

Dr. Rishi Kant

PhD, Indian Institute of Technology Kanpur, Uttar Pradesh– 208016,

India, Mobile No.: +91 7701809248,

E-mail: rishikt@hbtu.ac.in ,

rishikants.iitk@gmail.com

Scopus Author ID: 57194262260

Orcid.org/0000-0002-6089-5219

Google scholar: <https://scholar.google.co.in/citations?user=w90df7oAAAAJ&hl=en>



Educational Qualification:

Degree/ Branch of study (specialization)	University	Completion Year
PhD/Mechanical Engineering	Indian Institute of Technology Kanpur	2016
M.E./Mechanical Engineering (Production Engineering)	Delhi College of Engineering, University of Delhi (Now DTU (Delhi Technological University))	2007
B. Tech./ Mechanical Engineering	I.E.T , C.S.J. M University Kanpur	2004

Current Employment: :

Dr. Rishi Kant is working as Assistant Professor in Mechanical Engineering Department of Harcourt Butler Technical University, Kanpur since 10 June 2022.

Past Employment: :

- Worked as Assistant Professor and Head of Department (Mechanical Engineering) from 4/10/2018 to 28/12/2019 at Droancharaya Group of Institutions, Greater Noida approved by AICTE, New Delhi
- Worked as Head (Research & Development) & Assistant Professor at Droancharaya Group of Institutions, Greater Noida approved by AICTE, New Delhi.
- Worked as Project Scientist on at DORD, IIT Kanpur, India for 4 years.

Teaching Competence:

- Manufacturing Science and Technology
- Manufacturing Systems
- Bio-MEMS and Mechatronics
- Material Science
- Advanced manufacturing Processes
- Computer aided manufacturing (CAM)
- Micro/Nano fabrication Technologies

Current Area of Research:

- Micro/Nano manufacturing for μ -TAS (Micro Total Analytical systems) applications.
- Dielectrophoretic based cell/beads sorting and counting on chip.
- Fabrication, Characterization of micro/nano-structure materials for Nano energetic applications.
- Miniaturized fluid/particle manipulation for diagnostics application over chip.
- Electro-mechanical shock wave based bacterial cell transformation
- Purification processes for Industrial wastewater treatment

Ph.D. Thesis topic:

“Miniaturized fluid/particle manipulation in hybrid micro devices fabricated with laser micromachining for fluid delivery and diagnostic applications”

Patent filed and Published:

1. “An Integrated Microchip for the Detection of a Biological Cell”, M. Nayak, D. Singh, **Rishi Kant**, R. Gurunath, Shantanu Bhattacharya. Indian Patent Application No: **1787/DEL/2013**, Dated: 17.06.2013, Journal No. 28/2016.
2. “Micropump for fluidic applications”, **Rishi Kant**, A. Verma, N. Kumar, Shantanu Bhattacharya, Indian Patent Application No: **201611005750**, Dated: 18/02/2016, Journal No. 34/2017, Dated 25-08-2017.

Publications in peer reviewed journals:

1. **Rishi Kant**, G. Bhatt, V.K.Patel, A. Ganguli, D. Singh, K. Gangopadhyay, S. Gangopadhyay, G. Ramanathan, Shantanu Bhattacharya, “Synchronized Electromechanical Shock Wave-Induced Bacterial Transformation”, *ACS Omega* vol. 4., no. 5, pp. 8512-8521, 2019.
2. **Rishi Kant**, D. Sigh, S. Bhattacharya, “Digitally controlled portable micropump for transport of live micro-organisms” *Sensors & Actuators: A. Physical* vol. 265, pp. 138-151, 2017.
3. **Rishi Kant**[#], V.K. Patel[#], A. choudhary, M. Painuly, Shantanu Bhattacharya, “Performance characterization of Bi₂O₃/Al nanoenergetics blasted micro-forming system” *Defence Technology* Vol. 15, no. 1, 98-105, 2019. (# equal contribution)

4. P.S. Chauhan, **Rishi Kant**, A. Rai, A. Gupta, Shantanu Bhattacharya, “Facile synthesis of ZnO/GO nanoflowers over Si substrate for improved photocatalytic decolorization of MB dye and industrial wastewater under solar irradiation” *Materials Science in Semiconductor Processing* vol. 89, pp. 6-17,2019.
5. **Rishi Kant**, H. Singh, M. Nayak “Optimization of design and characterization of a novel micro-pumping system with peristaltic motion” *Microsystem Technologies* vol. 19, no. 4 ,pp. 563-575, 2013.
6. **Rishi Kant**, H. Singh, S. Bhattacharya, “Nanoscale etching of particles in serpentine micromixer” *Journal of Nanoscience and Nanotechnology* vol. 17, pp. 1–11, 2017.
7. A. Gupta, P. Sundriyal, A. Basu, K. Manoharan, **Rishi Kant**, S. Bhattacharya, “Nano-finishing of MEMS-based platforms for optimum optical sensing” *Journal of Micromanufacturing* Vol.3(1) 39–53, 2020.
8. G. Bhatt, **Rishi Kant**, K. Singh, K. Yadav, D. Singh, R. Gurunath, “Impact of surface roughness on Dielectrophoretically assisted concentration of microorganisms over PCB based platforms” *Biomedical Microdevices* vol.19 pp. 28,2017.
9. R. K Singh, **Rishi Kant**, M. Asfer, S. S. Pandey, B. Bhattacharya, P. K. Panigrahi, S. Bhattacharya, " Passive Vibration Damping Using Polymer Pads With Microchannel Arrays", *Journal of Microelectromechanical Systems* 22, no. 3 , 695-707,2013.
10. R. K. Singh, **Rishi Kant**, S. Singh, E. Suresh, A. Gupta, S. Bhattacharya, " A novel helical micro-valve for embedded micro-fluidic applications”, *Microfluidics and Nanofluidics* 19, no. 1, pp.19-29, 2015.
11. A. Ghosh, T. Patra, **Rishi Kant**, Rajeev Kumar Singh, Jayant Kumar Singh, Shantanu Bhattacharya, “Surface electrophoresis of ds-DNA across orthogonal surfaces” *Applied Physics Letters* 98, no. 16, pp. 164102, 2011.
12. R. K. Singh, A. Kumar, **Rishi Kant**, Ankur Gupta, E. Suresh, Shantanu Bhattacharya, “ Design and fabrication of 3-dimensional helical structures in polydimethyl siloxane for flow control applications” *Microsystem Technologies* 20, no. 1 ,pp. 101-111,2014.
13. A. Kumar, A. Gupta, **Rishi Kant**, S. N. Akhtar, N. Tiwari, J. Ramkumar, S. Bhattacharya, “Optimization of laser machining process for the preparation of photo masks, and its application to microsystems fabrication”, *Journal of Micro/Nanolithography, MEMS, and MOEMS* 12, no. 4 , pp. 041203-041203, 2013.
14. A. Atwe, A. Gupta, **Rishi Kant**, Mainak Das, Ishan Sharma, Shantanu Bhattacharya, "A Novel Microfluidic switch for pH control using Chitosan based Hydrogels" *Microsystem Technologies* 20, no. 7 ,pp. 1373-1381,2013.
15. M. Nayak, D. Singh, H. Singh, **Rishi Kant**, A. Gupta, S. S. Pandey, S. Mandal, G. Ramanathan and S. Bhattacharya “Integrated sorting, concentration and real time polymerase chain reaction based diagnostic protocol for rapid detection of microorganisms” *Scientific Reports* vol. 3 , pp. 3266, 2013.

16. V. K. Patel, A. Ganguli, **Rishi Kant**, S. Bhattacharya, " Micropatterning of nanoenergetic films of Bi₂O₃/Al for pyrotechnics", *RSC Advances* 5, no. 20 ,pp.14967-14973,2015.
17. S. Yardi, A. Gupta, G. Bhatt, P. Sundriyal, **Rishi Kant**, D. Boolchandani, S. Bhattacharya, "High efficiency coupling of optical fibers with SU8 micro-droplet using laser welding process" *Lasers in Manufacturing and Materials Processing*, Vol 3(3), pp.141-157, 2016.
18. V.K. Patel, D. Singh, **Rishi Kant**, A. Gupta, S. Bhattacharya, "Surface functionalization to mitigate fouling of bio-devices: a critical review" *Reviews of Adhesion and Adhesives* 3, no. 4,pp. 444-478, 2015.
19. A Gupta, VK Patel, R Kant, S Bhattacharya, "Surface Modification Strategies for Fabrication of Nano-biodevices: A Critical Review" *Reviews of Adhesion and Adhesives* vol. 4 ,no. 2,pp. 166-191,2016.

Book Publication

1. "Trends in Fabrication of Polymers and Polymer Composites" Editors: V. K. Patel, Rishi Kant, P. S. Chauhan and Shantanu Bhattacharya, Publisher- **AIP Publishing**, March 2022 Pages:284. ISBN (Print): 978-0-7354-2388-6.

Book Chapters:

1. **Rishi Kant**, Ankur Gupta, S. Bhattacharya, "Studies on CO₂ laser micromachining on PMMA to fabricate micro channel for microfluidic applications" in **Lasers Based Manufacturing**, pp. 221-238. Springer India, 2015.
2. **Rishi Kant**, Geeta Bhatt, Poonam Sundriyal, Shantanu Bhattacharya, "Relevance of Adhesion in Fabrication of Microarrays in Clinical Diagnostics", in **Adhesion in Pharmaceutical Biomedical and Dental Fields**,pp 257-291, **Wiley Publisher 2017** , edited by **Dr. Kash Mittal**.
3. A. Gupta, V.K. Patel, **Rishi Kant**, S Bhattacharya, "Surface Modification Strategies for Fabrication of Nano-biodevices: A Critical Review" in **Progress in Adhesion and Adhesives**, 166-191, **Wiley Publisher 2017**, edited by **Dr. Kash Mittal**.
4. **Rishi Kant**, S. Bhattacharya , "Sensors for Air Monitoring. in **Environmental, Chemical and Medical Sensors. Energy, Environment, and Sustainability**. Springer, Singapore, Bhattacharya S., Agarwal A., Chanda N., Pandey A., Sen A. (eds), ISBN: 978-981-10-7750-0
5. **Rishi Kant**, Pankaj Singh Chauhan, Geeta Bhatt & Shantanu Bhattacharya, (2019). Corrosion Monitoring and Control in Aircraft: A Review. In: Bhattacharya, S., Agarwal, A., Prakash, O., Singh, S. (eds) Sensors for Automotive and Aerospace Applications. Energy, Environment, and Sustainability. Springer ISBN: 978-981-13-3290-6

6. **Rishi Kant.**, Bhattacharya, S. (2018). Sensors for Air Monitoring. In: Bhattacharya, S., Agarwal, A., Chanda, N., Pandey, A., Sen, A. (eds) Environmental, Chemical and Medical Sensors. Energy, Environment, and Sustainability. Springer, Singapore. **ISBN : 978-981-10-7750-0**
7. S. Bhattacharya, A.K. Agarwal, O. Prakash, Singh, S., M. Pandey, **Rishi Kant** (2019). Introduction to Sensors for Aerospace and Automotive Applications. In: Bhattacharya, S., Agarwal, A., Prakash, O., Singh, S. (eds) Sensors for Automotive and Aerospace Applications. Energy, Environment, and Sustainability. Springer, Singapore. **ISBN : 978-981-13-3289-0**
8. **Rishi Kant**, and P. Sundriyal. "Carbon-based Nanomaterials for Perovskite Solar Cells: A Review."(2021): Page 1-12. Carbon Nanostructures Fundamentals to Applications Editors Rajagopalan Thiruvengadathan, Somnath C. Roy, Poonam Sundriyal and S. Bhattacharya **ISBN (Print): 978-0-7354-2308-4**

Conference Proceedings:

1. **Rishi Kant**, A. Ghosh, R. K. Singh, S. Bhattacharya "A novel soft lithography based peristaltic micro-pump, Proceedings on Recent Advances in Micro-Electro-Mechanical Systems" (**RAMEMS-2011**) March 07-09,2011 held at **IIT BHU**, Banaras, pp 261-128, 2011.
2. **Rishi Kant**, A. Gupta, S. Bhattacharya, "Studies on CO₂ laser micromachining on PMMA to fabricate micro channel for microfluidic applications" Proceeding of 5th International and 26th All India Manufacturing Technology, Design and Research Conference (**AIMTDR 2014**) December 12-14, 2014, held at **IIT Guwahati**.
3. A. Kumar, **Rishi Kant**, A. Gupta, Shantanu Bhattacharya, "Fabrication and parameter optimization of CO₂ laser machined photo mask for photolithography process, Proceedings of International conference on Innovations in Design and Manufacturing" (InnDeM 2012) December 05-12-2012 to 07-12-2012 at **PDPM IITDM Jabalpur**.
4. H. Singh, M. Nayak, **Rishi Kant**, R. Gurunath, Shantanu Bhattacharya."A Novel microchip platform to perform real time polymerase chain reaction on whole cell colonies and their nanoconjugates" sixth ISS international conference on smart materials, structures and systems (**ISSS-2012**) January (04-07)2012, at **IISc Bangalore**.
5. R. K. Singh, S. Varanasi, A. Ghosh, **Rishi Kant**, S. Pathak, Bishakh Bhattacharya and Shantanu Bhattacharya. "Passive vibration damping with microstructured viscoelastic laminates, Proceedings on Recent Advances in Micro-Electro-Mechanical Systems" (**RAMEMS-2011**) march 07-09, 2011 held at **IIT BHU**, Banaras, pp 138-140, 2011.

Awards and Honours:

- Biography listed in Marquis Who's Who in the World® 2015 (32nd Edition).
- Won First prize in **Artistic Micrography contest** organized by Institute of Metals & Material advantage at IIT Kanpur in 2015.
- Cash award by Dean of Resource and Planning Generation, IIT Kanpur for publishing research paper in reputed Peer reviewed international journal.
- Received travel grant to present research paper at IISc Bangalore from Mechanical Engineering Department., IIT Kanpur.

- Received travel grant to present research paper at IIT Guwahati from Mechanical Engineering Department., IIT Kanpur.
- Scholarship awarded by Ministry of Human Resource and Development for pursuing PhD
- Scholarship awarded by Ministry of Human Resource and Development for pursuing M.Tech.

Invited Talk/Presentation:

- Delivered a talk on "Micro scale flow control" at **Institute of Nano Science and Technology, Mohali** on 22nd AUGUST 2013.
- Delivered a talk on "Micro scale flow control for diagnostics" at **Indian Institute of Technology, Kanpur** on 13th May 2016.
- Presented paper on "A Novel microchip platform to perform real time polymerase chain reaction on whole cell colonies and their nanoconjugates" at **IISc Bangalore** on January (04-07), 2012.
- Presented paper on "optimization of CO₂ laser machined photo mask for photolithography process" at **PDPM IIT Jabalpur** on December 05-07-2012.
- Presented paper on "A novel soft lithography based peristaltic micro-pump" at **IIT BHU** on March 07-09, 2011.
- Present paper on "Studies on CO₂ laser micromachining on PMMA to fabricate micro channel for microfluidic applications" at **IIT Guwahati** on December 12-14, 2014.

Technical Training:

- July 14-23, 2010 at CEERI PILANI hands on training at **CEERI Pilani, India under NPMASS Program, ADA, Government of India.**
- October 1-2, 2014 India-Trento program for Advanced Research (**ITPAR**) workshop on N/MEMS sensing for Chem, Bio and Agriculture Applications, held at **IIT Bombay, Mumbai.**
- December 5-6, 2013 at **RRCAT, Indore** training program on X-ray lithography.

Other activities:

- Organizer of **Human Value and Professional Ethics course** for UPTU (now Dr. A.P.J. Abdul Kalam Technical University), Lucknow at IIT Kanpur, 2009.
- Volunteer for **counselling service IIT Kanpur** 2013-2014.

Academic activities at IIT Kanpur:

1. Tutor for Introduction to Manufacturing Process (TA 201) for under graduate students during 2011-2012 Ist semester.

2. Provided Teaching assistance in following courses:

- Introduction to Manufacturing Process (TA 201) for under graduate students.
- Manufacturing lab experiments (ME371) for under graduate students.
- Manufacturing Technology (ME 361) for under graduate students.
- Manufacturing Systems (ME461) for under graduate students.
- Bio-Micro electro-Mechanical Systems (ME 774) for both under & post graduate students.
- Provided training to students during **NPMASS workshop** on "**Fabrication and Characterization of Micromixer**" (workshop was conducted by Dr. S. Bhattacharya, Mech. Engg. , IIT Kanpur).

- Worked as Teaching Assistant for NPTEL courses for the following NPTEL courses “BioMEMS and Microsystems” and Manufacturing process Technology and “Microsystems fabrication using advanced manufacturing techniques”.

Other Professional Experience:

- Seven months experience as a Project Associate on ISRO funded project, titled as “Simulation of multi stage deep drawing of inconel-718 for aerospace applications” at **Indian institute of Technology, Delhi, from dated December 2007 to June 2008.**

Place: Kanpur U.P.

Date: 06/07/2022

(Rishi Kant)

BRIEF BIO-SKETCH

Rishi Kant received B.Tech. degree in Mechanical Engineering from University Institute of Engineering and Technology, C. S. J. M. University, Kanpur, India, in 2004 and the M.E. degree in Mechanical Engineering from Delhi College of Engineering, University of Delhi, New Delhi, India, in 2007 (Now DTU, Delhi). He was a Research Assistant with the Design Manufacturing Integration (DFM) Laboratory, Indian Institute of Technology, New Delhi, from 2007 to 2008. He received his Ph.D. degree in Mechanical Engineering from IIT Kanpur, India in 2016. He was awarded for his research contribution by DRPG, IIT Kanpur. He has delivered invited talks at INST Mohali, NIT Durgapur and IIT Kanpur and SNPITRC, Surat, Gujarat in MEMS and Micro/Nanofabrication domain. His research interests include MEMS (Micro electro mechanical systems), Manufacturing and Micro/Nanofabrication techniques for disease diagnostics and environmental applications.

He has served as reviewer for reputed peer reviewed journals such as Sustainable Materials and Technologies, Biomedical Microdevices, Engineering Research Express, Microsystem Technologies etc. He has published 20 international research papers in reputed journals, filed 2 Indian patents, wrote 8 book chapters and Co-Editor of 1 book published by AIP Publishing LLC and presented his work in reputed international conferences. His Google scholar profile has 518 citations with H index 15 and i10-index 20.

Research Publications can be accessed by following link

<https://scholar.google.co.in/citations?user=w90df7oAAAAJ&hl=en>

<https://orcid.org/0000-0002-6089-5219>



Orcid Id [0000-0002-6089-5219](https://orcid.org/0000-0002-6089-5219)

Scopus[®]

Scopus Id [57194262260](https://orcid.org/0000-0002-6089-5219)



Researcher Id [B-4693-2018](https://orcid.org/0000-0002-6089-5219)



Google Scholar Id [w90df7oAAAAJ](https://scholar.google.co.in/citations?user=w90df7oAAAAJ&hl=en)