Brief Biodata

Name: Dr. Anjana Dogra

Designation:	Senior Principal Scientist
DP No. and Name:	2.05, 2D Physics and Quantum Metrology Section
DU No. and Name:	2; Electrical and Electronics Metrology Division
Email:	anjanad@nplindia.org
Date of Joining CSIR-NPL:	07/05/2008
Phone *(office)*	011-45721097
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Research Area/ Interest

Oxide heterostructures, Thin films by Pulsed laser deposition, Low temperature physics and Magnetic materials

Educational Qualifications

(Please write latest qualification first)

Degree	Subject	University/ Institute	Year
Ph. D	PHYSICS	Himachal Pradesh University & Inter University Accelerator Centre	2005
M. Phil	PHYSICS	Saurashtra University	2000
M. Sc	PHYSICS	Saurashtra University	1999
B. Sc	Maths, Physics, Chemistry	Osmania University	1996

Academic / Research Experience

Grade / Post	Institute	Duration		Research Field
		From	To	
Senior Principal Scientist	CSIR-NPL	07/05/2022	Continuing	Quantum Materials
Principal Scientist	CSIR-NPL	07/05/2016	06/05/2022	Quantum Materials
Senior Scientist	CSIR-NPL	07/05/2012	06/05/2016	Physics of Low Dimensional Oxide hetero-interfaces
Scientist C	CSIR-NPL	07/05/2008	06/05/2012	Synthesis & Characterization of Artificially Tailored Oxide Heterostructure
Scientific Officer D	BARC, Mumbai	October 2007	May 2008	Giant Magnetoresistance in alloys and Colossal Magnetoresistance in bulk materials
Dr. K. S. Krishnan Research Associate	BARC, Mumbai	2006	2007	Giant Magnetoresistance in alloys and Planar Hall effect

No. of Publications in SCI Journals	No. of Publications in non-SCIJournals	No. of Publications in Conference Proceedings	Books	Total
64	Nil	More than 50		

Selected Publications

1. Shikha Shrivastava, Debashrita Mahana, Simran Nehra, Sunil Gangwar , Sandeep Singh, C.S. Yadav, Se nthil Kumar Muthusamy, **Anjana Dogra**; Sensors and Actuators B: Chemical, 400, Part B, 134882 (2024). https://doi.org/10.1016/j.snb.2023.134882
2. Artificial Tailoring of MI transition at LAO/STO interface with SrSnO3 buffer layer, Simran Nehra , Shikha Srivastava, Sunil Gangwar, C. S. Yadav, A Arora, V K Malik, **Anjana Dogra**; Material Chemistry and Physics, 311, 128513 (2024) https://doi.org/10.1016/j.matchemphys.2023.128513
3. Effect of growth parameters on conducting CaxTayO3-δ/SrTiO3 interface, Sumit Kumar , Simran Nehra, Sumit Kumar, Shikha Srivastava, A. Rathi, K. K. Maurya, Sunil Ojha , Sonu Chhillar, C. S. Yadav, Vipin Chawla, **Anjana Dogra**, Journal of Physics D: Applied Physics 57, 055303(2023) **DOI** 10.1088/1361-6463/acfcc5
4. Temperature-dependent Dielectric Measurements and Structural Properties of Barium Stannate ($BaSnO_3$), Shikha Shrivastava, Simran Nehra,Sumit kumar, Jasveer Singh , Sudhindra Rayaprol, Shovit Bhattacharya, Ashok Kumar, Nita Dilawar Sharma, **Anjana Dogra**, J. Alloys Compd, 957 (2023) 170458.
5. Suppression of conductivity by 1uc buffer layer at LAO/STO interface, Simran Nehra, Sumit Kumar, Shikha Shrivastava , Sonu Chhillar, C. S. Yadav, **Anjana Dogra**; Physica B, 660 (2023) 414871.
6. Anomalous conducting heterointerface of non-stoichiometric $Ca_xTa_yO_{3+\delta}/SrTiO_3$, Sumit Kumar, D S Rana, Biswarup Satpati, Sunil Ojha, Bhasker Gahtori, J. J. Pulikkotil, **Anjana Dogra**; J. Alloys Compd 876 (2021) 160064
7. $LaScO_3/SrTiO_3$: A conducting polar heterointerface of two 3d band insulating perovskites, Sumit Kumar, Jyoti Kaswan, Biswarup Satpati, A. K. Shukla, Bhasker Gahtori, J. J. Pulikkotil, **Anjana Dogra** ; Appl. Phys. Lett. 116, 051603 (2020)
8. Effect of spin-orbit interaction on the vortex dynamics in $LaAlO_3/SrTiO_3$ interfaces near the superconducting transition, Gopi Nath Daptary, Hemanta Kumar Kundu, Pramod Kumar, **Anjana Dogra**, Narayan Mohanta, A. Taraphder, and Aveek Bid; Phys. Rev. B. 100, 125117 (2019)
9. Nonlinear I-V characteristics of two-dimensional superconductors: Berezinskii-Kosterlitz-Thouless physics versus inhomogeneity, G. Venditti, J. Biscaras, S. Hurand, N. Bergeal, J. Lesueur, **A. Dogra**, R. C. Budhani, Mintu Mondal, John Jesudasan, Pratap Raychaudhuri, S. Caprara, and L. Benfatt; Phys. Rev. B. 100, 064506 (2019)
10. Effect of multiband transport on charge carrier density fluctuations at the $LaAlO_3/SrTiO_3$ interface, Gopi Nath Daptary, Pramod Kumar, Anjana Dogra, Aveek Bid; Phys. Rev. B. 98, 035433 (2018)
11. Competition between electron pairing and phase coherence in superconducting interfaces, G. Singh, A. Jouan, L Benfatto, F. Couedo, P Kumar, **A. Dogra**, R. Budhani, S. Caprara, M. Grilli, E. Lesne, A Barthélémy, M. Bibes, C. Feuillet-Palma, J. Lesueur, and N. Bergeal, Nature Communications 9: 407 (2018).
12. Effect of Oxygen Pressure on Structural and Magnetic Properties of Nd_2NiMnO_6 Thin Films Grown on Different Substrates, Geetanjali Singh, Pooja Singh, R. J. Choudhary, **Anjana Dogra**, J. Alloys Compd 739, 586-589 (2018).
13. Temperature dependent space charge limited conduction in $BaTiO_3$ heterojunctions, Pooja Singh, P. K. Rout, Himanshu Pandey, **Anjana Dogra**, Journal of Material Science 53, 4806-4813 (2018).
14. Effect of disorder on superconductivity and Rashba spin-orbit coupling in $LaAlO_3/SrTiO_3$ interfaces, G. Singh,A. Jouan,S. Hurand,C. Feuillet-Palma,P. Kumar, **A. Dogra**, R. Budhani, J. Lesueur,and N. Bergeal Phys. Rev. B. 96, 024509 (2017).
15. Observation of transient superconductivity at the $LaAlO_3/SrTiO_3$ interface; Gopi Nath Daptary, Shelender Kumar, Aveek Bid, Pramod Kumar, **Anjana Dogra**, R. C. Budhani, Dushyant Kumar, N. Mohanta, A. Taraphder, Phys. Rev. B. 95, 174502 (2017).
16. Ferroelectric Memristive behavior in $BaTiO_3$/Nb doped $SrTiO_3$ heterojunctions, Pooja Singh, P. K. Rout, Manju Singh, R. K. Rakshit, **Anjana Dogra**, Thin Solid Films 643, 60-64 (2017)
17. Correlated non-Gaussian phase fluctuations in $LaAlO_3/SrTiO_3$ heterointerface, Gopi Nath Daptary, Shelender Kumar, Pramod Kumar, **Anjana Dogra**, N. Mohanta, A. Taraphder, and Aveek Bid; Phys. Rev. B. B 94, 085104 (2016)
18. Non-linear polaronic conduction in magnetite nanowires, Pooja Singh, P. K. Rout, Sudhir Husale, Anurag Gupta, Manju Singh, R. K. Rakshit and **Anjana Dogra**; Journal of Magnetism and Magnetic Material 419 (2016) 566.
19. Photo-resistive properties of $LaAl_{0.6}Cr_{0.4}O_3/SrTiO_3$heterostructures: a comparative study with $LaAlO_3/SrTiO_3$, Aswin V, Pramod Kumar, Prabir Pal, **Anjana Dogra**, Optics letters, 41 (2016) 1134.

20. Retentivity of spin state transitions in $LaCoO_3$ with chemical disorder, Aswin V, **Anjana Dogra**, Anurag Gupta, J. J. Pulikkotil, RSC Adv,6, 1403 (2016).
21. Thickness dependent charge transport in ferroelectric $BaTiO_3$ heterojunctions, Pooja Singh, P. K. Rout, M. Singh, R. K. Rakshit, **Anjana Dogra**, J. Appl. Phys. 118 (2015) 114103.
22. Pulsed Laser Deposited $LaInO_3$ Thin Films and Their Photoluminescence Characteristics, Ch. Sandeep Kumar, Aswin V, Pramod Kumar, Pooja Singh, D. Haranath, P. K. Rout, **Anjana Dogra**, Journal of Luminescence 166 (2015) 244.
23. Fiber optic transport probe for Hall measurements under light and magnetic field at low temperatures:Case study of a two dimensional electron gas, P.P.S. Bhadauria, Anurag Gupta, Pramod Kumar, **Anjana Dogra**, R. C. Budhani, Rev. of Scientific Instruments 86 (2015) 056107.
24. Electronic reconstruction guided metal to insulator transition in $LaAl_{1-x}Cr_xO_3/SrTiO_3$ oxide hetero-structures, Pramod Kumar, Prabir Pal, A. K. Shukla, J. J. Pulikkotil and **Anjana Dogra**, Phys. Rev. B. 91 (2015) 115127.
25. Enhanced spin–orbit coupling and charge carrier density suppression in $LaAl_{1-x}Cr_xO_3/SrTiO_3$ hetero-interfaces, Pramod Kumar, **Anjana Dogra**, P.P.S. Bhadauria, Anurag Gupta, K.K. Maurya, R. C. Budhani, J. Phys.: Condens. Matter 27(2015) 125007.
26. Influence of Al doping in $LaCoO_3$ on structural, electrical and magnetic properties, Aswin V, Pramod Kumar, Pooja Singh, Anurag Gupta, S. Rayaprol, **Anjana Dogra**, J Mater Sci 50 (2014) 366.
27. Chemical potential shift and pseudogap behavior in $SrTiO_3$ revealed by photoemission spectroscopy, Prabir Pal, Pramod Kumar, Aswin V, **Anjana Dogra**, Amish G. Joshi; J. Appl. Phys. 116 (2014) 053704 DOI: 10.1063/1.4892397
28. Pin hole mediated electrical transport across $LaTiO_3/SrTiO_3$ and $LaAlO_3/SrTiO_3$ oxide hetero-structure, Pramod Kumar, **Anjana Dogra**, Vijay kumar Toutam; Appl. Phys. Lett. 103 (2013) 211601.
29. Planar Hall Effect in Electrodeposited CoCu/Cu multilayer, **Anjana Dogra**, P. Chowdhury, S.K. Ghosh, S.K. Gupta and G. Ravikumar, Appl. Phys. A 111 (2013) 323-328.
30. Magnetic and magnetoresistance studies of the evolution of the magnetic layer structure with Co layer thickness in electrodeposited Co-Cu/Cu multilayers, S. K. Ghosh, Prashanta Chowdhury and **Anjana Dogra**; Journ. Magn. Magn. Mater. 327 (2013) 121.
31. Structural and magnetization studies on nanoparticles of Nd doped Fe_2O_3, Gaurav Goel, **Anjana Dogra**, S. Rayaprol, S.D. Kaushik, V. Sirugiri, H. Kishan; Mat. Chem. Phys. 134 (2012) 133.
32. Energetics and electronic structure of La/Sr disorder at the interface of $SrTiO_3/LaTiO_3$ heterostructure, J. J. Pulikkotil, S. Auluck, Pramod Kumar, **Anjana Dogra**, and R. C. Budhani; Appl. Phys. Lett. 99 (2011) 081915
33. Neutron diffraction and magnetization study of $La_{0.7}Ca_{0.3}FeO_3$, **Anjana Dogra**, Neeraj Kumar, V.P.S. Awana, S. Rayaprol, S. D. Kaushik, V. Siruguri and H. Kishan; J. Appl. Phys. 109 (2011) 07E132.
34. Influence of chemical pressure on the magnetism of $Pr_{0.7}Ca_{0.3-x}Sr_xMnO_3$ (x = 0.0 - 0.3), **Anjana Dogra**, Sudhindra Rayaprol, P D Babu, G Ravi Kumar, S K Gupta, J. Alloy Compd. 493 (2010) L19-L24.
35. Structural evolution and giant magnetoresistance in electrodeposited Co-Cu/Cu multilayers, P. Chowdhury, S. K. Ghosh, **Anjana Dogra**, G. K. Dey, Yashwant G. Gowda, S. K. Gupta, G. RaviKumar, A. K. Grover and A. K. Suri, Phys. Rev. B. 77 (2008) 134441.

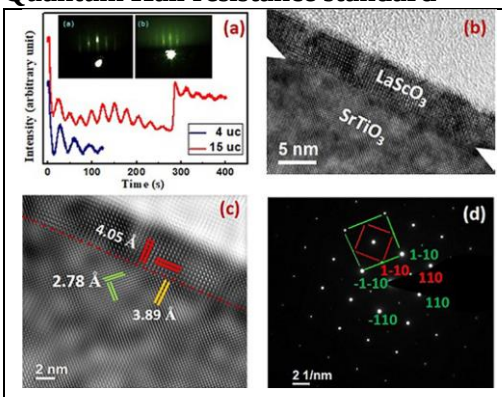
Patents

Nil

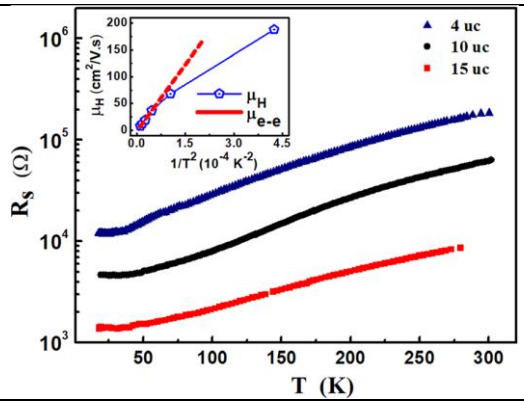
Current Activities

(Not more than 100 words)

R & D in quasi-two dimensional electron gas (q-2DEG) Oxide heterostructures for Quantum Hall resistance standard



(a) RHEED intensity oscillation during the growth of the LaScO3/STO thin film along with the RHEED pattern of the bare substrate (left) and thin film (right). (b) XTEM image of the 10 uc structure. (c) Fourier filtered XTEM image and (d) SAED pattern of the same structure and same image shown in (b).



Sheet resistance showing a metallic behavior. The inset shows the hall mobility of the 15 uc LaScO3/SrTiO3 structure plotted against $1/T^2$ with a high temperature linear variation (red line), corresponding to e-e (2D) interactions.

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

NIL

Contributions to AcSIR

(a) Teaching Course # PHY(NPL)-3-4602: Nanostructured Materials
(b) Teaching Course #AcSIR-XX-RPE: Research Publications and Ethics
(c) Ph.D students – 03 completed, 03 ongoing
(d) DAC member for Ph.D students

Membership of Professional Societies/ Institutions

(a) Metrology Society of India
(b) Magnetics Society of India
(c) Neutron Scattering Society of India
(d) Swadeshi Science Movement of India
(e) Organization for women in science for the developing world (OWSD)

Any other Information

(Not more than 100 words)

- Invited talks on various occasions at Aligarh Muslim University-Aligarh, Himachal Pradesh University-Shimla, IIT- Chennai, IISC-Banglore, JNU-Delhi, Nirma University-Ahmedabad, Hansraj College-Delhi University, IIT-Roorkee, CRS University- Jind-Haryana, IIT-Hyderabad, DIAT-Pune, INST-Chandigarh
- Referee to Science Direct Journals, JAP, European Physical Journal, Conference Papers