


## Brief Biodata

**Name: Dr. R.P. Aloysius**

<b>Designation:</b>	Sr. Pr. Scientist	
<b>DP No. and Name:</b>	#2.04, Quantum Nanophotonics Metrology	
<b>DU No. and Name:</b>	DU#2, Electrical and Electronics Metrology	
<b>Email:</b>	alosp@nplindia.org	
<b>Date of Joining CSIR-NPL:</b>	20.02.2006	
<b>Phone (office)</b>	011-45608356	

### Research Area/ Interest

Superconductivity, Magnetism, Quantum Transport, Single Photon Detection and counting

### Educational Qualifications

*(Please write latest qualification first)*

Degree	Subject	University/ Institute	Year
Ph.D.	Physics	Cochin University of Science and Technology (CUSAT Cochin, Kerala)	2002
M.Sc.	Physics	University of Kerala	1996
B.Sc.	Physics	University of Kerala	1994
P.D.C.	-	University of Kerala	1991
S.S.L.C	-	Board of Public Examinations Kerala	1989

### Academic / Research Experience

Grade / Post	Institute	Duration		Research Field
		From	To	
Sr. Pr. Scientist	CSIR-NPL	20.02.2020	Till Date	Superconductivity and Quantum Transport
Pr. Scientist	CSIR-NPL	20.02.2014	19.02.2020	Superconductivity and Quantum Transport
Sr. Scientist	20.02.2010	19.02.2014	CSIR-NPL	Magnetism, Magnetic Standards and Quantum Transport
Scientist	20.02.2006	19.02.2010	CSIR-NPL	Magnetism and Magnetic Standards

Research Associate	2002	2006	CSIR-NIIST, TVM	Superconductivity(HTS Conductors)
Senior Research Fellow	2000	2002	CSIR-NIIST, TVM	Superconductivity (HTS Conductors)
Junior Research Fellow	1997	2000	CSIR-NIIST, TVM	Superconductivity (HTS Conductors)

### No. of Publications

No. of Publications in SCI Journals	No. of Publications in non-SCI Journals	No. of Publications in Conference Proceedings	Books	Total
65		30	1	96

### Selected Publications

- Kumar, Abhishek; Husale, Sudhir; Pandey, Himanshu; Yadav, Mahesh Gaurav; Yousuf, Majid; Papanai, Girija Shankar; Gupta, Anurag; Aloysius, RP  
“On the switching current and the re-trapping current of tungsten nanowires fabricated by Focused Ion Beam (FIB) technique”, Engineering Research Express 3(2), p25017, 2021(IOP Publishing)
- Yadav, Sachin; Kaushik, Vinay; Saravanan, MP; Aloysius, RP; Ganesan, V; Sahoo, Sangeeta;  
“A robust nitridation technique for fabrication of disordered superconducting TiN thin films featuring phase slip events”, Scientific reports 11 (1), 01-Dec, 2021, Nature Publishing Group
- Yadav, Reena; Bhattacharyya, Biplab; Pandey, Animesh; Kaur, Mandeep; Aloysius, RP; Gupta, Anurag; Husale, Sudhir;  
“Accessing topological surface states and negative MR in sculpted nanowires of Bi<sub>2</sub>Te<sub>3</sub> at ultra-low temperature”, Journal of Physics: Condensed Matter 33(8) 85301, 2020, IOP Publishing
- Aloysius, RP; Husale, Sudhir; Kumar, Abhishek; Ahmad, Farhan; Gangwar, AK; Papanai, Girija Shankar; Gupta, Anurag;  
“Superconducting properties of tungsten nanowires fabricated using focussed ion beam technique”, Nanotechnology, 30(40), 405001, 2019, IOP Publishing
- Bhattacharyya, Biplab; Singh, Bahadur; Aloysius, RP; Yadav, Reena; Su, Chenliang; Lin, Hsin; Auluck, S; Gupta, Anurag; Senguttuvan, TD; Husale, Sudhir;  
“Spin-dependent scattering induced negative magnetoresistance in topological insulator Bi<sub>2</sub>Te<sub>3</sub> nanowires Scientific reports, 9(1), 01-Oct, 2019, Nature Publishing Group
- Gajar, Bikash; Yadav, Sachin; Sawle, Deepika; Maurya, Kamlesh K; Gupta, Anurag; Aloysius, RP; Sahoo, Sangeeta;  
“Substrate mediated nitridation of niobium into superconducting Nb<sub>2</sub>N thin films for phase slip study”, Scientific reports, 9(1), 01-Nov, 2019, Nature Publishing Group

7. A Saini, K Kumar, MM Sharma, RP Aloysius, VPS Awana  
“Growth, Structure, Micro-structure and Magneto-transport of an Easy Route Synthesized Bulk Polycrystalline TiSe<sub>2</sub>”, Journal of Superconductivity and Novel Magnetism, 1-5, 2022

### **Patents**

- U. Syamaprasad, R.G. Abhilash Kumar, K. Vinod, R. P. Aloysius, P. M. Sarun  
“Method for continuous production of MgB<sub>2</sub> based superconductors” 7456134, (Ref. No: 0185NF2005) 19/08/2008 US Patent,(Awarded)

### **Current Activities**

*(Not more than 100 words)*

- R&D on the development of single photon detection based on superconducting nanowires
- R&D on the development of Quantum Current Standard based superconducting nanowires
- R&D on the development of ultra-low current measurements and standardisation
- R&D on the measurement standards for electrical and electronics metrology
- Quantum Transport on 2D and 1D structures and hetero-interfaces

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

1. V. Sivarama Krishna Iyer Gold Medal University of Kerala 1996 (M.Sc. Physics)
2. V.S. Subramonia Aiyer Gold Medal, University of Kerala 1996 (M.Sc. Physics)

### **Contributions to AcSIR**

- AcSIR Faculty for Course Work on “Superconductivity and Magnetism”
- As Associate Professor with AcSIR, supervising Research Scholars for their Doctoral Degree

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

Life Member: Metrology Society of India

### **Any other Information**

*(Not more than 100 words)*

Our group is focused on the realisation of Quantum Electrical Standards for ‘Ampere’, Single photon detection based on superconducting nanowires (SNSPD), Standardisation for single photon detectors, apart from research on superconductivity and magnetism, we also have R&D programmes on Quantum Transport in 2D and 1D structures.