CURRICULUM VITAE ATANU PATRA

Experience	Postdoctoral (December 2020-November 2021)
	Optical Spectroscopy of Nanostructured Materials laboratory, Department of Physics, Sapienza University of Rome, Italy.
	Postdoctoral (October 2019-November 2020)
	Institute of semiconductors, Chinese Academy of science, Beijing and Beijing Academy of Quantum Information Sciences, China.
	Postdoctoral (June 2019–September 2019)
	Department of Physics,
	Indian Institute of Technology Bombay, Maharashtra, India.
Education	Ph.D (26.06.2013–05.04.2019) Indian Institute of Technology Kharagpur, West Bengal, India.
	• Thesis Title: Arsenic/antimony based III-V semiconductor heterostructures: structural and
	optical characteristics
	Advisor: Professor Anushree Roy
	Department of Physics,
	Indian Institute of Technology Kharagpur, West Bengal, India.
	Master of Science (2011-2013): Physics, Marks obtained: 8.16/10.0 Indian Institute of Technology Kharagpur, West Bengal, India.
	Master thesis title: Structural phase transition studies on Bi ₄ V ₂ O ₁₁ and Bi ₄ V _{1.8} Cu _{0.2} O _{10.7} by
	<i>temperature dependent Raman measurements</i> , under the supervision of Prof. Anushree Roy .
	Bachelor of Science (2008-2011): Physics , Subsidiary subjects: Mathematics and Chemistry, Percentage of Marks: 72%
	Midnapore College under the affiliation of Vidyasagar University, West Bengal, India.
Research Interest:	Optical Spectroscopy of low dimensional Materials
	Crystal structure, electronic band structure
	Raman and Photoluminescence spectroscopy
	Density functional calculation

Awards and achievements	• 2013-2018: Obtained Ministry of Human Resource Development (MHRD) fellowship funded
	by the Govt. of India to pursue my doctoral degree
	• Best poster presentation award on International Conference on Perspectives in Vibrational
	Spectroscopy 2016 (ICOPVS 2016) held at University of Lucknow, Uttar Pradesh,
	India
Teaching experience	Teaching assistant:
	a. 2014-Autumn semester: 3 rd year undergraduate course on statistical mechanics
	b. 2014-Spring semester: 1 st year undergraduate course on general physics
	c. 2015-Autumn semester: 4 th year undergraduate course on Laser spectroscopy • Lab
	demonstrator:
	2015 (Autumn)-2017 (spring) semester: 1 st year undergraduate physics lab, condensed matter lab, electromagnetic optics and nuclear physics lab
Research Skills	Hand on experienceMechanical exfoliation of 2D materials
	Post-growth hydrogen irradiation
	• Visible and UV-Micro-Raman (Horiba Jobin-Yvon-T64000): Raman mapping resonance
	Raman temperature dependent measurements (5 K to 1500 K) polarization dependent Raman study.
	Photoluminescence (PL) and PL excitation (Horiba-Yvon)
	Spectrometers for UV/VIS/NIR with Si,InGaAs and INSb CCD arrays Time-resolved PL temperature dependent measurements (5 K to 300 K)
	Theoretical and computational tools
	Method:Density functional theory
	Code:Wien2K and VASP
	Software skills:
	a. Operating systems:Windows and Linux
	b. Numerical tools:Labspec, Mathematica and Matlab
	d. Graphics packages:XCrysden, Xmgrace and gnuplot.

e. Visualization program for structural models: Vesta and Material studio

Publications 1. Patwe S. J., **Patra A.**, Dey R., Roy A., Kadam M., Achary S. N., and Tyagi A. K.; Probing the local structure and phase transitions of Bi₄V₂O₁₁-based fast ionic conductors by combined Raman and XRD studies (2013). *J. Am. Ceram. Soc.* 96, 3448.

2. **Patra A.**, Panda J. K., Roy A., Gemmi M., David J., Ercolani D., and Sorba L.; Mapping of axial strain in InAs/InSb heterostructured nanowires (2015). *Appl. Phys. Lett.* 107, 093103.

3. **Patra A.**, Chakraborty M., and Roy A.; Mapping of the electronic band gap along the axis of a single InAs/InSb_xAs_{1-x} heterostructured nanowire (2016). *Nanoscale* 8, 18143.

4. **Patra A.**, Roy A. Gomes U. P., Zannier V., Ercolani D., and Sorba L.; Manipulation of polarization anisotropy in bare InAs and InAs/GaSb core-shell nanowires (2018). *Appl. Phys. Lett.* 112, 153104.

5. **Patra A.**, Chatterjee S., and Roy A.; Strain Distribution in (InAs)_n/(InSb)_m Multilayer: A First Principles Calculations (2019). *Solid State Commun.* 291, 2427.

6. **Patra A.**, Chakraborty M., and Roy A.; Electronic band structure engineering in InAs/InSbAs and InSb/InSbAs superlattice heterostructures (2019). *J. Appl. Phys.* 125, 025704.

7. Bera K., Chugh D., **Patra A.**, Tan H. Hoe, Jagadish C., and A. Roy; Strain distribution in wrinkled hBN films (2020). *Solid State Commun.* 310, 113847.

8. Kumar K., Mishra S., **Patra A.**, Chowdhury A., and Roy A.; Phase integrity of zinc oxide doped zirconia under low compacting pressure (2020). *J. Alloys Compd.* 843, 155927.

9. Pal A., Kuo T. W., Hsu C. H., Kakarla D. C., Tiwari A., Wu H. C., Chou M. C., **Patra A.**, Blundo E., Polimeni A., Chuang F. C., Yang H. D.; Unveiling interesting coupled structural, magnetic, and electrical properties in CoTeMoO₆ (2021). *Manuscript under communication*.

Presentations in Conference/Workshop

International	 Poster presentation titled "Experimental and theoretical detection of axial strain in InAs/InSb heterostructured nanowires", -Materials Research Society-Spring (MRS-2017); Arizona, USA.
	2. Poster presentation titled " <i>Composition modulated electronic band gap along InAs/InSb_xAs</i> _{1-x}
	heterostructured nanowire using resonance Raman mapping",
	-International Conference on Perspectives in Vibrational Spectroscopy 2016 (ICOPVS2016); University of Lucknow, Uttar Pradesh, India.
National	
	1. Poster presentation titled "Interface effect of topological semimetal with the band insulator", - National Conference on Recent Trends in Condensed Matter Physics (RTCMP-2017); Bose Institute, Kolkata, West Bengal,India.
	2. Poster presentation titled " <i>Axial strain relaxation in InAs/InSb heterostructured nanowires</i> ", - Frontiers in Advanced Materials (FAM-2015) ; Indian Institute of Science, Bangalore, Karnataka, India
Declaration	I hereby declare that the above-written particulars are true to the best of my knowledge and belief.