

Curriculum Vitae

Dr. Sanjiv Kumar Jha

Assistant Professor

August 9, 2018

Department of Physics
East Central University
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PARTICULARS

EDUCATION

| | |
|--|---|
| New Mexico State University Ph.D. in Physics | Las Cruces, NM <i>May, 2015</i> |
| New Mexico State University M.S. in Physics | Las Cruces, NM <i>December, 2012</i> |
| Tribhuvan University M.Sc. in Physics | Kathmandu, Nepal <i>August, 2006</i> |
| Tribhuvan University B.Sc. in Physics | Birgunj, Nepal <i>August, 2004</i> |

DISSERTATION

Title: “*First-Principles Study of the Covalently Functionalized Graphene*”

Advisor: Professor Igor Vasiliev

EMPLOYMENT

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|--|---|-----------|
| Assistant Professor | Department of Physics, East Central University, Ada, OK | 2018–now |
| Assistant Professor | Department of Physics, Samford University, Birmingham, AL | 2017–2018 |
| Postdoctoral Research Associate | School of Polymer Science and Engineering, | 2015–2017 |
| Advisor I: Dr. Gopinath Subramanian | The University of Southern Mississippi, Hattiesburg, MS | |
| Advisor II: Dr. Manoj K. Shukla | U.S. Army Engineer Research and Development Center, Vicksburg, MS | 2015–2017 |
| Graduate Teaching and Research Assistant | Department of Physics, New Mexico State University, Las Cruces, NM | 2009–2015 |
| Lecturer and Assistant Program Coordinator | Chaitanya Multiple Campus, Banepa, Nepal | 2008–2009 |
| High School Science and Maths Teacher | Nightingale Academy, Banepa, Nepal | 2007–2008 |

TEACHING EXPERIENCE

I. EAST CENTRAL UNIVERSITY (2018–now): Assistant Professor

II. SAMFORD UNIVERSITY (2017–2018): Assistant Professor

- Calculus Based Physics I (PHYS 203 Lecture)
- Physics I Laboratory (PHYS 203L)
- Calculus Based Physics II (PHYS 204 Lecture)
- Physics II Laboratory (PHYS 204L)
- Mechanics I – Engineering Statics and Dynamics (PHYS 310 Lecture)
- Mechanics I Laboratory (PHYS 311L)
- Modern Physics I (PHYS 350 Lecture)
- Modern Physics Advanced Laboratory (PHYS 351L)

III. NEW MEXICO STATE UNIVERSITY (2009–2015): Teaching Assistant

- Supplemental Instruction (SI) to PHYS 215G (PHYS 205) – Workshop Based Engineering Physics I Class.
- General Physics II Lab (PHYS 212L)–Text Book: *Tutorials in Introductory Physics* by Lillian C. McDermott and Peter S. Shaffer.
- Electricity/Magnetism Lab (PHYS 214L)–Text Book: *Tutorials in Introductory Physics* by Lillian C. McDermott and Peter S. Shaffer.
- Engineering Physics II Lab (PHYS 216L)–Text Book: *Tutorials in Introductory Physics* by Lillian C. McDermott and Peter S. Shaffer.
- General Physics for Life Science II Lab (PHYS 222L)–Text Book: *Tutorials in Introductory Physics* by Lillian C. McDermott and Peter S. Shaffer.

IV. CHAITANYA MULTIPLE CAMPUS, NEPAL (2008–2009): Lecturer & Assistant Program Coordinator of Science Division

- Calculus Based Physics I
- Algebra Based Physics I
- Physics I Laboratory
- Calculus Based Physics II
- Algebra Based Physics II
- Physics II Laboratory

V. NIGHTINGALE ACADEMY, NEPAL (2007–2008): High School Science & Maths Teacher

- Physics, Chemistry, & Maths

RESEARCH INTERESTS

My research interests span the areas of theoretical and computational condensed matter physics/materials science in the framework of first-principles density functional theory (DFT). I am also interested in physics education, and enthusiastic towards the implementation of active learning strategies, cooperative learning, and partially flipped classroom structures in my classes.

JOURNAL PUBLICATIONS

1. **S. K. Jha**, M. Roth, G. Todde, J. P. Buchanan, R. D. Moser, M. K. Shukla, and G. Subramanian, *Role of Stone–Wales Defects on the Interfacial Interactions among Graphene, Carbon Nanotubes, and Nylon 6: A First-Principles Study*, *J. Chem. Phys.* **149**, 0547031–05470312 (2018).
2. **S. K. Jha**, M. Roth, G. Todde, J. P. Buchanan, R. D. Moser, M. K. Shukla, and G. Subramanian, *First-Principles Study of the Interactions between Graphene Oxide and Amine-Functionalized Carbon Nanotube*, *J. Phys. Chem. C* **122**, 1288–1298 (2018).
3. G. Todde, **S. K. Jha**, G. Subramanian, and M. K. Shukla, *Adsorption of TNT, DNAN, NTO, FOX7, and NQ onto Cellulose, Chitin, and Cellulose Triacetate. Insights from Density Functional Theory Calculations*, *Surf. Sci.* **668**, 54–60 (2018).
4. G. Todde, **S. K. Jha**, and G. Subramanian, *The Effect of External Forces on the Initial Dissociation of RDX (1,3,5-Trinitro-1,3,5-Triazine): a Mechanochemical Study*, *Int. J. Quantum Chem.* **117**, 20, e25426 (2017).
5. **S. K. Jha**, K. Brown, G. Todde, and G. Subramanian, *A Mechanochemical Study of the Effects of Compression on a Diels-Alder Reaction*, *J. Chem. Phys.* **145**, 0743071–0743079 (2016).
6. M. Hammouri, **S. K. Jha**, and I. Vasiliev, *First-Principles Study of Graphene and Carbon Nanotubes Functionalized with Benzyne*, *J. Phys. Chem. C*, **119** (32), 18719–18728 (2015).
7. L. V. Frolova, I. V. Magedov, A. Harper, **S. K. Jha**, M. Ovezmyradov, G. Chandler, J. Garcia, D. Bethke, E. A. Shaner, I. Vasiliev, and N. G. Kalugin, *Tetracyanoethylene Oxide-Functionalized Graphene and Graphite Characterized by Raman and Auger Spectroscopy*, *Carbon*, **81**, 216–222 (2015).
8. **S. K. Jha**, *First-Principles Study of the Covalently Functionalized Graphene*, ProQuest Dissertations Publishing, **76-10(E)**, 3663300 (2015). (ISBN: 9781321867329)
9. **S. K. Jha**, and I. Vasiliev, *Vibrational Signatures of the Carboxylated Graphene: A First-Principles Study*, (Submitted to *J. Phys. Chem. C* on 07/01/2018).
10. **S. K. Jha**, M. Roth, G. Todde, G. Subramanian, E. R. Reed-Gore, J. A. Jefcoat, R. D. Moser, H. R. Peel, J. P. Buchanan, and M. K. Shukla, *Combined Computational and Experimental Investigation of Graphene–Carbon Nanotube–Nylon 6 Composite*, (in preparation, will be submitted to *Compos Sci Technol*).

CONFERENCE TALKS

Contributed Talks

1. *Computational Investigation of Graphene-Carbon Nanotube-Polymer Composite*, APS 2017 March Meeting (New Orleans, Louisiana, March 13–17, 2017).
2. *Atomistic Study of Graphene-Carbon Nanotube-Polymer Composite*, Mississippi Academy of Sciences (MAS), 81st Annual Meeting 2017, The University of Southern Mississippi (Hattiesburg, Mississippi, February 23–24, 2017).
3. *Exploring Reaction Mechanism on Generalized Force Modified Potential Energy Surfaces (G-FMPES) for Diels-Alder Reaction*, APS 2016 March Meeting (Baltimore, Maryland, March 14–18, 2016).
4. *Reaction Mechanism on Generalized Force Modified Potential Energy Surfaces for Diels-Alder Reaction*, Mississippi Academy of Sciences (MAS), 80th Annual Meeting 2016, The University of Southern Mississippi (Hattiesburg, Mississippi, February 18–19, 2016).
5. *Density Functional Study of Covalently Functionalized Graphene*, Graduate Research & Arts Symposium, New Mexico State University (Las Cruces, New Mexico, March 18, 2015).
6. *First Principles Study of Chemically Functionalized Graphene*, APS 2015 March Meeting (San Antonio, Texas, March 2–6, 2015).
7. *Ab Initio Study of Graphene Functionalized with Carboxyl Groups and Tetracyanoethylene Oxide*, APS 2014 Four Corners Section Meeting (Orem, Utah, October 17–18, 2014).
8. *Ab Initio Study of Covalently Functionalized Graphene and Carbon Nanotubes*, APS 2014 March Meeting (Denver, Colorado, March 3–7, 2014).
9. *Ab Initio Study of Graphene Functionalized with Benzyne*, APS 2013 Four Corners Section Meeting (Denver, Colorado, October 18–19, 2013).

Co-Authored Talks

10. M. Roth, **S. K. Jha**, M. K. Shukla, and G. Subramanian, *Computational Modeling of Nylon 6 Nanocomposites*, Mississippi Academy of Sciences (MAS), 82nd Annual Meeting 2018, The University of Southern Mississippi (Hattiesburg, Mississippi, February 22–23, 2018).
11. G. Todde, **S. K. Jha**, G. Subramanian, and M. K. Shukla, *Adsorption of TNT, DNAN, NTO, FOX7 and NQ Onto Cellulose, Chitin and Cellulose Triacetate. Insights from Density Functional Theory Calculations*, APS 2017 March Meeting (New Orleans, Louisiana, March 13–17, 2017).
12. G. Todde, **S. K. Jha**, G. Subramanian, and M. K. Shukla, *Insensitive Munitions Adsorbed Onto Cellulose, Chitin and Cellulose Triacetate: A DFT Study*, Mississippi Academy of Sciences (MAS), 81st Annual Meeting 2017, The University of Southern Mississippi (Hattiesburg, Mississippi, February 23–24, 2017).
13. M. K. Shukla, **S. K. Jha**, M. Roth, and G. Subramanian, *Computational Modeling of Graphene-Carbon Nanotube-Polymer Composite*, (Ole Miss, Mississippi, November 16–17, 2016).
14. D. Clouse, T. Woldanski, S. K. Mendon, **S. K. Jha**, J. W. Rawlins, and G. Subramanian, *Steady-state measurement of water diffusivity through coatings*, The International Waterborne, High-Solids and Powder Coatings Symposium (New Orleans, Louisiana, January 31–February 5, 2016).

Poster Presentation

15. M. Roth, **S. K. Jha**, G. Todde, G. Subramanian, and M. K. Shukla, *Computational Investigation of Graphene-Carbon Nanotube Nylon 6 Composite*, Mississippi Academy of Science (MAS), 81st Annual Meeting 2017, The University of Southern Mississippi (Hattiesburg, Mississippi, February 23–24, 2017).

Services

- **JOURNAL REVIEWER:** Journal of Nanostructure in Chemistry (JNSC), May 2018 – now

CONFERENCE AND WORKSHOPS ATTENDED

1. *Symposium on Plasma Physics and Material Science*, 2008 Meeting Nepal (Tribhuvan University, Kathmandu, Nepal, January 23–25, 2008).
2. *National Symposium on Plasma Physics and Material Science*, 2007 Meeting Nepal (Kathmandu University, Dhulikhel, Nepal, January 24–26, 2007).

COLLABORATORS AND OTHER AFFILIATIONS

- Dr. Gopinath Subramanian (School of Polymer Science and Engineering, University of Southern Mississippi)
- Dr. Manoj K. Shukla (Research Scientist, U.S. Army Engineer Research and Development Center)

WORKSHOPS/TRAINING ORGANIZED

1. *Introduction to Linux and High Performance Computing (HPC)*, The University of Southern Mississippi (March 3, March 24, and April 7–2017).

AWARDS

1. Graduate Student Travel Research Award, College of Arts and Science, New Mexico State University, Spring 2015.
2. Graduate Research Award, Department of Physics New Mexico State University, Summer 2014.
3. **Outstanding Physics Teaching Assistant Award**, American Association of Physics Teachers (AAPT) & Department of Physics, New Mexico State University, April 25, 2014.
4. **Bravo Award for Outstanding Performance as Teaching Assistants of Physics Laboratories** during 2010 summer session, Department of Physics New Mexico State University, August 20, 2010.
5. Mamta Memorial Award for the Teacher of the Year, Nightingale Academy, Banepa, Kavre, Nepal, Nov 26, 2007.
6. Undergraduate Merit Scholarship, Thakur Ram Multiple Campus, Birgunj, Nepal, 2003, & 2004.

PROFESSIONAL MEMBERSHIPS

1. American Physical Society (APS), member
2. Nepal Physical Society (NPS), member

LEADERSHIP EXPERIENCES

1. Lead Teaching Assistant, Department of Physics New Mexico State University, January 2014–May 2014.
2. Vice-President, Physics Graduate Student Organization (PGSO) at New Mexico State University, 2013–2014.
3. Community Service Director, Nepalese Student's Association (NeSA) at New Mexico State University, 2013–2014.
4. Treasurer, Physics Graduate Student Organization (PGSO) at New Mexico State University, 2011–2012.
5. Secretary, Nepalese Student's Association (NeSA) at New Mexico State University, 2011–2012.
6. Assistant Program Coordinator (Science) , Chaitanya Multiple Campus, Banepa, Kavre, Nepal, July 2008–June 2009.

COMPUTER AND LANGUAGE SKILLS

1. Experience with learning management systems: Blackboard, Canvas, and Moodle.
2. Experience with Physics Laboratory Softwares: PASCO Capstone Software, Tracker.
3. Experience with high-performance computer cluster (hpc) and Computational Research Softwares: Quantum ESPRESSO, SIESTA, GAUSSIAN.
4. Experience with Visualization Softwares: XcrysDen, VMD, GaussView, Jmol, VESTA, Avogadro.
5. Computer Skills: Windows, Linux, Latex, and Matlab.
6. Language Skills: Proficient (written and spoken) in English, Nepali, Hindi, Maithili, and Bhojpuri.

REFERENCES

- Dr. Henry W. Glotfelty
Chair and Professor
Department of Physics
Samford University
800 Lakeshore Dr
Birmingham, AL 35229
- Dr. Igor Vasiliev (Ph.D. Dissertation Advisor)
Professor
Department of Physics, MSC 3D
New Mexico State University
1255 N. Horseshoe St
Las Cruces, NM 88003
- Dr. Gopinath Subramanian (Post-Doc Advisor I)
Assistant Professor
School of Polymer Science and Engineering
The University of Southern Mississippi
118 College Dr
Hattiesburg, MS 39406
- Dr. Manoj K. Shukla (Post-Doc Advisor II)
Research Physical Scientist
Environmental Laboratory,
U.S. Army Engineer Research and Development Center (ERDC)
Vicksburg, MS 39180