Brief Biodata

Name: Dr. Nidhi Singh

Designation:	**Sr. Pr. Scientist & Head**	
DP No. and Name:	**01 and Physico Mechanical Metrology Division**	
DU No. and Name:	**01 and Mass Metrology**	
Email:	**singhnidhi@nplindia.org**	
Date of Joining CSIR-NPL:	**09.02.2009**	
Phone ***(office)***	**011-47091139**	

Research Area/ Interest

- **Development of Kibble Balance for CSIR-NPL**
- **Development of the rare earth free or reduced rare earth permanent magnetic material**

Educational Qualifications

(Please write latest qualification first)

Degree	Subject	University/ Institute	Year
Ph.D.	**Metallurgical Engineering**	**Dept. of Metallurgical Engg. IIT-BHU**	**2000**
M.Sc.	**Physics (sp. Solid state physics)**	**Dept. of Physics, Banaras Hindu University**	**1996**
B. Sc.	**Physics (Hons.), Maths, Chemistry**	**Faculty of Science, Banaras Hindu University**	**1994**

Academic / Research Experience

Grade / Post	Institute	Duration		Research Field
		From	To	
Sr. Pr. Scientist	**CSIR-National Physical Laboratory**	**16.04.2020**	**Present**	**(1) To establish & maintain the national standards of Mass and related quantities. (2) Dissemination of the standards of mass and related quantities**

				Maintaining the traceability chain of standards in the country. **(3) Research & Development in field of mass and related quantities.**
Pr. Scientist	**-do-**	**17-04-2017**	**04-09-2020**	**-do-**
Pr. Scientist	**-do-**	**04-09-2015**	**16-04-2017**	**Synthesis of Rare-Earth Free Permanent Magnetic Material employing arc melting, Melt spinning, conventional melting, high energy ball milling and spark plasma sintering techniques.**
Sr. Scientist	**-do-**	**17/04/2011**	**16/04/2015**	**-do-**
Scientist	**-do-**	**09/02/2009**	**16/04/2011**	**-do-**
Scientist	**CSIR-National Metallurgical Laboratory**	**17/04/2008**	**08/02/2009**	**Surface nano-crystallization of carbon steels/alloy steels by surface mechanical attrition treatment (SMAT) Surface modification of steels through boronizing**

No. of Publications

No. of Publications in SCI Journals	No. of Publications in non-SCI Journals	No. of Publications in Conference Proceedings	Books	Total
50	**-**	**15**	**4**	**69**

Selected Publications

1. **Coercivity enhancement and magnetic property evaluation of Bi doped Mn_2Sb**
2. **Evaluation of structural and magnetic property of Cr-doped MnBi permanent magnet material**
3. **Martensitic ferromagnetism and spin glass behaviour in $Ni_{47}Mn_{36}Cr_4Sn_{13}$ ribbons**
4. **Magnetic and Magneto-transport Characteristics of Cr-Substituted $Ni_{55}Mn_{34}Sn_{11}$ Thin Films Grown by Magnetron Sputtering**
5. **Influence of wheel speed and ageing on nanostructure and magnetic properties of Cr-doped MnBi magnetic material**
6. **Journey of Kilogram from Physical Constant to Universal Physical Constant (h) via Artefact -A Brief Review**
7. **Influence of cooling rate on the magnetic properties of Hf–Co–Fe–B melt-spun alloy**
8. **Non-isothermal crystallization kinetics and hard magnetic properties of $Hf_{1.5}Zr_{0.5}Co_{10}FeB$ melt-spun ribbons**
9. **Enhancement of hard magnetic properties in rapidly quenched Zr–Co–Fe–B ribbons through vacuum annealing**
10. **Limitation of the Artifact based definition of the Kilogram, its redefinition and realization using Kibble Balance**
11. **Automation of Demonstrational Model of 1 g Kibble Balance using LabVIEW at CSIR-NPL**

Patents

US patent: US9968999-Boron Doped Manganese Antimonide as a Useful Permanent Magnet Material.

Current Activities

(Not more than 100 words)

(1) Research & Development in field of:
- **1.1. Mass and related quantities (Kibble Balance).**
- **1.2. Permanent magnets**

(2) To establish & maintain the national standards of Mass and related quantities.

(3) Dissemination of the standards of mass and related quantities to the user industries or laboratories by calibrating their standard equipment, maintaining the traceability chain of standards in the country.

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

Best paper and best poster awards have been given to my PhD students in several conferences.

Contributions to AcSIR

Teaching : Taking classes for PhD students for the course "Research methodology"

: Taking classes for PMQC students for the subject "Mass Metrology"

PhD students: As guide 4 and as co-guide 2

DAC member for several students. Also contributing in several other committees like, selection committee, project evaluation, review article evaluation etc.

Membership of Professional Societies/ Institutions

Life Member in Metrology Society of India since 2017 (LM-1171)

Any other Information

(Not more than 100 words)

- **Member-APMP Technical committee for Mass**
- **APMP-DEC CMC task force group-Mentor for NBSM Nepal**
- **Member-BIS committee**
- **Work Package lead for Quantum Mass in HCP-55 project. Working toward establishment of Kibble Balance**
- **PI: NWP100, CSIR Integrated Skill Initiative Programme. Conducting training programs for students, research scholars and industry personnel**
- **Participating in various international inter-comparisons on mass and related parameters to prove the international equivalence of CSIR-NPL.**
- **Visited BIPM and NMI Malaysia on deputation**
- **Participated in scientific interaction programs for SAARC NMIs under PTB-SAARC collaborative project**
- **Qualified Assessor of ISO/IEC 17025:2017 of National Accreditation Board of Laboratories, Quality Control of India, Ministry of Science and Technology.**
- **Mentoring students of UG, PG and PhD.**