Information to create webpage in SCNS-JNU website

Name: Ram Krishna Ghosh

Designation: DST INSPIRE Faculty

Centre/School/Special Centre: Special Centre for Nanoscience (SCNS)

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Qualifications:

Ph. D. (Engineering, 2013), Indian Institute of Science (IISc), Bangalore, India
M.Sc. (Physics, 2008), Indian Institute of Technology (IIT), Madras, India
B.Sc. (Physics, 2006), University of Calcutta, Kolkata, India

Areas of Interest/Specialization:

The prime interest is in simulation and modeling of emerging materials and devices in the vicinity of Physics, Materials and Device engineering, especially, atomistic and quantum transport simulations at the nanoscale for next-generation electronic and spintronic devices.

Specializations:

Density Functional Theory (DFT), Molecular Dynamics (MD), Atomistic Simulation, Non-Equilibrium Green's Function (NEGF), Computational Nanoelectronics and Spintronics, Device Modeling, Materials Modeling, and Multiscale Modeling.

Experience:

Oct 2017 – present DST INSPIRE Faculty
Special Centre for Nanoscience, Jawaharlal Nehru University, New Delhi, India

Nov 2015 – Sept 2017 Post-Doctoral Research Associate
Department of Electrical Engineering, University of Notre Dame, USA

Nov 2013 – Oct 2015 Post-Doctoral Fellow
Department of Electrical Engineering, Pennsylvania State University, USA

Awards & Honours:

- Highly prestigious DST-INSPIRE Faculty award-2017.
- Post-Doctoral Research Fellowship - Center for Low Energy Systems Technology (LEAST), USA – 2013-2017.
- Tag Corporation Medal for the Best Ph.D. Thesis from the Department of Electronic Systems Engineering 2015.

- CSIR-UGC Junior and Senior Research Fellowship (JRF & SRF), Jan 2010-April 2013.
- Eligibility for Lectureship by CSIR-UGC, 2008 and 2009.
- Indian Institute of Technology-Madras Merit Scholarship.
- Medal to secure 1st class in B.Sc Physics Hons. from RKM Vidyamandira, Belur Math, W.B.

International Collaboration/Consultancy:

- Prof. Suman Datta, Department of Electrical Engineering, University of Notre Dame, USA
- Prof. Joshua A. Robinson, Materials Science and Engineering, Pennsylvania State University, USA
- Prof. Nikhil Shukla, ECE and the Materials Science and Engineering, University of Virginia, USA
- Prof. Sumeet Gupta, Electrical and Computer Engineering, Purdue University, USA

Best Peer-Reviewed Publications (up to 5):

Total 22 Publications till 31st Dec 2018

1. Z. Y A. Balushi, K. Wang, **R. K. Ghosh**, R. A. Vilá, S. M Eichfeld, J. D. Caldwell, X. Qin, Y-C. Lin, P. A DeSario, G. Stone, S. Subramanian D. F Paul, R. M. Wallace, S. Datta, J. M Redwing, J. A Robinson, "Two-dimensional gallium nitride realized via graphene encapsulation", **Nature Materials**, vol. 15, pp. 1166-1171, 2016. (*Impact factor: 39.235*)
2. Y-C. Lin, **R. K. Ghosh**, R. Addou, N. Lu, S. M. Eichfeld, H. Zhu, M-Y. Li, X. Peng, M. J. Kim, L-J. Li, R. M. Wallace, S. Datta, and J. A. Robinson, "Atomically Thin Resonant Tunnel Diodes built from Synthetic van der Waals Heterostructures", **Nature Communications**, vol. 6, pp. 7311, 2015. (*Impact factor: 12.353*)
3. M. Huefner, **R. K. Ghosh**, E. Freeman, N. Shukla, H. Paik, D. G. Schlom, and S. Datta, "Hubbard gap modulation in vanadium dioxide nanoscale tunnel junctions", **ACS Nano-Letters**, vol. 14, no.11, pp. 6115–6120, 2014. (*Impact factor: 12.08*)
4. **R. K. Ghosh,** M. Brahma, and S. Mahapatra, "Germanane: a Low Effective Mass and High Bandgap 2-D Channel material for Future FETs", **IEEE Trans. Elec. Dev**., vol. 61, no. 7, pp. 2309- 2315, 2014. (*Impact factor: 2.62*)
5. **R. K. Ghosh** and S. Mahapatra, "Monolayer transition metal dichalcogenide channel based tunnel transistor", **IEEE Journal of the Elec. Dev. Soc.**, vol. 1, no. 10, pp. 175-180, Nov. 2013. (Within top 10 popular articles from Dec 2013 to June 2016). (*Impact factor: 2.696*)

Recent Peer Reviewed Journals/Books (up to 3):

1. B. Grisafe, R. Zhao, **R. K. Ghosh**, J. A Robinson, and S. Datta, "Electrically triggered insulator-to-metal phase transition in two-dimensional (2D) heterostructures", **Appl. Phys. Lett.**, vol. 113, no. 14, pp. 142101, 2018. (*Impact factor: 3.495*)
2. R. Zhao, B. Grisafe, **R. K. Ghosh**, S. Holoviak, B. Wang, K. Wang, N. Briggs, M. A. Haque, S. Datta, J. A. Robinson, "Two-dimensional tantalum disulfide: controlling structure and properties via synthesis", **IOP 2D Materials**, vol. 5, pp. 025001, 2018. (*Impact factor: 7.042*)
3. N. Shukla, **R. K. Ghosh**, B. Grisafe, S. Datta, "Fundamental Mechanism Behind Volatile and Non-Volatile Switching in Metallic Conducting Bridge RAM", **IEEE International Electron Devices Meeting (IEDM)**, 2017. (DOI: 10.1109/IEDM.2017.8268325).