.2022.1049189</a> , 2023	<b>22968016</b>
18	Substrate-dependent fractal growth and wettability of N <sup>+</sup> ion implanted V <sub>2</sub> O <sub>5</sub> thin films	B Priya, P Jasrotia, I Sulania, R Kumar, RK Pandey, T Kumar	Applied Surface Science, 156592, 2023	0169-4332
19	SERS Detection of Rhodamine-6G on Ion Beam Nanostructured Ultra-Thin Gold (Au) Films: A Correlation between Fractal Growth, Water Contact-Angle and Raman Intensity	P Jasrotia, B Priya, R Kumar, P Bishnoi, A Vij, T Kumar	ECS Journal of Solid State Science and Technology, 2023	<b>21628777</b>
20	Gold (Au)-Doped Lead Sulfide-Polyvinyl Alcohol (PbS-PVA) Nanocomposites for High-Performance, Flexible Memristors	S Pathania, JLL Hmar, V Kumar, ON Verma, T Kumar, C Paulsamy	Journal of Electronic Materials, 1-14	0361-5235
21	Projectile's mass-dependent nanopatterning of Si (1 0 0) for different incidence angles	P Chhokkar, S Kumar, V Singh, RK Pandey, T Kumar, S Kumar	Materials Letters 309, 131348, 2022	

#### List of Conference/School/workshop attended:

##### Invited Talk

1. A talk delivered on "Role of amorphous/crystalline (a/c) interface in surface patterning under ion bombardment" in international conference on nano-structuring by ion beam (ICNIB-2015) held at Agra from 23 – 25th November 2015.
2. Invited Talk in International conference on "18th International conference on radiation effects in insulators" held at Jaipur, Rajasthan during 26th Oct.-31th Oct.-2015.
3. Invited talk, National conference Role of mathematical and computer science in advancement of Physics, (RMCSAP 2018) 10-11 nov 2017.
4. Invited Talk in National conference on "Recent Advances in Materials Science and Spectroscopy (NCRAMSS), 15-17 Feb, 2017 held at SMVD university, Katra, J&K
5. Invited talk, National conference RAETP 2018 (April 17-18, 2018), Dept. of Physical & Astronomical science, Central University of Jammu
6. Invited talk in one day acquaintance program on Accelerator based research, 26 march 2018, Dept. of Physical & Astronomical science, Central University of Jammu

### List of Conference/School/workshop organized:

1. Member of organizing Committee for the “Workshop on Vacuum, Plasma and Thin Film Deposition Techniques” held during 22nd – 24th Sep. 2015, organized by Department of Physics, Central University of Haryana, Mahendergarh.
2. Member of organizing Committee for the National conference on Materials for Sustainable Development & New Technology (MSDNT-2017), April 28-29, 2017, held at CUJ, Jammu

### Oral/Poster

3. Participated and present work in form of poster in International conference on “**Swift Heavy Ions in Materials Engineering and Characterization**” held at Inter-University Accelerator Centre (IUAC), Delhi on 6th Oct.-9th Oct.-2010.
4. Participated and presented work in form of paper/oral in International conference “**56th DAE-Solid State Physics Symposium**” held at Manipal University, Manipal from 26-30 Dec, 2010.
5. Participated and presented work in form of poster in International conference on “**Ion-Beam Induced Nano-patterning of Materials (IINM-2011)**” held at Institute of Physics, Bhubaneswar, Orissa on 06-10 February, 2011
6. Participated and presented work in form of oral presentation in International conference on “**Nanostructuring by Ion Beams (NIB 2011)**” held at University of Allahabad, Allahabad, Uttar Pradesh on 17th -19th October, 2011
7. Participated in “**Summer school on Micro-and Nano- Structural Characterization of materials**” Thessaloniki, Greece on July-11-15, 2012.
8. Participated and presented work in form of oral presentation in International conference on “**Swift Heavy Ions in Materials Engineering and Characterization**” held at Inter-University Accelerator Centre (IUAC), Delhi on 9th Oct.-12th Oct.-2012.
9. Attended in International school on “**Ion Beams in Materials Science**” held at Inter-University Accelerator Centre (IUAC), Delhi on 3rd Oct.-8th Oct.-2012.
10. Participated and presented work in form of poster in **8th International Symposium on Swift Heavy Ions in Matter** October 24-27, 2012 Kyoto, **Japan**
11. Attended in International school on “**School on thin films**” held at Inter-University Accelerator Centre (IUAC), Delhi on 11th Dec. - 13th Dec.-2012.
12. Participated in national workshop “**Ion Beams in Materials Research (IBMR 2013)**” held at MNIT, Jaipur on March 22-23, 2013.
13. Participated and presented work in form of oral presentation in International conference on “**International symposium on nano-scale pattern formation at surfaces**” held at Copenhagen, Denmark during 26th May-30th May-2013.
14. Participated in workshop “**Nano Probe Techniques**” held at **IIT Delhi** on July, 14, 2014.
15. Oral presentation, International conference on Ion Beams in Materials Engineering and Characterization (IBMEC-2016), 28th sept -1st Oct 2016, held at IUAC, New Delhi
16. Poster presentation, National conference on Materials for Sustainable Development & New Technology (MSDNT-2017), April 28-29, 2017, held at CUJ, Jammu

### Reference

<b>Dr. D. Kanjilal, (Director)</b>  Inter-University Accelerator Centre, ArunaAsaf Ali Marg, Post Box-10502 Vasant Kunj, New Delhi-110 067,  Email: <a href="mailto:dkiuac@gmail.com">dkiuac@gmail.com</a> ,  Handy:+91-9818077001, Fax: +91-11-2689-3666	<b>Dr. Pratap Kumar Sahoo</b>  Reader in Physics School of Physical Sciences National Institute of Science Education and Research (NISER) Bhubaneswar 751005, Odisha, India  Email: <a href="mailto:pratap.sahoo@niser.ac.in">pratap.sahoo@niser.ac.in</a> ,  Handy:+91-674 2304042,
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Sincerely,  
Tanuj Kumar

