

## **Curriculum Vitae**

**Name** : Achintya Singha, Ph.D.,

**Date of Birth:** April 28, 1977

**Gender** : Male

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### **Education and Training:**

2006: **Ph.D.** in Raman spectroscopy of nanometrials, Department of Physics, Indian Institute of Technology Kharagpur, India (Supervisor: Prof. Anushree Roy)

2001: **M.Sc.**, (Physics) Jadavpur University, India

### **Professional Experiences**

July, 2015-Till Date :Associate Professor, Department of Physics, Bose Institute  
May, 2011-June, 2015 :Assistant Professor, Department of Physics, Bose Institute  
Feb, 2010-Apr, 2011 :Faculty Fellow, Department of Physics, Bose Institute  
Mar, 2007-Jan, 2010 :Postdoctoral Fellow, National Enterprise for nanoScience and nanoTechnology(NEST), Scuola Normale Superiore (SNS), Pisa, Italy  
Mar, 2002-Feb, 2007 :Research Fellow, Indian Institute of Technology Kharagpur, India

### **Scientific Interests:**

- Raman spectroscopy of nanomaterials
- Electron correlation effects in semiconductor quantum structures
- Carbon and layered transition metal dichalcogenides (LTMDs) nanostructures
- Surface Enhanced Raman Scattering (SERS)

### **Award:**

Best Ph. D Thesis Award in 51st DAE Solid State Physics Symposium, 2006

### **List of publications:**

1. Maiti R. , Haldar S., Majumdar D., Singha A. and Ray S. K. Hybrid opto-chemical doping in Ag nanoparticle-decorated monolayer graphene grown by chemical vapor deposition probed by Raman spectroscopy. **Nanotechnology** **28** (2017) 075707 (8pp)
2. Samanta S., Saini D., **Singha A.**, Das K., Bandaru P.R. and Rao A. M. and Raychaudhuri A. K. Photoresponse of a Single Y-Junction Carbon Nanotube. **ACS Applied Materials & Interfaces** (2016) **8** (29), 19024-19030.
3. Majumdar D., Ercolani D., Sorba L. and **Singha A.** Laser induced photothermal effects on InAs nanowires: tuning the hole density. **Journal of Materials Chemistry C** (2016) **4** (12), 2339-2344.
4. Biswas S., Doherty J., Saladukha D., Ramasse Q., Majumdar D., Upmanyu M., **Singha A.**, Ochalski T., Morris M. A. and Holmes J. D. Non-equilibrium induction of tin in germanium: towards direct bandgap Ge<sub>1-x</sub>Sn<sub>x</sub> nanowires. **Nature Communications** (2016) **11405** (7), 1-12.
5. Konar A., Sarkar T., Chakraborty I., Sukul N.C., Majumdar D., **Singha A.** and Sukul A. Raman spectroscopy reveals variation in free OH groups and hydrogen bond strength in ultrahigh dilutions. **International Journal of High Dilution Research** (2016) **15** (2),2-9.
6. Ansari Z., Sarkar K., Saha A., **Singha A.** and Sen K. Enhanced anion sensing by  $\gamma$ -irradiated polyphenol capped iron oxide nanoparticles. **Journal of Radioanalytical and Nuclear Chemistry** (2016) **308** (2), 517-525.
7. Ghatak S.K., Sen S., Majumdar D., **Singha A.** and Sen K. Peanut proteins in periodate specific anion sensing: An ensuing reduction in allergic response. **Food chemistry** (2016) **197**, 1286-1291.

8. Sarkar T., Konar A., Sukul N.C., Majumdar D., **Singha A.** and Sukul A. Raman spectroscopy shows difference in drugs at ultra high dilution prepared with stepwise mechanical agitation. **International Journal of High Dilution Research (2016) 15 (1), 2-9.**
9. Majumdar D., Biswas S., Ghoshal T. and Holmes J.D. and **Singha A.** Probing Thermal Flux in Twinned Ge Nanowires through Raman Spectroscopy. **ACS applied materials & interfaces (2015) 7 (44), 24679-24685.**
10. Ghatak S.K., Majumdar D., **Singha A.**, Sen S., Das D., Chakrabarti A., Mukhopadhyay C. and Sen K. Peanut protein sensitivity towards trace iron: a novel mode to ebb allergic response. **Food chemistry (2015) 176, 308-313.**
11. Biswas S., Doherty J., Majumdar D., Ghoshal T., Rahme K., Conroy M., **Singha A.**, Morris M. and Holmes J. D. Diameter-Controlled Germanium Nanowires with Lamellar Twinning and Polytypes. **Chemistry of Materials (2015) 27 (9), 3408-3416.**
12. Singha S. S., Nandi D. and **Singha A.** Tuning the photoluminescence and ultrasensitive trace detection properties of few-layer MoS<sub>2</sub> by decoration with gold nanoparticles, **RSC Advances (2015) 5 (31), 24188–24193.**
13. Chowdhury A, Iyyappan R, Majumdar D and **Singha A.** Structural and spectroscopic characterisations of the surface oxide scales and inclusions present on edge-burst hot-rolled steel coils. **Materials Chemistry and Physics (2014) 148 (1), 276-283.**
14. Majumdar D, Basu A, Mukherjee G D, Ercolani D, Sorba L, **Singha A.** Raman scattering study of InAs nanowire under high pressure. **Nanotechnology, (2014) 25 (46) 465704.**
15. Giri A, Goswami N, Sasmal C, Polley N, Majumdar D, Sarkar S, Bandyopadhyay S N, **Singha A** and Pal S K Unprecedented catalytic activity of Mn<sub>3</sub>O<sub>4</sub> nanoparticles: potential

- lead of a sustainable therapeutic agent for hyperbilirubinemia. **RSC Advances (2014)4, 5075-5079.**
16. Mitra S, **Singha A** and Chakravorty D. Non-linear temperature variation of resistivity in graphene/silicate glass nanocomposite. **Journal of Physics D: Applied Physics (2013) 46 (37), 375306.**
  17. Majumdar D, **Singha A**, Mondal P K and Kundu S DNA-Mediated Wirelike Clusters of Silver Nanoparticles: An Ultrasensitive SERS Substrate. **ACS Applied Materials and Interfaces (2013) 5 (16), 7798–7807.**
  18. Panda J K, Roy A, **Singha A**, Gemmi M, Ercolani D, Pellegrini V and Sorba L Internal field induced enhancement and effect of resonance in Raman scattering of InAs nanowires. **Solid State Communications (2013) 160, 26-31.**
  19. Rakshit S, Saha R, **Singha A**, Seddigi Z S A, Pal S K Molecular interaction, co-solubilization of organic pollutants and ecotoxicity of a potential carcinogenic fuel additive MTBE in water. **Journal of Molecular Liquids (2013)180, 235-243.**
  20. Saha R, Rakshit S, Majumdar D, **Singha A**, Mitra R K and Pal SK. Nanostructure, solvation dynamics, and nanotemplating of plasmonically active SERS substrate in reverse vesicles. **Journal of Nanoparticle Research (2013) 15 (4) 1576 (1-12).**
  21. Giri A., Goswami N., Pal M., Zar Myint M. T., Al-Harathi S., **Singha A.**, Ghosh B., Dutta J., Pal S.K. Rational surface modification of Mn<sub>3</sub>O<sub>4</sub> nanoparticles to induce multiple photoluminescence and room temperature ferromagnetism. **Journal of Materials Chemistry C (2013) 1 (9), 1885-1895.**
  22. Sarkar S., Makhal A., Bora T., Lakhsman K., **Singha A.**, Dutta J., Pal S.K. Hematoporphyrin-ZnO nanohybrids: **Twin applications in efficient visible-light**

- photocatalysis and dye-sensitized solar cells**, ACS Applied Materials and Interfaces (2012) 4 (12), 7027-7035.
23. Biswas S., **Singha A.**, Morris M. A., and Holmes J. D. Inherent Control of Growth, Morphology, and Defect Formation in Germanium Nanowires. **NanoLetters**, (2012) **12 (11), 5654–5663.**
24. Panda J. K., Roy A., **Singha A.**, Gemmi M., Ercolani D., Pellegrini V., and Sorba L. Raman sensitivity to crystal structure in InAs nanowires. **Applied Physics Letters**, (2012) **100, 143101 1-3.**
25. Gamucci A., Pellegrini V., **Singha A.**, Pinczuk A., Pfeiffer L. N., West K. W. and Rontani M. Probing the spin states of three interacting electrons in quantum dots. **Physical Review B**, (2012) **85 (3), 033307 (1-4).**
26. **Singha A.**, Gibertini M., Karmakar B., Yuan S., Polini M., Vignale G., Katsnelson M. I., Pinczuk A., Pfeiffer L. N., West K.W., and Pellegrini V. Two-dimensional Mott-Hubbard electrons in an artificial honeycomb lattice. **Science** (2011) **332(6034), 1176.**
27. De Simoni, G., **Singha A.**, Gibertini M., Karmakar B., Polini M., Piazza V., Pfeiffer L.N., West K.W., Beltram F. and Pellegrini V. Delocalized-localized transition in a semiconductor two-dimensional honeycomb lattice, **Applied Physics Letters**, (2010) **97 (13), 132113-3.**
28. **Singha A.**, Pellegrini V., Pinczuk A., Pfeiffer L.N., West K.W. and Rontani M. Correlated electrons in optically tunable quantum dots: Building an electron dimer molecule, **Physical Review Letters**, (2010) **104 (24), 246802-4.**
29. Gibertini M., **Singha A.**, Pellegrini V., Polini M., Vignale G., Pinczuk A., Pfeiffer L.N. and West K.W. Engineering artificial graphene in a two-dimensional electron gas. **Physical Review, B** (2009) **79 (24), 241406 (R)-4.**

30. **Singha A.**, Pellegrini V., Kalliakos S., Karmakar B., Pinczuk A., Pfeiffer, L. N. and West K.W. Optical anisotropy of electronic excitations in elliptical quantum dots. **Applied Physics Letters**, (2009) **94** (7), **073114-3**.
31. Kalliakos S., Rontani M., Pellegrini V., Pinczuk A., **Singha A.**, Garcia C. P., Goldoni G., Molinari E., Pfeiffer L.N. and West K.W. Probing collective modes of correlated states of few electrons in semiconductor quantum dots. **Solid State Communications**, (2009) **149**, **1436-1442**.
32. **Singha A.**, Roy A., Sonkusare A., Kumar P. and Kaul A.D. Measuring nanoNewton forces with an indigenous atomic force microscope. **Current Science**, (2007) **93** (8), **1063-1070**.
33. Mal S., **Singha A.**, Dhara S. and Roy A. Raman measurements and stress analysis in gallium ion-implanted gallium nitride epitaxial layers on sapphire. **Thin Solid Films** (2006) **515**(4), **2798-2802**.
34. Ojha A. K., **Singha A.**, Dasgupta S., Singh R.K. and Roy A. pH dependent surface enhanced Raman study of Phe<sup>+</sup> Ag complex and DFT calculations for spectral analysis. **Chemical Physics Letters**, (2006) **431**(1), **121-126**.
35. **Singha A.**, Roy A., Kabiraj D. and Kanjilal D. A hybrid model for the origin of photoluminescence from Ge nanocrystals in a SiO<sub>2</sub> matrix, **Semiconductor Science and Technology**, (2006) **21**(12), **1691-1698**.
36. **Singha A.**, Ghosh A., Roy A. and Ray N.R. Quantitative analysis of hydrogenated diamondlike carbon films by visible Raman spectroscopy, **Journal of Applied Physics**(2006) **100** (4), **044910-8**.

37. **Singha A.** and Roy A. Quantitative analysis of thermal stability of CdSe/CdS core-shell nanocrystals under infrared radiation. **Journal of Materials Research**, (2006) **21 (6)**, **1385-1389**.
38. **Singha A.**, Dasgupta S. And Roy A. Comparison of metal-amino acid interaction in Phe-Ag and Tyr-Ag complexes by spectroscopic measurements. **Biophysical Chemistry**, (2006) **120 (3)**, **215-224**.
39. **Singha A.** and Roy A. Phonon confinement and surface phonon modes in CdSe-CdS core-shell nanocrystals. **Reviews on Advanced Materials Science**, (2005)**10**, **462-466**.
40. **Singha A.**, Satpati B., Satyam P. V. and Roy A. Electron and phonon confinement and surface phonon modes in CdSe-CdS core-shell nanocrystals. **Journal of Physics Condensed Matter** (2005) **17 (37)**, **5697-5708**.
41. Ray S., Pramanik P., **Singha A.** and Roy A. Optical properties of nanocrystalline Y<sub>2</sub>O<sub>3</sub>:Eu<sup>3+</sup>, **Journal of Applied Physics** (2005) **97 (9)**, **094312-6**.
42. **Singha A.**, Dhar P. and Roy A. A nondestructive tool for nanomaterials: Raman and photoluminescence spectroscopy. **American Journal of Physics** (2005) **73 (3)**, **224-233**.