

Sujoy Ghosh, Ph.D.

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Employment History

- 2022 – Present **Staff R & D Associate** Oak Ridge National Laboratory, Oak Ridge, TN USA.
- 2021 – 2022 **Research Associate** Colorado School of Mines, Golden, CO, USA.
- 2019 – 2021 **Postdoctoral Research Associate** Los Alamos National Laboratory, Los Alamos, NM, USA.
- 2017 – 2018 **Postdoctoral Research Associate** University of New Hampshire, Durham, NH, USA.

Education




- 2011 – 2016 **Ph.D.**, Applied Physics.
Southern Illinois University, Carbondale, IL, USA.
- 2009 – 2011 **M.S.**, Physics.
Southern Illinois University, Carbondale, IL, USA.
- 2006 – 2008 **M.Sc.**, Physics.
University of Calcutta, Kolkata, India.
- 2003 – 2006 **B.Sc.**, Physics.
University of Calcutta, Kolkata, India.

Research Publications

Journal Articles

- 1 **S. Ghosh**, J. Zhang, M. Wasala, P. Patil, N. Pradhan, and S. Talapatra, “Probing the electronic and opto-electronic properties of multilayer mos2 field-effect transistors at low temperatures,” *Nanomaterials*, vol. 13, no. 16, 2023, ISSN: 2079-4991. [DOI: 10.3390/nano13162333](https://doi.org/10.3390/nano13162333).
- 2 S. Ghosh, C. Lane, F. Ronning, E. D. Bauer, J. D. Thompson, J.-X. Zhu, P. F. S. Rosa, and S. M. Thomas, “Colossal piezoresistance in narrow-gap $\text{Eu}_5\text{In}_2\text{Sb}_6$,” *Phys. Rev. B*, vol. 106, p. 045 110, 4 Jul. 2022. [DOI: 10.1103/PhysRevB.106.045110](https://doi.org/10.1103/PhysRevB.106.045110).
- 3 P. D. Patil, M. Wasala, **S. Ghosh**, S. Lei, and S. Talapatra, “Broadband photocurrent spectroscopy and temperature dependence of band gap of few-layer indium selenide (InSe),” *Emergent Materials*, vol. 4, no. 4, pp. 1029–1036, 2021. [DOI: 10.1007/s42247-021-00248-9](https://doi.org/10.1007/s42247-021-00248-9).
- 4 M. Wasala, P. Patil, **S. Ghosh**, L. Weber, S. Lei, and S. Talapatra, “Role of layer thickness and field-effect mobility on photoresponsivity of indium selenide (InSe)-based phototransistors,” *Oxford Open Materials Science*, vol. 1, no. 1, itab010, Jul. 2021, ISSN: 2633-6979. [DOI: 10.1093/oxfmat/itab010](https://doi.org/10.1093/oxfmat/itab010). eprint: <https://academic.oup.com/ooms/article-pdf/1/1/itab010/47935290/itab010.pdf>.
- 5 N. I. Khan, M. Mousazadehkasin, **S. Ghosh**, J. G. Tsavalas, and E. Song, “An integrated microfluidic platform for selective and real-time detection of thrombin biomarkers using a graphene FET,” *Analyst*, vol. 145, no. 13, pp. 4494–4503, 2020. [DOI: 10.1039/D0AN00251H](https://doi.org/10.1039/D0AN00251H).
- 6 M. Wasala, P. D. Patil, **S. Ghosh**, R. Alkhalidi, L. Weber, S. Lei, R. Vajtai, P. M. Ajayan, and S. Talapatra, “Influence of channel thickness on charge transport behavior of multi-layer indium selenide (inse) field-effect transistors,” *2D Materials*, vol. 7, no. 2, p. 025 030, Feb. 2020. [DOI: 10.1088/2053-1583/ab6f79](https://doi.org/10.1088/2053-1583/ab6f79).

- 7 H. M. N. Ahmad, **S. Ghosh**, G. Dutta, A. G. Maddaus, J. G. Tsavalas, S. Hollen, and E. Song, "Effects of impurities on the electrochemical characterization of liquid-phase exfoliated niobium diselenide nanosheets," *The Journal of Physical Chemistry C*, vol. 123, no. 14, pp. 8671–8680, 2019. [DOI: 10.1021/acs.jpcc.9b00485](https://doi.org/10.1021/acs.jpcc.9b00485). eprint: <https://doi.org/10.1021/acs.jpcc.9b00485>.
- 8 P. D. Patil, **S. Ghosh**, M. Wasala, S. Lei, R. Vajtai, P. M. Ajayan, A. Ghosh, and S. Talapatra, "Gate-induced metal–insulator transition in 2d van der waals layers of copper indium selenide based field-effect transistors," *ACS Nano*, vol. 13, no. 11, pp. 13 413–13 420, 2019, PMID: 31661261. [DOI: 10.1021/acsnano.9b06846](https://doi.org/10.1021/acsnano.9b06846). eprint: <https://doi.org/10.1021/acsnano.9b06846>.
- 9 P. D. Patil, **S. Ghosh**, M. Wasala, S. Lei, R. Vajtai, P. M. Ajayan, and S. Talapatra, "Electric double layer field-effect transistors using two-dimensional (2d) layers of copper indium selenide (cuin7se11)," *Electronics*, vol. 8, no. 6, 2019, ISSN: 2079-9292. [DOI: 10.3390/electronics8060645](https://doi.org/10.3390/electronics8060645).
- 10 **S. Ghosh**, N. I. Khan, J. G. Tsavalas, and E. Song, "Selective detection of lysozyme biomarker utilizing large area chemical vapor deposition-grown graphene-based field-effect transistor," *Frontiers in Bioengineering and Biotechnology*, vol. 6, 2018, ISSN: 2296-4185. [DOI: 10.3389/fbioe.2018.00029](https://doi.org/10.3389/fbioe.2018.00029).
- 11 **S. Ghosh**, N. I. Khan, and E. Song, "Selective detection of a protein biomarker utilizing a large area cvd-grown graphene-based field effect transistor," *ECS Meeting Abstracts*, vol. MA2018-01, no. 43, p. 2485, Apr. 2018. [DOI: 10.1149/MA2018-01/43/2485](https://doi.org/10.1149/MA2018-01/43/2485).
- 12 J. D. Huffstutler, M. Wasala, J. Richie, J. Barron, A. Winchester, **S. Ghosh**, C. Yang, W. Xu, L. Song, S. Kar, and S. Talapatra, "High performance graphene-based electrochemical double layer capacitors using 1-butyl-1-methylpyrrolidinium tris (pentafluoroethyl) trifluorophosphate ionic liquid as an electrolyte," *Electronics*, vol. 7, no. 10, 2018, ISSN: 2079-9292. [DOI: 10.3390/electronics7100229](https://doi.org/10.3390/electronics7100229).
- 13 F. R. Bagsican, A. Winchester, **S. Ghosh**, X. Zhang, L. Ma, M. Wang, H. Murakami, S. Talapatra, R. Vajtai, and P. M. Ajayan, "Adsorption energy of oxygen molecules on graphene and two-dimensional tungsten disulfide," *Scientific reports*, vol. 7, no. 1, p. 1774, 2017. [DOI: 10.1038/s41598-017-01883-1](https://doi.org/10.1038/s41598-017-01883-1).
- 14 A. S. Al-Asadi, L. A. Henley, **S. Ghosh**, A. Quetz, I. Dubenko, N. Pradhan, L. Balicas, N. Perea-Lopez, V. Carozo, Z. Lin, M. Terrones, S. Talapatra, and N. Ali, "Fabrication and characterization of ultraviolet photosensors from ZnO nanowires prepared using chemical bath deposition method," *Journal of Applied Physics*, vol. 119, no. 8, p. 084 306, Feb. 2016, ISSN: 0021-8979. [DOI: 10.1063/1.4942653](https://doi.org/10.1063/1.4942653).
- 15 F. R. Bagsican, I. Kawayama, H. Murakami, M. Tonouchi, A. Winchester, **S. Ghosh**, and S. Talapatra, "Laser thz emission spectroscopy of gas adsorption-desorption dynamics in tungsten disulfide nanosheets," *e-Journal of Surface Science and Nanotechnology*, vol. 14, pp. 78–82, 2016. [DOI: 10.1380/ejsnt.2016.78](https://doi.org/10.1380/ejsnt.2016.78).
- 16 M. Wasala, J. Zhang, **S. Ghosh**, B. Muchharla, R. Malecek, D. Mazumdar, H. Samassekou, M. Gaither-Ganim, A. Morrison, and N.-P. Lopez, "Effect of underlying boron nitride thickness on photocurrent response in molybdenum disulfide-boron nitride heterostructures," *Journal of Materials Research*, vol. 31, no. 7, pp. 893–899, 2016. [DOI: 10.1557/jmr.2015.364](https://doi.org/10.1557/jmr.2015.364).
- 17 **S. Ghosh**, A. Winchester, B. Muchharla, M. Wasala, S. Feng, A. L. Elias, M. Krishna, T. Harada, C. Chin, and K. Dani, "Ultrafast intrinsic photoresponse and direct evidence of sub-gap states in liquid phase exfoliated MoS₂ thin films," *Scientific reports*, vol. 5, no. 1, pp. 1–8, 2015. [DOI: 10.1038/srep11272](https://doi.org/10.1038/srep11272).
- 18 S. Kundu, **S. Ghosh**, M. Fralade, T. N. Narayanan, V. K. Pillai, and S. Talapatra, "Fractional photo-current dependence of graphene quantum dots prepared from carbon nanotubes," *Phys. Chem. Chem. Phys.*, vol. 17, pp. 24 566–24 569, 38 2015. [DOI: 10.1039/C5CP03306C](https://doi.org/10.1039/C5CP03306C).
- 19 **S. Ghosh**, S. Najmaei, S. Kar, R. Vajtai, J. Lou, N. R. Pradhan, L. Balicas, P. M. Ajayan, and S. Talapatra, "Universal ac conduction in large area atomic layers of cvd-grown mos₂," *Phys. Rev. B*, vol. 89, p. 125 422, 12 Mar. 2014. [DOI: 10.1103/PhysRevB.89.125422](https://doi.org/10.1103/PhysRevB.89.125422).

- 20 A. Winchester, **S. Ghosh**, S. Feng, A. L. Elias, T. Mallouk, M. Terrones, and S. Talapatra, "Electrochemical characterization of liquid phase exfoliated two-dimensional layers of molybdenum disulfide," *ACS applied materials & interfaces*, vol. 6, no. 3, pp. 2125–2130, 2014.  DOI: 10.1021/am4051316.
- 21 N. Perea-López, A. L. Elías, A. Berkdemir, A. Castro-Beltran, H. R. Gutiérrez, S. Feng, R. Lv, T. Hayashi, F. López-Urías, **S. Ghosh**, B. Muchharla, S. Talapatra, H. Terrones, and M. Terrones, "Photosensor device based on few-layered ws_2 films," *Advanced Functional Materials*, vol. 23, no. 44, pp. 5511–5517, 2013.  DOI: <https://doi.org/10.1002/adfm.201300760>.
- 22 **S. Ghosh**, X. An, R. Shah, D. Rawat, B. Dave, S. Kar, and S. Talapatra, "Effect of 1-pyrene carboxylic-acid functionalization of graphene on its capacitive energy storage," *The Journal of Physical Chemistry C*, vol. 116, no. 39, pp. 20 688–20 693, 2012.  DOI: 10.1021/jp303339f.

Conference Proceedings

- 1 P. Patil, M. Wasala, **S. Ghosh**, L. Weber, S. Lei, and S. Talapatra, "Layer dependent photo-response of Indium Selenide (InSe) field-effect transistors (FETs)," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2022, Mar. 2022, K60.007, K60.007.
- 2 S. Thomas, **S. Ghosh**, C. Lane, F. Ronning, E. Bauer, J. Thompson, J.-X. Zhu, and P. Rosa, "Colossal Piezoresistance in Narrow-Gap $\text{Eu}_5\text{In}_2\text{Sb}_6$," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2022, Mar. 2022, M64.008, p. M64.008.
- 3 P. Patil, **S. Ghosh**, M. Wasala, S. Lei, R. Vajtai, P. Ajayan, and S. Talapatra, "Evidence of Metal-Insulator Transition in 2D Van der Waals layers of Copper Indium Selenide ($\text{CuIn}_7\text{Se}_{11}$)," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2019, Jan. 2019, K12.003, K12.003.
- 4 M. Wasala, P. Patil, **S. Ghosh**, R. Alkhalidi, L. Weber, S. Lei, H. Sirikumara, T. Jayasekera, R. Vajtai, P. Ajayan, and S. Talapatra, "Temperature dependent electrical and photoconductive properties of few-layer Indium Selenide (InSe) FETs," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2019, Jan. 2019, V13.008, p. V13.008.
- 5 P. Patil, M. Wasala, **S. Ghosh**, S. Lei, R. Vajtai, P. Ajayan, and S. Talapatra, "Low Temperature Electronic Transport in Field-effect Transistors based on 2D Layers of Copper Indium Selenide ($\text{CuIn}_7\text{Se}_{11}$)," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2018, Jan. 2018, L37.006, p. L37.006.
- 6 P. Patil, **S. Ghosh**, M. Wasala, S. Lei, R. Vajtai, P. Ajayan, and S. Talapatra, "Fast Photo-detection in Phototransistors based on Group III-VI Layered Materials.," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2017, Mar. 2017, K31.012, K31.012.
- 7 M. Wasala, P. Patil, **S. Ghosh**, S. Lei, R. Vajtai, P. Ajayan, and S. Talapatra, "Temperature Dependent Photocurrent Spectroscopy of Few Layer $\text{CuIn}_7\text{Se}_{11}$," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2017, Mar. 2017, H33.011, H33.011.
- 8 F. Bagsican, A. Winchester, S. Ghosh, X. Zhang, L. Ma, M. Wang, I. Kawayama, H. Murakami, S. Talapatra, R. Vajtai, P. Ajayan, J. Kono, and M. Tonouchi, "Evaluation of local adsorption energy of oxygen on graphene using laser thz emission spectroscopy," in *Conference on Lasers and Electro-Optics*, Optica Publishing Group, 2016, STh4I.8.  DOI: 10.1364/CLEO_SI.2016.STh4I.8.
- 9 F. R. Bagsican, I. Kawayama, A. Winchester, **S. Ghosh**, X. Zhang, L. Ma, M. Wang, H. Murakami, S. Talapatra, R. Vajtai, P. M. Ajayan, J. Kono, and M. Tonouchi, "Temperature programmed desorption measurements of oxygen molecules in 2d materials using laser terahertz emission microscopy," in *2016 41st International Conference on Infrared, Millimeter, and Terahertz waves (IRMMW-THz)*, 2016, pp. 1–2.  DOI: 10.1109/IRMMW-THz.2016.7758578.

- 10 P. Patil, **S. Ghosh**, M. Wasala, S. Lei, R. Vajtai, P. Ajayan, and S. Talapatra, "Field Effect Transistors Using Atomically Thin Layers of Copper Indium Selenide (CuInSe)," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2016, Jan. 2016, P16.015, P16.015.
- 11 A. Al-Asadi, L. Henley, **S. Ghosh**, A. Quetz, I. Dubenko, N. Pradhan, L. Balicas, S. Talapatra, and N. Ali, "Synthesis and Photoresponse of Hydrothermally Grown ZnO Nanowires," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2015, Mar. 2015, M26.001, p. M26.001.
- 12 F. Bagsican, A. Winchester, S. Ghosh, X. Zhang, L. Ma, M. Wang, I. Kawayama, H. Murakami, S. Talapatra, R. Vajtai, P. Ajayan, J. Kono, and M. Tonouchi, "Gas adsorption dynamics in graphene by laser thz emission spectroscopy," in *JSAP-OSA Joint Symposia 2015 Abstracts*, Optica Publishing Group, 2015, 15a2D7. [URL: https://opg.optica.org/abstract.cfm?URI=JSAP-2015-15a_2D_7](https://opg.optica.org/abstract.cfm?URI=JSAP-2015-15a_2D_7).
- 13 **S. Ghosh**, M. Wasala, J. Zhang, S. Lei, R. Vajtai, P. M. Ajayan, and S. Talapatra, "Temperature dependent photoconduction in atomically thin Layers of Indium Selenide," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2015, Mar. 2015, S2.010, S2.010.
- 14 J. Gonzales, F. Bagsican, I. Kawayama, H. Murakami, A. Winchester, S. Ghosh, S. Talapatra, and M. Tonouchi, "Measuring photo-oxidation effect in ws₂ nanosheets using laser terahertz emission spectroscopy," vol. 2015.1, 2015, pp. 3746–3746. [DOI: 10.11470/jsapmeeting.2015.1.0_3746](https://doi.org/10.11470/jsapmeeting.2015.1.0_3746).
- 15 M. Wasala, **S. Ghosh**, J. Zhang, J. Richie, D. Mazumdar, S. Kar, and S. Talapatra, "Electronic and photo-electronic transport in sputter deposited MoS₂ film," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2015, Mar. 2015, S2.006, S2.006.
- 16 J. Zhang, **S. Ghosh**, M. Wasala, and S. Talapatra, "Electronic and optoelectronic properties of Few Layer MoS₂ Flake," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2015, Mar. 2015, S2.002, S2.002.
- 17 F. R. Bagsican, M. Ohshiro, K. Takayama, I. Kawayama, H. Murakami, A. Winchester, S. Kittu, S. Talapatra, and M. Tonouchi, "Graphene and tungsten disulfide nanosheets prepared using liquid phase exfoliation," vol. 2014.1, 2014, pp. 1352–1352. [DOI: 10.11470/jsapmeeting.2014.1.0_1352](https://doi.org/10.11470/jsapmeeting.2014.1.0_1352).
- 18 **S. Ghosh**, B. Muchharla, A. Winchester, S. Feng, A. L. Elias, N. P. Lopez, S. Kar, M. Terrones, and S. Talapatra, "Synthesis and Photoresponse of Few Layer Liquid Phase Exfoliated Molybdenum Disulphide (MoS₂) Flakes," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2014, Mar. 2014, F51.013, F51.013.
- 19 J. Huffstutler, M. Wasala, J. Richie, A. Winchester, **S. Ghosh**, S. Kar, and S. Talapatra, "Performance of Liquid Phase Exfoliated Graphene As Electrochemical Double Layer Capacitors Electrodes," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2014, Mar. 2014, J25.003, J25.003.
- 20 J. Richie, J. Huffstutler, M. Wasala, A. Winchester, **S. Ghosh**, S. Kar, and S. Talapatra, "Synthesis and Electrochemical Characterization of Liquid Phase Exfoliated Graphene Flakes," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2014, Mar. 2014, H1.337, H1.337.
- 21 M. Wasala, **S. Ghosh**, A. Winchester, L. Moore, B. Nichols, M. Dubey, and S. Talapatra, "Synthesis and Characterization of Liquid Phase Exfoliated Tungsten Disulphide (WS₂) Flakes," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2014, Mar. 2014, A51.011, A51.011.
- 22 A. Elias, N. Perea-Lopez, A. Castro-Beltran, A. Berkdemir, S. Feng, R. Lv, A. Long, T. Hayashi, Y. Kim, M. Endo, H. Gutierrez, **S. Ghosh**, S. Talapatra, N. Pradhan, L. Balicas, F. Lopez-Urias, H. Terrones, and M. Terrones, "Large Area Synthesis of WS₂ Crystalline Sheets Directly on SiO₂ and Their Transfer to Other Substrates," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2013, Mar. 2013, Q1.251, Q1.251.

- 23 **S. Ghosh**, A. Winchester, A. Elias, N. Pradhan, L. Balicas, M. Terrones, and S. Talapatra, "Electrical Transport Properties of Liquid Phase Exfoliated MoS₂ Thin Films," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2013, Mar. 2013, T23.006, T23.006.
- 24 N. Perea-Lopez, A. Elias-Arriaga, H. Rodriguez-Gutierrez, R. Lu, A. Castro, S. Talapatra, **S. Ghosh**, A. Berkdemir, F. Lopez-Urias, H. Terrones, M. Terrones, and MURI 24 Team, "Photocurrent studies on continuous large area monolayers of WS₂ and MoS₂," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2013, Mar. 2013, R38.009, R38.009.
- 25 S. Talapatra, B. Muchharla, M. Connolly, A. Winchester, **S. Ghosh**, S. Kar, Southern Illinois University Carbondale Team, and B. C. Northeastern University, "Electrical Characterization of Graphene Flakes Synthesized Using Liquid Phase Exfoliation of Graphite in Isopropyl Alcohol," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2013, Mar. 2013, C6.008, p. C6.008.
- 26 **S. Ghosh**, S. Kar, Z. Liu, R. Vajtai, P. Ajayan, and S. Talapatra, "Investigation of Electrochemical Gate Controlled Charge Transport in Large Area Boron-Nitrogen Doped Graphene," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2012, Feb. 2012, H12.002, H12.002.
- 27 A. Winchester, **S. Ghosh**, B. Turner, X. F. Zhang, and S. Talapatra, "Performance of Multi Walled Carbon Nanotubes Grown on Conductive Substrates as Supercapacitors Electrodes using Organic and Ionic liquid electrolytes," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2012, Feb. 2012, C1.320, p. C1.320.
- 28 **S. Ghosh**, R. Shah, X. An, D. Rawat, S. Kar, S. Talapatra, Southern Illinois University Collaboration, and Northeastern University Collaboration, "1-pyrenecarboxylic acid Functionalization of Graphene: Effect on Capacitive Energy Storage," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2011, Mar. 2011, B20.010, B20.010.
- 29 S. Talapatra, S. Kar, R. Shah, **S. Ghosh**, X. An, T. Simmons, M. Washington, and S. Nayak, "Ultrathin Graphene Membranes as Flexible Electrodes for Electrochemical Double Layer Capacitors," in *APS March Meeting Abstracts*, ser. APS Meeting Abstracts, vol. 2010, Mar. 2010, X21.008, p. X21.008.

Skills

Nanofabrication	■ Photolithography, electron-beam lithography, Focus ion beam (FIB) lithography.
Microscopy	■ Scanning electron microscopy (SEM), Focus ion beam (FIB) & Atomic force microscopy (AFM)
Device Property Measurement	■ Semiconductor parameter analyzer, Low temperature cryogenic probe station, Automated probe station.
Programming	■ LabView, MatLab, Origin

Awards and Achievements

- 2015 ■ **Deutscher Akademischer Austausch Dienst (DAAD) scholarship for further study and training in Germany**, Helmholtz-Zentrum Berlin.
- 2014 ■ **Dissertation Research Assistantship Award**, Southern Illinois University Carbondale.
- 2013 ■ **Best Poster Presentation Award in Physical Sciences**, Southern Illinois University Carbondale.
- **Best Oral Presentation Award- Symposium O, Beyond Graphene – 2D Atomic Layers**, MRS Spring Meeting.

Research Expertise & Interests

- Experimental quantum materials research with a focus on device fabrication and nanoscale transport phenomena
- Strongly correlated low-dimensional nanomaterials for quantum computing device applications
- Synthesis and characterization of various low-dimensional materials e.g 2D materials, nano-wires, nanotubes etc.
- 2D nanomaterials based electronic, opto-electronic and bio-sensing device applications
- Low temperature electronic, opto-electronic and magneto-electronic transport property of low-dimensional nanomaterials
- Electrochemical energy storage device applications utilizing nano-materials based electrodes