




Bhagini Nivedita College



Faculty Details

Title	Dr	First Name	RAM GOPAL	Last Name	SINGH	Photograph
Designation		Assistant Professor				
Address		359, Metro view Apartmets, Sector 13 Pocket B New Delhi- 110078				
Phone No	Office	011-28018326				
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Email		rgsnsc@gmail.com, ram.gopal@bn.du.ac.in				
Web-Page						
Educational Qualifications						
Degree		Institution			Year	
P.hD		University of Delhi			2009	
M.Sc.		Dr B.R. Ambedkar University Agra			2004	
B.Sc.		Dr B.R. Ambedkar University Agra			2001	
10+2		U.P. Board Allahabad			1998	
10		U.P. Board Allahabad			1996	
Career Profile						
Assistant Professor since 2010 to 2013 in Maharaja Agrasen College University of Delhi Assistant Professor since 2013 to till date in Bhagini Nivedita College University of Delhi						
Administrative Assignments						
Member of Cultural Committee Member of Discipline Committee Member of Sports Committee Member of Students Advisory Committee Member of Library Committee Member of OBE Committee						
Areas of Interest / Specialization						
<ul style="list-style-type: none"> ➤ Hybrid Materials for Energy Related Device ➤ Role of Swift Heavy Ion in Hybrid Nanocomposites of Metal Oxide Semiconductor ➤ Synthesis of doped and co-doped metal oxide quantum dots and nanowires. ➤ The transparency, conductivity and luminescent properties can be tune by the tuning of shape, size, annealing temperature, dopants material and its concentration. ➤ The structural, luminescence and transport properties of the films will be tailor by Swift heavy ion (SHI) irradiation. 						
Subjects Taught						
Solid State Physics, Electricity and magnetism, Electromagnetics, Nano materials and Applications, Analog System and Application, Physics of Devices and Communication and Electronic Communication						

Research Guidance
No
Publications Profile
<ol style="list-style-type: none"> 1. Semiconductor-to-metal transition in nanocomposites of wide bandgap oxide semiconductors H Gupta, N Gautam, SK Gautam, RG Singh, F Singh Journal of Alloys and Compounds 894, 162392 (2022) 2. Tuning of defects induced visible photoluminescence by swift heavy ion irradiation and thermal annealing in zinc oxide films RG Singh, H Gupta, RM Mehra, F Singh Radiation Physics and Chemistry 183, 109400 (2022) 3. Swift heavy ion irradiation induced negative differential resistance and transport of charge carriers in conducting polymer-metal oxide hybrids J Singh, RG Singh, SK Gautam, H Gupta, S Ojha, F Singh Radiation Physics and Chemistry 179, 109211 (2021) 4. Photoluminescence Quenching and Photo-Induced Charge Transfer Processes in Poly (3-octylthiophene) Polymer Based Hybrid Nano-composites by Ion Irradiation for Possible ... J Singh, H Gupta, RG Singh, S Ojha, PK Kulriya, F Singh Journal of Electronic Materials 50 (1), 85-99 (2021) 5. A versatile multifaceted resistive switching memory activated by light and ion irradiation in poly (3-octylthiophene)-zinc oxide hybrids J Singh, RG Singh, SK Gautam, H Gupta, F Singh Organic Electronics 87, 105932 (2020) 6. Raman scattering from irradiated nanocrystalline zinc oxide thin films: Perspective view on effects of energy loss, ion fluence, and ion flux H Gupta, K Joshi, SK Gautam, RG Singh, F Singh Vacuum 181, 109598 (2020) 7. Ion beam engineering in WO₃-PEDOT: PSS hybrid nanocomposite thin films for gas sensing measurement at room temperature J Ram, RG Singh, F Singh, V Chauhan, D Gupta, V Kumar, U Kumar, ... Inorganic Chemistry Communications 119, 108000 (2020) 8. Radiation stability and reliability of Cu–ZnO/P3OT hybrid heterostructures under swift heavy ion irradiations J Singh, H Gupta, A Kumar, RG Singh, F Singh Materials Science in Semiconductor Processing 108, 104885 (2020)

9. Photo-induced inter-chain and interfacial charge transfer in Cu–ZnO/poly (3-octylthiophene) hybrid nanocomposites
J Singh, **RG Singh**, H Gupta, S Ojha, F Singh
Optical Materials 94, 316-321 (2019)
10. Development of WO₃-PEDOT: PSS hybrid nanocomposites based devices for liquefied petroleum gas (LPG) sensor
J Ram, **RG Singh**, F Singh, V Kumar, V Chauhan, R Gupta, U Kumar, ...
Journal of Materials Science: Materials in Electronics 30 (14), 13593-13603 (2019)
11. Effect of annealing on the surface morphology, optical and structural properties of nanodimensional tungsten oxide prepared by coprecipitation technique
J Ram, **RG Singh**, R Gupta, V Kumar, F Singh, R Kumar
Journal of Electronic Materials 48 (2), 1174-1183 (2019)
12. *In Situ* Study of Radiation Stability and Associated Conduction Mechanisms of Nb-Doped TiO₂/p-Si Heterojunction Diode Under Swift Heavy Ion Irradiation
SK Gautam, J Singh, **RG Singh**, N Gautam, P Trivedi, F Singh
IEEE Transactions on Electron Devices 66 (3), 1475-1481 (2019)
13. Multifunctional hybrid diode: Study of photoresponse, high responsivity, and charge injection mechanisms
J Singh, **RG Singh**, SK Gautam, F Singh
Journal of Applied Physics 123 (17), 174503 (2018)
14. Carrier transport mechanism of highly-sensitive niobium doped titanium dioxide/p-Si heterojunction photodiode under illuminations by solar simulated light
Subodh K. Gautam, Arkaprava Das, **R. G. Singh**, V. V. S. Kumar, and Fouran Singh
J. Appl. Phys. 120, 214502 (2016)
15. Band gap widening and narrowing in Cu-doped ZnO thin films
K. Joshi, M. Rawat, Subodh K. Gautam, **R.G. Singh**, R.C. Ramola, Fouran Singh
Journal of Alloy and Compound 680, 252 (2016)
16. Band gap engineering and low temperature transport phenomenon in highly conducting antimony doped tin oxide thin films
MPSRana, Fouran Singh Sandhya Negi, Subodh k Gautam, **R G Singh** and R C Ramola
Ceramic International 42, 5932 (2016)
17. Decomposition mechanism of indium oxide nanoparticlessandwiched between zinc oxide layer by energetic ions
Subodh. K. Gautam, Fouran Singh S. Ojha, **R. G. Singh**, V.V.Siva Kumar
Ceramic International 42, 2846 (2016)

18. Swift heavy ion irradiation induced phase transformation in undoped and niobium doped titanium dioxide composite thin films
Subodh K. Gautam, Abdelhak Chettah, **R.G. Singh**, Sunil Ojha, Fouran Singh
Nucl. Instrum. and Meth. B. 379, 224 (2016)
19. Structural and optical modification of Ga-doped zinc oxide thin films induced by thermal annealing
Sandhya Negi, M. P. S. Rana, Subodh K Gautam, **R G Singh**, Fouran Singh and R C Ramola
Indian Journal of Pure & Applied Physics 54, 236 (2016)
20. Anomalous behavior of B1g mode in highly transparent anatase nano-crystalline Nb-doped Titanium Dioxide (NTO) thin films
Subodh K. Gautam, Naina Gautam, **R. G. Singh**, S. Ojha, D. K. Shukla, and Fouran Singh
AIP Advances 5, 127212 (2015)
21. Growth of Highly Transparent $Cd_xZn_{1-x}O$ (CZO) Thin Films: Effect of Doping Concentration on Structural and Optical Properties
Naina Gautam, Subodh K Gautam, **R. G Singh**, Sunil Ojha and Avinashi Kapoor
Journal of Alloy and Compound 650, 311 (2015)
22. Giant enhancement of the n-type conductivity in single phase p-type ZnO:N thin films by intentionally created defect clusters and pairs
Subodh K.Gautam, **R.G.Singh**, V.V.Siva Kumar and Fouran Singh
Solid State Communications 218 20 (2015)
23. Micro-Raman study on the softening and stiffening of phonons in rutile titanium dioxide film: Competing effects of structural defects, crystallite size, and lattice strain
Subodh K. Gautam, Fouran Singh, I. Sulania, **R. G. Singh**, P. K. Kulriya, and E. Pippel,
J. Appl. Phys. 115, 143504 (2014)
24. Thermal annealing induced anomalous band gap modification in nanocrystalline antimony doped tin oxide thin films
M. P. S. Rana, S. Negi, M. Rawat. S. K. Gautam, Fouran Singh, **R G Singh**, and R C Ramola, **Adv. Sci. Lett. 20**, 1410 (2014)
25. High efficiency hybrid solid state blended dyes sensitized solar cell based on zinc oxide nanostructures
R. G. Singh, Naina Gautam, Subodh K. Gautam, V. Kumar, A. Kapoor, Fouran Singh
J. Renewable and Sustainable Energy 5, 033134 (2013)
26. Synthesis and characterization of aluminum–boron co-doped ZnO nanostructures
V. Kumar, **R. G. Singh**, N. Singh, Avinashi Kapoor, R.M. Mehra, L.P. Purohit
Materials Research Bulletin 48, 362 (2013)

27. Disorder induced semiconductor to metal transition and modifications of grain boundaries in nanocrystalline zinc oxide thin film
Fouran Singh, B. Chaudhary, V. Kumar, **R. G. Singh**, Sanjeev Kumar, A. Kapoor
J. Appl. Phys. **112**, 073101 (2012)
28. Highly transparent and conducting boron doped zinc oxide films for window of dye sensitized solar cell applications
V. Kumar, **R. G. Singh**, Fouran Singh, L.P. Purohit
Journal of Alloys and Compounds **544**, 112 (2012)
29. Effect of swift heavy ion on structural and optical properties of undoped and doped nanocrystalline zinc oxide films
V. Kumar, **R. G. Singh**, L.P. Purohit and Fouran Singh
Adv. Mat. Lett. **423**, 427 (2013)
30. Softening of phonon localization by lattice defects and structural strain in heavy ion irradiated nanocrystalline zinc oxide films
Fouran Singh, **R. G. Singh**, V. Kumar, S. A. Khan, J. C. Pivin,
J. Appl. Phys. **110**, 083520, (2011)
31. Growth Kinetics of ZnO Nanocrystallites: Structural Optical and Photoluminescence Properties Tuned by Thermal Annealing
R. G. Singh, V. Kumar, Fouran Singh, R. M. Mehra,
Curent. Appl. Phys. **11**, 624 (2011)
32. Synthesis of Nanocrystalline α -Zn₂SiO₄ at ZnO-Porous Silicon Interface: Phase transition study
R. G. Singh, Fouran Singh, R.M.Mehra, D. Kanjilal, V. Agarwal,
Solid State Commun., **151**, 701 (2011)
33. Structural and spectroscopic modifications of nanocrystalline zinc oxide films induced by swift heavy ions
S. Rehman, **R. G. Singh**, J. C. Pivin, Waseem Bari and Fouran Singh
Vacuum **86**, 87 (2011)
34. Structural, Transport and Optical Properties of Boron-Doped Zinc Oxide Nanocrystalline:Mechanisms of Transport
V. Kumar, **R. G. Singh**, L.P. Purohit, R. M. Mehra,
J. Mater. Sci. Tech. **27**, 481 (2011)
35. Temperature Induced Stress Dependent Photoluminescence Properties of Nanocrystallite Zinc Oxide
V. Kumar, **R. G. Singh**, L. P. Purohit and R. M. Mehra
Journal of Nanoelectronic and Physics, **3**, 388 (2011)

36. White Light Emission from Chemically Synthesized ZnO–Porous Silicon Nanocomposite

R. G. Singh, Fouran Singh, D. Kanjilal, V Agarwal and R. M. Mehra

J. Phys. D: Appl. Phys./FTC- 42, 062002 (2009)

37. Electronic Excitations Induced Modifications of Structural and Optical Properties of ZnO-Porous Silicon Nanocomposites

R. G. Singh, Fouran Singh, I. Sulania, D. Kanjilal, K. Sehrawat, V. Agarwal, R. M. Mehra

Nucl. Instrum. and Meth. B. 267, 2399 (2009)

38. Photoluminescence Studies of ZnO/Porous Silicon Nanocomposites

R. G. Singh, Fouran Singh, V. Agarwal, R. M. Mehra

J. Phys. D: Appl. Phys. 40, 3090 (2007)

Publications in the Last one year

1.Semiconductor-to-metal transition in nanocomposites of wide bandgap oxide semiconductors

H Gupta, N Gautam, SK Gautam, **RG Singh**, F Singh

Journal of Alloys and Compounds 894, 162392 (2022)

2.Tuning of defects induced visible photoluminescence by swift heavy ion irradiation and thermal annealing in zinc oxide films

RG Singh, H Gupta, RM Mehra, F Singh

Radiation Physics and Chemistry 183, 109400 (2022)

3.Swift heavy ion irradiation induced negative differential resistance and transport of charge carriers in conducting polymer-metal oxide hybrids

J Singh, **RG Singh**, SK Gautam, H Gupta, S Ojha, F Singh

Radiation Physics and Chemistry 179, 109211 (2021)

4.Photoluminescence Quenching and Photo-Induced Charge Transfer Processes in Poly (3-octylthiophene) Polymer Based Hybrid Nano-composites by Ion Irradiation for Possible ...

J Singh, H Gupta, **RG Singh**, S Ojha, PK Kulriya, F Singh

Journal of Electronic Materials 50 (1), 85-99 (2021)

Conference Organization/ Presentations (in the last three years)

Research Projects (Major Grants/Research Collaboration)

Research Collaborator/Co-worker

Dr.D. Kanjilal

Inter-Universitu Accelerator Centre, New Delhi-110067

Dr. Fouran Singh
Inter-University Accelerator Centre (IUAC), New Delhi-110067
Dr. Subodh K. Gautam
CNRS-Postdoctoral Researcher at Solid States Physics Laboratory (LPS), Uni. of Paris-Saclay,
France
Dr. Jitendra Singh
Post-Doctoral Researcher at National Taiwan University of Science and Technology, Taipei-
Taiwan
Dr. Vinod Kumar
DaDU (Ethiopia); IIT Delhi (India); UCA (France); TU (USA); UFS (South Africa); IUAC
(India)
Prof (Dr.) R C Ramola
Professor of Physics, HNB Garhwal University

Awards and Distinctions

Association With Professional Bodies

Semiconductor Society (India) (SSI)
Membership No.: **201002605**

Other Activities

1. Co-organizer of one-day workshop for students on "solar energy technology" on March 11, 2014. Organized by Department of Physics Bhagini Nivedita college University of Delhi
2. Co-organizer of three-day digital literacy camp for students on March 31, 2017 and April 03 & 05, 2017. Organized by Department of Physics Bhagini Nivedita college University of Delhi