


## Brief Biodata

**Name: Dr. Mukesh Jewariya**

<b>Designation:</b>	Senior Scientist	
<b>DP No. and Name:</b>	1.02, Length, Dimension and Nano Metrology	
<b>DU No. and Name:</b>	1, Physico-Mechanical Metrology	
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<b>Date of Joining CSIR-NPL:</b>	26/12/2012	
<b>Phone (office)</b>	011-4706-1269	
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### Research Area/ Interest

Optical Frequency Comb, Realization of SI unit Metre, Dimensional Metrology, Terahertz Metrology, THz spectroscopy, 3-Dimensional THz Imaging, High Power THz Generation and Detection, THz communications, THz detectors etc.

### Educational Qualifications

*(Please write latest qualification first)*

Degree	Subject	University/ Institute	Year
D.Sc.	High Power Terahertz	Kyoto University, Japan	2010
M.Tech.	Laser Technology	Devi Ahilya University	2006
M.Sc.	Physics	I.I.T-Roorkee	2003
B.Sc.	PCM	Rajasthan University	2001

### Academic / Research Experience

Grade / Post	Institute	Duration		Research Field
		From	To	
<b>Specially Appointed Researcher, JSPS - Kakenhi</b>	Osaka University- Osaka, Japan	1 <sup>st</sup> January 2011	30 <sup>th</sup> March 2012	Development of ASOPS THz spectroscopy, Development of THz frequency Standard
<b>Assistant Professor</b>	The University of Tokushima- Tokushima, Japan	1 <sup>st</sup> April 2012	24 <sup>th</sup> Dec. 2012	Development of High power THz system, Terahertz 3-D Imaging
<b>Korean Research Fellow ( Brain Pool)</b>	Korea Atomic Energy Research Institute- Daejeon, S. Korea	1 <sup>st</sup> Oct. 2015	28 Feb 2017	High Power THz system development, Real Time THz Imaging

## No. of Publications

No. of Publications in SCI Journals	No. of Publications in non-SCI Journals	No. of Publications in Conference Proceedings	Books	Total
58	3	80+	2	143+

## Selected Publications ( few Selected)

1. **M.Jewariya**, E. Abraham, T. Kitaguchi, Y. Ohgi, M. Minami, T. Araki, and T. Yasui, "Fast three-dimensional terahertz computed tomography using real-time line projection of intense terahertz pulse," **Opt. Express**, Vol. 21, Issue 2, pp. 2423-2433 (2013).
2. **Mukesh. Jewariya**, Masaya Nagai, and Koichiro Tanaka "Ladder Climbing on the Anharmonic Intermolecular Potential in Amino-Acids Microcrystal with Intense Monocycle THz pulse", **Phys. Rev. Lett.** **105,203003 (2010)**
3. **Mukesh. Jewariya**, Masaya Nagai, and Koichiro Tanaka, "Enhancement of terahertz wave generation by cascaded  $\chi^{(2)}$  processes in LiNbO<sub>3</sub>", **J. Opt. Soc. Am. B** **26**, A101 (2009).
4. Masaya Nagai, **Mukesh Jewariya**, Yuki Ichikawa, Hideyuki Ohtake, Toshiharu Sugiura, Yuzuru Uehara, and Koichiro Tanaka, "Broadband and high power terahertz pulse generation beyond excitation bandwidth limitation via  $\chi(2)$  cascaded processes in LiNbO<sub>3</sub>," **Opt. Express** 17, 11543-11549 (2009).
5. Emmanuel Abraham, Yoshiyuki Ohgi, Masa-aki Minami, **Mukesh Jewariya**, Masaya Nagai, Tsutomu Araki, and Takeshi Yasui "Real-time line projection for fast terahertz spectral computed tomography" **Opt. Lett.** Vol. 36, Issue 11, pp. 2119-2121(2011).
6. T. Yasui, K. Kawamoto, Y.-D. Hsieh, Y. Sakaguchi, **M. Jewariya**, H. Inaba, K. Minoshima, F. Hindle, and T. Araki, "Enhancement of spectral resolution and accuracy in asynchronous-optical-sampling terahertz time-domain spectroscopy for low-pressure gas-phase analysis," **Opt. Express** Vol. 20, Iss. 14, pp. 15071–15078 (2012).
7. T.Yasui, **M. Jewariya**, T. Yasuda, M. Schirmer, T. Araki, and E. Abraham, "Real-time two-dimensional spatio-temporal terahertz imaging based on non-collinear free-space electro-optic sampling and application to functional terahertz imaging of moving object," **IEEE J. Selected Topics in Quantum Electron.**, Vol. 19, Issue 1, art. 8600110 (2013).
8. Investigation of dynamic optical behavior of CeO<sub>2</sub> thin film using terahertz spectroscopy **Mukesh Jewariya**, Preetam Singh, Girija Moona, Gauri Shanker, KMK Srivatsa, In Hyung Baek, Young Uk Jeong **Optical Materials** 85, 295-297, 2018.
9. Relevance of dimensional metrology in manufacturing industries Girija Moona, **Mukesh Jewariya**, Rina Sharma **MAPAN** 34 (1), 97-104, 2019.
10. Measurement uncertainty evaluation using Monte Carlo simulation for newly established line scale calibration facility at CSIR-NPLI Girija Moona, Vinod Kumar, **Mukesh Jewariya**, Rina Sharma, Harish Kumar **MAPAN** 34 (3), 325-331, 2019.
11. Single crystal growth of l-tartaric acid and its characterization for optical applications Naghma Khan, N Vijayan, Kopal Shandilya, Ravinder Kumar, Anuj Krishna, Samridhi

- Chopra, Sudha Yadav, Girija Moona, **Mukesh Jewariya** Journal of Materials Science: Materials in Electronics 31 (6), 4494-4502, 2020
12. Sulphamic acid: potential single crystal for nonlinear optical applications Ravinder Kumar, N Vijayan, Naghma Khan, Manju Kumari, **Mukesh Jewariya**, Ritu Srivastava Journal of Materials Science: Materials in Electronics 31 (17), 14271-14278, 2020.
  13. Investigation of cerium oxide thin film thickness using THz spectroscopy for non-destructive measurement Subhash Nimanpure, Guruvandra Singh, Sudha Yadav, Preetam Singh, Girija Moona, **Mukesh Jewariya**, Rina Sharma Journal of Optics, 1-5, 2020.
  14. Synthesis growth and studies on optical, thermal and terahertz analyses of bulk size sodium acid phthalate single crystal: a metal–organic material for nonlinear optical applications Manju Kumari, N Vijayan, Debabrata Nayak, Mahak Vij, Pargam Vashishtha, Subhash Nimanpure, Govind Gupta, **Mukesh Jewariya**, RP Pant Journal of Thermal Analysis and Calorimetry, 1-9, 2020.
  15. Growth and Characterization of Single Crystals of l-Histidine Hydrochloride Monohydrate for Nonlinear Optical Applications Sudha Yadav, Manju Kumari, Debabrata Nayak, Sabyasachi Banerjee, Naghma Khan, Subhash Nimanpure, Girija Moona, Rina Sharma, Bhupendra K Sharma, Dibakar Roy Chowdhury, N Vijayan, **Mukesh Jewariya** Journal of Electronic Materials 49 (12), 7502-7508, 2020.
  16. Progress Towards the Establishment of Various Redefinitions of SI Unit “Metre” at CSIR-National Physical Laboratory-India and its Realization Rina Sharma, Girija Moona, **Mukesh Jewariya** MAPAN, 1-9, 2020.
  17. Investigation of cerium oxide thin film thickness using THz spectroscopy for non-destructive measurement, Subhash Nimanpure, Guruvandra Singh, Sudha Yadav, Preetam Singh, Girija Moona, **Mukesh Jewariya**, Rina Sharma, Journal of Optics 50 (1), 90-94 ( 2021)
  18. Estimation of Error in Distance, Length, and Angular Measurements Using CCD Pixel Counting Technique, Rajeev Dwivedi, Swati Gangwar, Shibu Saha, VK Jaiswal, Ranjana Mehrotra, **Mukesh Jewariya**, Girija Mona, Rina Sharma, Parag Sharma, MAPAN, 1-6 ( 2021)
  19. Investigation of cerium oxide thin film thickness using THz spectroscopy for non-destructive measurement, Subhash Nimanpure, Guruvandra Singh, Sudha Yadav, Preetam Singh, Girija Moona, **Mukesh Jewariya**, Rina Sharma, Journal of Optics 50 (1), 90-94 ( 2021)
  20. Estimation of Error in Distance, Length, and Angular Measurements Using CCD Pixel Counting Technique, Rajeev Dwivedi, Swati Gangwar, Shibu Saha, VK Jaiswal, Ranjana Mehrotra, **Mukesh Jewariya**, Girija Mona, Rina Sharma, Parag Sharma, MAPAN, 1-6 ( 2021)
  21. Dynamic Optical Study of Flexible Multiwall Carbon Nanotube Paper Using Terahertz Spectroscopy Subhash Nimanpure, Animesh Pandey, Guruvandra Singh, Satish Teotia, Sabyasachi Banerjee, Sudhir Husale, Bhanu Pratap Singh, Dibakar Roychowdhury, Manoj Kumar, Rina Sharma, **Mukesh Jewariya**, Journal of Electronic Materials, 1-7 ( 2021)
  22. Uncertainty Evaluation for Frequency Calibration of Helium–Neon Laser Head Using Monte Carlo Simulation G Moona, **M Jewariya**, P Arora, R Sharma, MAPAN, 1-6 (2021)
  23. Elemental, Optical, and Time-Domain Terahertz Spectroscopy Studies on Methyl p-Hydroxybenzoate Single Crystal for THz Applications Debabrata Nayak, N Vijayan, Manju Kumari, Pargam Vashishtha, Sudha Yadav, **Mukesh Jewariya**, Dibakar Roy Chowdhury, Govind Gupta, RP Pant, Journal of Electronic Materials, 1-7 ( 2021)
  24. Investigation of dynamic optical study of Bi<sub>2</sub>Te<sub>3</sub> topological insulators thin film based on MWCNT flexible paper using terahertz spectroscopy Subhash Nimanpure, Animesh Pandey, Guruvandra Singh, Bhanu Pratap Singh, Dibakar Roy Chowdhury, Young Uk Jeong, Rina Sharma, Sudhir Husale, **Mukesh Jewariya** Optical Materials Volume 121

Pages 111490 ( 2021)

25. Nonlinear optical single crystals for terahertz generation and detection, Sudha Yadav, Manju Kumari, Debabrata Nayak, Girija Moona, Rina Sharma, N Vijayan, **Mukesh Jewariya**, Journal of Nonlinear Optical Physics & Materials, 2230001, 2022/1/7.

### Patents

NA

### Current Activities

*(Not more than 100 words)*

**Currently we are working on Realization of SI unit Metre using Optical frequency comb. Development of secondary standard for dimensional metrology and establishment of In-House traceability, Generation and detection of Terahertz, Terahertz detectors based on graphene, Meta materials, Bi<sub>2</sub>Se<sub>3</sub> etc. Growth of crystal for THz. Terahertz spectroscopy of various materials. Establishment of THz frequency standard using THz comb.**

### Honour(s)/Award(s)/ Fellowship(s)

- Council of Scientific & Industrial Research-Junior Research Fellowship (**CSIR–NET**): **July 2006.**
- Graduate Aptitude Test in Engineering (**GATE**), 2003,2006,
- **JEST-2003**
- MHRD-fellowship (SRF) from Indian Institute of Technology Delhi, July 2006- Dec 2006.
- Recipient of **Monbukagashuo fellowship 2007** (April 2007- Sep. 2010) Japanese Govt. Scholarship for PhD., MEXT-JAPAN
- Recipient of **Japanese Society for promotion of Science (JSPS) KAKENHI 2011**
- Recipient of **Korean Research fellowship (KRF), Senior Fellow for 5 years (2015-2017)**
- **Best Poster Award**, 7<sup>th</sup> Asia-pacific Laser symposium, Jeju, S.Korea 11-16<sup>th</sup> may 2010.
- **Best Poster Award**, Japanese Physical society, Osaka Japan, 23-27 June 2008

### Contributions to AcSIR

Teaching: Research methodology, technical writing and communication skill to PhD students

Teaching: Length & Dimensional Metrology to PG diploma ( PMQC)

### Membership of Professional Societies/ Institutions

1. Indian Physics Association (Life Member)

2. Indian Laser Association (Life Member)
3. Optical Society of America (member)
4. Physical society of Japan (member)
5. Applied Physical society of Japan (member)
6. Korean Physical Society ( member)
7. Indian Metrological Society ( Life Member)

**Any other Information**

*(Not more than 100 words)*

**❖ Reviewer of SCI Journals:**

(Phy. Rev. Letters, Optics Express, Opt. Lett., Indian Journal of Optics, applied physics letters, IEEE transaction, Material's Today, Optical Materials, MAPAN etc).