


## Brief Biodata

**Name: Dr. Preetam Singh**

<b>Designation:</b>	Principal Scientist	
<b>DP No. and Name:</b>	3.04 and Sensor Devices & Metrology	
<b>DU No. and Name:</b>	3 and Environmental Sciences & Biomedical Metrology	
<b>Email:</b>	singhp@nplindia.org	
<b>Date of Joining CSIR-NPL:</b>	25-02-2011	
<b>Phone (office)</b>	+91-11-45608609	

### Research Area/ Interest

Growth of thin films and nanostructures of metal oxides and transition metal chalcogenides for efficient gas sensor devices for the detection of atmospheric pollutant gases.

### Educational Qualifications

*(Please write latest qualification first)*

Degree	Subject	University/ Institute	Year
Ph.D	Condensed Matter Physics (Experimental)	IIT Roorkee, Roorkee, India	2008
M.Sc	Physics	CCS University, Meerut, India	2004
B.Sc	Physics, Chemistry, Maths	NREC College Khurja affiliated to CCS University, Meerut, India	2002
12th	Physics, Chemistry, Maths, Hindi, English	UP board Allahabad, India	1999

### Academic / Research Experience

Grade / Post	Institute	Duration		Research Field
		From	To	
Principal Scientist	CSIR-National Physical Laboratory, India	2019	Till date	Metal oxides and transition metal chalcogenides thin films for gas sensor devices
Senior Scientist	CSIR-National Physical Laboratory, India	2015	2019	Metal oxides thin films for gas sensor devices
Scientist	CSIR-National Physical Laboratory, India	2011	2015	Growth of Poly-Si thin films by HWCVD
Research Associate	IIT Roorkee, India	2009	2009	Functional nanostructures thin films
Post-Doctoral Fellow	Inha University, Incheon, Republic of Korea	2008	2009	Bi-ferrite based multiferroic thin films

## No. of Publications

No. of Publications in SCI Journals	No. of Publications in non-SCI Journals	No. of Publications in Conference Proceedings	Book Chapters	Total
46	7	4	3	60

## Selected Publications

1. A.K. Gangwar, S. Srivastava, R. Godiwal, J. Jaiswal, P. Vashishtha, S. Pal, P. Pal, G. Gupta, P. Singh, Room temperature sputtered nanocrystalline SnO<sub>2</sub> thin films functionalized with Pd nanoparticles for high performance CO gas sensing application, *Optical Materials* 128 (2022) 112362.
2. S. Srivastava, P. Singh, G. Gupta, Transition metal tellurides based gas sensors for efficient sensing at room temperature: Recent progress and prospective, *Micro and Nanostructures* 172 (2022) 207452.
3. A.K. Gangwar, R. Godiwal, S. Srivastava, P. Pal, G. Gupta, P. Singh, Preparation of nanocrystalline Pd/SnO<sub>2</sub> thin films deposited on alumina substrate by reactive magnetron sputtering for efficient CO gas sensing, *Materials Research Bulletin* 148 (2022) 111692.
4. R. Godiwal, A.K. Gangwar, J. Jaiswal, P. Vashishtha, M. Hossain, P. Pal, G. Gupta, P. Singh, Influence of magnetron configurations on the structure and properties of room temperature sputtered ZnO thin films, *Physica Scripta* 96 (2021) 015811.
5. G. Shanker, P. Prathap, K.M.K. Srivatsa, P. Singh, Effect of balanced and unbalanced magnetron sputtering processes on the properties of SnO<sub>2</sub> thin films, *Current Applied Physics* 19 (2019) 697-703.
6. P. Singh, K.M.K. Srivatsa, A. Barvat, P. Pal, X-ray photoelectron spectroscopic studies of CeO<sub>2</sub> thin films deposited on Ni-W (100), c-Al<sub>2</sub>O<sub>3</sub> (0001) and Si (100) substrates, *Current Applied Physics* 16 (2016) 1388-1394.
7. P. Singh, Y.A. Park, K.D. Sung, N. Hur, J.H. Jung, W.S. Noh, J.Y. Kim, J. Yoon, Y. Jo, Magnetic and ferroelectric properties of epitaxial Sr-doped BiFeO<sub>3</sub> thin films, *Solid State Communications* 150 (2010) 431-434.
8. P. Singh, D. Kaur, Room temperature growth of nanocrystalline anatase TiO<sub>2</sub> thin films by dc magnetron sputtering, *Physica B: Condensed Matter* 405 (2010) 1258-1266.
9. P. Singh, A. Kaushal, D. Kaur, Mn-doped ZnO nanocrystalline thin films prepared by ultrasonic spray pyrolysis, *Journal of Alloys and Compounds* 471 (2009) 11-15.
10. P. Singh, D. Kaur, Influence of film thickness on texture and electrical and optical properties of room temperature deposited nanocrystalline V<sub>2</sub>O<sub>5</sub> thin films, *Journal of Applied Physics* 103 (2008) 043507.

## Patents

NA

### **Current Activities**

*(Not more than 100 words)*

His current research activity is focused on the growth of thin films and nanostructures of metal oxides and transition metal chalcogenides using physical vapour deposition (PVD) techniques for the fabrication of efficient gas sensor devices for the detection of atmospheric pollutant gases like CO<sub>x</sub>, NO<sub>x</sub>, etc. Various metal oxides (such as SnO<sub>2</sub>, ZnO, CuO, NiO, etc) based thin films and nanostructures have been prepared using Magnetron sputtering and Thermal evaporation techniques for high sensing performance of CO gas and the further developments are under progress.

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

- Qualified National Eligibility Test (**CSIR-JRF**) in **Physical Sciences** in **2004**.
- Qualified Graduate Aptitude Test in Engineering (**GATE**) in **2004** and **2005**.
- Qualified Uttar Pradesh State Level Eligibility Test (**UP-SLET**) in **2004**.
- Recipient of **Best Poster Prize** in International Conference (**IUMRS-ICAM**) in **2007**.
- Recipient of **Post-Doctoral Fellowship** at Inha University, South Korea in **2008-09**.

### **Contributions to AcSIR**

- Teaching “Physics and Technology of Thin Films” course to Ph.D. students.
- Supervisor/Co-supervisor of 06 Ph.D students registered under AcSIR.

### **Membership of Professional Societies/ Institutions**

- Life Member of Metrology Society of India (MSI) since 2020.

### **Any other Information**

*(Not more than 100 words)*

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