


Brief Biodata

Name: Dr. Satish

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| Designation: | Principal Scientist |  |
| DP No. and Name: | LF, HF Impedance and DC Metrology | |
| DU No. and Name: | Electrical and Electronics Metrology | |
| Email: | singhsp3@nplindia.org , satish.rfic@gmail.com | |
| Date of Joining CSIR-NPL: | 16.09.2009 | |
| Phone (office) | 011-47091176, 011-45608510 | |

Research Area/ Interest

Impedance and DC Metrology, Electro-magnetic, Microwave and Radio Frequency Devices, Instrumentation, Biosensors, Data Acquisition, Instrumentation control, measurement automation, Biomedical Engineering, Quality system IS/ISO/IEC 17025:2017 & 17034:2016, Material properties (Dielectric properties (solid and liquids), Electrolytic conductivity, resistivity and conductivity of metal, alloys, semiconductors and insulators)

Educational Qualifications

(Please write latest qualification first)

| Degree | Subject | University/ Institute | Year |
|------------|------------------------|---|------|
| Ph. D. | Biomedical Engineering | Centre for Biomedical Engineering, Indian Institute of Technology, | 2020 |
| M. Tech | Microwave Electronics | Department of Electronic Science, University of Delhi, South Campus | 2005 |
| M. Sc. | Electronic Science | Department of Electronic Science, University of Delhi, South Campus | 2003 |
| B. Sc. (H) | Electronics | Deen Dayal Upadhaya College, Delhi University | 2001 |

Academic / Research Experience

| Grade / Post | Institute | Duration | | Research Field |
|---------------|--|-----------------|-----------------|--|
| | | From | To | |
| Pr. Scientist | CSIR-National Physical Laboratory, New Delhi | September, 2020 | Present | Establishment, up-gradation and maintenance of Impedance and DC metrology, Material Metrology, biomedical sensor, e-textile, resistive switching, Write-Once-Read-Memory, Volatile and non-volatile memory |
| Sr. Scientist | CSIR-National Physical Laboratory, New Delhi | September, 2016 | September, 2020 | Establishment, up-gradation and maintenance of Impedance and DC metrology, Material Metrology, |

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|------------------------|--|-----------------|-----------------|--|
| | Delhi | | | biomedical sensor |
| Scientist | CSIR-National Physical Laboratory, New Delhi | September, 2012 | September, 2016 | Establishment, up-gradation and maintenance of Impedance and DC metrology, biomedical sensor, Frequency characteristics of high frequency capacitance standards, Data Acquisition, Instrumentation control, measurement automation |
| Jr. Scientist | CSIR-National Physical Laboratory, New Delhi | September, 2009 | September, 2012 | Establishment, up-gradation and maintenance of Impedance and DC metrology, biomedical sensor, Frequency characteristics of high frequency capacitance standards, Data Acquisition, Instrumentation control, measurement automation |
| RF Design Manager | Rancore Technologies Pvt. Ltd. Navi Mumbai | June, 2008 | Sept, 2009 | Design and development of 4G RF Front End Module |
| Senior Design Engineer | SM Wireless Solutions Pvt. Ltd. Nagpur | Dec., 2005 | June, 2008 | Design and development of MMIC, RFIC and MIC modules, development of RF and Microwave low noise and high power amplifiers, circuit simulation, RF and Microwave amplifier testing and measurement |

No. of Publications

| No. of Publications in SCI Journals | No. of Publications in non-SCI Journals | No. of Publications in Conference Proceedings | Books | Total |
|-------------------------------------|---|---|-------|-------|
| 22 | 1 | 4 | 1 | 28 |

Selected Publications

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| [1] | D. Dai, Y. Yang, Satish, and M. Homklintian, "Comparison of Four-terminal-pair 1 pF, 10 pF, 100 pF and 1000 pF; Capacitance Standards at Frequencies of 10 kHz, 100 kHz, 1 MHz and 10 MHz," <i>Metrologia</i> , vol. 59, no. 1A, 2022. |
| [2] | S. P. Khanna, S. Singh, C. K. Suman, and N. Kumar, "ReWORM Memory Effect in PET-Metal Fiber-Based Electroconductive Yarn; ReWORM Memory Effect in PET-Metal Fiber-Based Electroconductive Yarn," <i>IEEE Trans. Electron Devices</i> , vol. 69, no. 8, pp. 4236–4240, 2022. |
| [3] | Satish, K. Sen, and S. Anand, "Analysis of glucose-dependent dielectric properties of aqueous-based solution : A proof of concept," <i>IET Sci. Meas. Technol.</i> , vol. 15, no. April, pp. 562–568, |

2021.

- [4] Satish, K. Sen, and S. Anand, "Demonstration of Microstrip Sensor for the Feasibility Study of Non-invasive Blood-Glucose Sensing," *Mapan-JMSI*, vol. 36, pp. 193–199, 2021.
- [5] S. Singh, S. Kumar, Babita, and T. John, "Realization of Four-Terminal-Pair Capacitors as Reference Standards of Impedance at High Frequency Using Impedance-Matrix Method," *IEEE Trans. Instrum. Meas.*, vol. 66, no. 08, pp. 2129–2135, 2017.
- [6] A. Kumar *et al.*, "National Physical Laboratory demonstrates 1 g Kibble balance: Linkage of macroscopic mass to Planck constant," *Curr. Sci.*, vol. 113, no. 3, pp. 381–382, 2017.
- [7] Satish, Babita, B. Khurana, S. Kumar, and A. K. Saxena, "Evaluation of four-terminal-pair capacitance standards using electrical equivalent circuit model," *Measurement*, vol. 73, pp. 121–126, May 2015.
- [8] Babita, D. K. Sharma, Satish, M. A. Ansari, and A. K. Saxena, "A versatile automation program using LabVIEW for low dc current measurement," *J. Sci. Ind. Res. (India)*, vol. 73, no. 2, pp. 91–94, 2014.
- [9] Satish, M. A. Ansari, and A. K. Saxena, "Determination and Comparison of Temperature Coefficient of Standard Inductors by Measuring Change in Inductance and Resistances," *Mapan-JMSI*, vol. 29, no. 1, pp. 73–76, Jan. 2014.

Patents

NIL

Current Activities

(Not more than 100 words)

- Up-gradation and advances in Impedance and DC Metrology
- Design and development of ultra-precise ac coaxial resistance standards
- E-textile for volatile and non-volatile memory application
- Material Metrology (Dielectric properties for solid and liquid samples, electrolytic conductivity, resistivity and conductivity of metal, alloys, semiconductors and insulators)
- Biomedical Sensor
- Data Acquisition, Instrumentation control, measurement automation
- Co-coordinator for PGD-PMQC affiliated with AcSIR
- Implementation of Quality System

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

NIL

Contributions to AcSIR

Assistant Professor

Co-coordinator for Post Graduation Diploma in Precision Measurement and Quality Control
(Responsibilities: Admission, Examination, Placement and Coordination)

Faculty : AC –DC and Microwave Metrology

Membership of Professional Societies/ Institutions

Metrology Society of India

Any other Information

(Not more than 100 words)

- **Project Investigator: *Feasibility Study of Non-Invasive Blood Glucose Monitoring* funded by SERB-DST [completed in 2018].**
- **Team Member: *Support to SAARC in strengthening regional cooperation and integration in the field of quality infrastructure* funded by PTB-Germany and “*ANSHAANKAN*” funded by SASE-DRDO**
- **Establishment of metrological traceable earth resistance testing facility and providing testing services to research and metrology laboratories at CSIR-NPL as per the requirement**
- **Metrological Traceability has been established for the following parameters:**
 1. **High Frequency capacitance standards upto 30 MHz**
 2. **Dielectric Constant for solid sample materials upto 10 MHz**
 3. **Dissipation factor at 1 kHz**
 4. **Electrolytic conductivity for KCl solutions (BND released)**
 5. **High frequency ac resistance standards upto 1 MHz**
 6. **Earth resistance**
- **Coordinator for International Inter-comparison of high frequency capacitance standards from 10 kHz to 10 MHz (Completed successfully, CMC will be added in coming peer review)**
- **Provided technical support to NBSM, Nepal for the establishment of electricity and magnetism metrology under SAARC-PTB programme**
- **Auditor for quality system IS/ISO/IEC 17025:2017 & 17034:2016**
- **Reviewer: Elsevier – Measurement, Springer – Mapan JMSI, IOPscience - Measurement Science and Technology, IOPscience - Journal of Physics: Energy**
- **25+ B.Tech/B.E/ M.E/ M.Tech student guided for dissertation**