


Brief Biodata

Name: Dr. Sangeeta Sahoo

Designation:	Sr. Principal Scientist	
DP No. and Name:	2.04: Quantum Nanophotonics Metrology Section & 2.01: LF, HF Impedance and DC Metrology Section	
DU No. and Name:	DU#2: Electrical & Electronics Metrology	
Email:	sahoos@nplindia.org	
Date of Joining at CSIR-NPL:	September 02, 2011	
Phone (office)	(11)-4560-8689	

Research Area/ Interest

- ❖ Quantum Transport through low dimensional systems
- ❖ Quantum phase slip and phase fluctuations in reduced dimensional superconductor
- ❖ Quantum current metrology
- ❖ Quantum nanophotonics

Educational Qualifications

(Please write latest qualification first)

Degree	Subject	University/ Institute	Year
PhD	Condensed Matter Physics	University of Basel, Switzerland	2005
M. Sc.	Physics (Electronics)	University of Kalyani, West Bengal, India	1999
B. Sc.	Physics (Hons.)	University of Kalyani, West Bengal, India	1997

Academic / Research Experience

Grade / Post	Institute	Duration		Research Field
		From	To	
Sr. Principal Scientist	CSIR-NPL	11-07-2020	Till date	Quantum current metrology and quantum nanophotonics
Principal Scientist	CSIR-NPL	11-07-2015	10-07-2020	Quantum current metrology
Senior Scientist	CSIR-NPL	11-07-2012	10-07-2015	Quantum current metrology
QHF Scientist	CSIR-NPL	02-09-	10-07-	Quantum fluctuations in superconducting

		2011	2012	nanowires
Postdoctoral Fellow	Ecole Polytechnic Federal de Lausanne (EPFL), Switzerland	01.03.2009	31.12.2009	Quantum transport through graphene and 2D layered materials
Postdoctoral Research Associate	Rensselaer Polytechnic Institute (RPI), USA	01.05.2006	28.02.2009	Synthesis and transport through carbon based materials like graphene and carbon nanotubes (Supervisor: Prof. P. M. Ajayan)
Postdoctoral Fellow	Swiss Federal Institute, Zurich (ETHZ), Switzerland	01.01.2006	31.03.2006	Quantum transport through 2DEG (Supervisor: Prof. Klaus Ensslin)

No. of Publications:

No. of Publications in SCI Journals	No. of Publications in non-SCI Journals	No. of Publications in Conference Proceedings	Books	Total
20	—	—	—	20

Selected Publications

1. D. Sawle, S. Husale, S. Yadav, B. Gajar, V. P. S. Awana and **S. Sahoo***, “Accessing Phase Slip Events in Nb Meander Wires”, *Superconductor Science and Technology*, **34**, 125016 (2021).
2. S. Yadav, V. Kaushik, M.P. Saravanan, R.P. Aloysius, V. Ganesan and **S. Sahoo***, “A robust nitridation technique for fabrication of disordered superconducting TiN thin films featuring phase slip events”, *Scientific Reports* **11**, 7888 (2021).
3. S. Yadav and **S. Sahoo***, “Interface study of thermally driven chemical kinetics involved in Ti/Si₃N₄ based metal-substrate assembly by X-ray photoelectron spectroscopy.”, *Applied Surface Science*, **541**, 148465, (2021)
4. B. Gajar, S. Yadav, D. Sawle, K. K. Maurya, A. Gupta, R. P. Aloysius and **S. Sahoo***, "Substrate mediated nitridation of niobium into superconducting Nb₂N thin films for phase slip study", *Scientific Reports*, **9**, 8811 (2019)
5. S. Yadav, A. Sharma, B. Gajar, M. Kaur, D. Singh, S. Singh, K. K. Maurya, S. Husale, V. N. Ojha and **S. Sahoo***, “Substrate Mediated Synthesis of Ti–Si–N Nano-and-Micro Structures for Optoelectronic Applications”, *Advanced Engineering Materials* **21**, 1900061

(2019). (The story of the above article has been appeared on the *cover page* of the journal's issue from July, **2019**.)

6. S. Kazim, A. Sharma, S. Yadav, B. Gajar, L. M. Joshi, M. Mishra, G. Gupta, S. Husale, A. Gupta, **S. Sahoo*** and V. N. Ojha, "Light Induced Electron-Phonon Scattering Mediated Resistive Switching in Nanostructured Nb Thin Film Superconductor", *Scientific Reports* **7**, 881(2017). (The above article has been selected for publication in *Virtual Journal of Nanoscale Science & Technology*.)

*Corresponding author

7. A. Bawa, A. Gupta, S. Singh, V.P.S. Awana and **S. Sahoo***, "Ultrasensitive interplay between ferromagnetism and superconductivity in NbGd composite thin films", *Scientific Reports* **6**, 18689 (2016).

8. A. Bawa, R. Jha and **S. Sahoo***, "Tailoring phase slip events through magnetic doping in superconductor-ferromagnet composite films", *Scientific Reports* **5**, 13459 (2015)

9. **S. Sahoo***, S. Husale, S. P. Karna, and P. M. Ajayan, "Controlled Assembly of Ag Nanoparticles and Carbon Nanotube Hybrid Structures for Biosensing", *J. Am. Chem. Soc.*, **133**, 4005 (2011).

10. M.M. Benameur, B. Radisavljevic, **S. Sahoo**, H. Berger, and A. Kis,, "Visibility of dichalcogenide nanolayers", *Nanotechnology* **22**, 125706 (2011).

11. S. Husale ^(a), **S. Sahoo** ^(a), A. Radenovic, F. Traversi, P. Annibale, and A. Kis,, "ssDNA Binding Reveals the Atomic Structure of Graphene", *Langmuir*, **26**, 18078, (2010)

^(a) *equal contribution.*

12. G. Mallick, M. Griep, S. Lastella, **S. Sahoo**, S. Hirsch, P. M. Ajayan, and S. P. Karna, "Diode-Like Properties of As-Grown Chemical Vapor Deposited Single-Walled Carbon Nanotubes", *J. Nanoscience and Nanotechnology*, **10**, 6062-6066 (2010)

13. **S. Sahoo***, S. Husale, B. Colwill, T. -M. Lu, S. K. Nayak, and P. M. Ajayan, "Electric Field Directed Self-Assembly of Cuprous Oxide Nanostructures for Photon Sensing", *ACS Nano* **3**, 3935 (2009). (The story of the above article has been appeared on the *cover page* of the journal's issue from December, **2009**.)

14. **S. Sahoo***, R. Maranganti, S. Lastella, G. Mallick, S. Karna, P. Sharma, and P. M. Ajayan, "Reversible Separation of Single Walled Nanotubes in Bundles", *Appl. Phys. Lett.* **93**, 083120 (2008). (The above article has been selected for publication in *Virtual Journal of Nanoscale Science & Technology*.)

15. S. Kaur, **S. Sahoo**, P.M. Ajayan and R. Kane, "Capillarity-Driven assembly of Carbon Nanotubes on substrates into Dense Vertically Aligned Arrays", *Adv. Mater.* **19**, 2984 (2007).

16. A. Cottet, T. Kontos, **S. Sahoo**, H. T. Man, M. -S. Choi, W. Belzig, C. Bruder, A. F. Morpurgo, and C. Schönenberger, "Nanospintronics with Carbon Nanotubes", *Semicond. Sci. Technol.* **21**, S78 (2006).

17. **S. Sahoo**, T. Kontos, J. Furer, C. Hoffmann, M. Graeber, A. Cottet and C. Schönenberger, "Electric Field Control of Spin Transport", *Nature Physics* **1**, 99 (2005).

18. **S. Sahoo**, T. Kontos, C. Schönenberger, and C. Sürgers, "Electrical spin injection in multi-wall carbon nanotubes with transparent ferromagnetic contacts", *Appl. Phys. Lett.* **86**,

112109 (2005). (The above article has been selected for publication in **Virtual Journal of Nanoscale Science & Technology**.)

19. B. Babic, J. Furer, **S. Sahoo**, Sh. Farhangfar, and C. Schönenberger, “Intrinsic thermal vibrations of suspended doubly clamped single-wall carbon nanotubes”, *Nano Letters* **3**, 1577 (2003).

20. **S. Sahoo** and A. Roy, “Elastic strain at the interface in Ge clusters on Si substrate – a Raman spectroscopic measurement”, *J. Phys. and Chem. of Solids* **64**, 361 (2003).

Current Activities

(Not more than 100 words)

- (i) Quantum transport through superconducting thin films: Exploring 2D superconductivity, Weak localization, electron-electron interaction, superconducting fluctuations, quantum phase transition and other fundamental physics related phenomena in reduced dimension
- (ii) Quantum phase slip in superconducting nanostructures: Towards the establishment of quantum current standard
- (iii) Quantum Nanophotonics: Superconducting nanowire single photon detector (SNSPD)

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

G. Mallick, M. Griep, S. Lastella, **S. Sahoo**, S. Hirsch, P. M. Ajayan, and S. P. Karna, Current Rectification by As-Grown Chemical Vapor Deposited Single-Walled Carbon Nanotubes, **Awarded as the best paper in Nanotechnology category and overall second best (Bronze medal for each author)** by 26th Army Science Conference at Orlando, FL, USA in 2010.

Contributions to AcSIR

Supervising PhD students

Membership of Professional Societies/ Institutions

Editorial Board Member for the journal *Scientific Reports* under *Nature Publishing Group* (NPG).

Any other Information

(Not more than 100 words)

Field of expertise: Experimental condensed matter Physics, Electronics, Spintronics, Superconductivity, Thin films, Device Physics, Nanofabrication using state-of-the earth facilities, Low temperature physics, electrical transport measurements down to mK temperature and at high magnetic field, Ultra high vacuum physical vapor deposition etc.