RESUME

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Experience & Education

- **Nov 2022- till date, Associate Professor, School of Physics**, University of Hyderabad.
- **March 2014-Nov 2022, Assistant Professor, School of Physics**, University of Hyderabad.
- **Dec 2009-Feb 2014, Worked as Scientist-SD & SE** at SAC ISRO, Ahemadabad.
- **Ph.D., Two-dimensional infrared femtosecond laser spectroscopy,** Tulane University, New Orleans, LA, USA; Spring 2005- Summer 2009; GPA 4.0/4.0. (3 months Postdoc at UoH).
- **M.S. Applied Physics**; University of Massachusetts (UMASS), Boston, MA, USA; Fall. 2003 – Fall.2004, GPA: 3.97/4.0, Among the top ten GPA awards in the University.
- **Academic year 2002-2003** Lecturer in Physics for M.Sc, Shadhan College, Hyderabad.
- **M.Sc Physics**, with specialization in Quantum Optics: University of Hyderabad, India during 2000-2002, stood as a topper in Quantum Optics specialization with 72% of marks.
- **B.Sc. Maths, Physics & Chemistry**; Andhra University, 1997-2000, stood college first with 80% of marks.

Projects or Funding received at UoH: (Established state-of-the-art facility)

(1) UGC- Startup Grant, 2015-17, **6 Lakhs,** Title:" Ultrafast infrared spectroscopy**"**

(2) DST-Extramural individual centric grant (Department of Science and Technology), 2015-19, **51 Lakhs**. EMR/2014/000516, Title: "Dual Frequency 2DIR spectroscopy".

(3)UPE-II University of Potential Excellence, 2016-2018, **21 Lakhs, Title:** "Ultrafast Lasers: Science and Applications.UH/UPE-2/28/2016.

(4) Respond Project, ISRO Indian Space Research Organisation, **87.5 Lakhs**, 2019-2023, **Title:** "Stray light suppression in optical payloads via nanostructured absorbing surfaces fabricated by femtosecond laser patterning". File: ISRO/RES/3/799

(5) Institute of Eminence, University of Hyderabad, 2021-2024, **67 lakhs,** Title: "Multidimensional Ultrafast spectroscopy". File: UoH-IoE-RC1-20-026

(6) DST- SERB, as Co-PI (along with PI: Prof Sharath Anathamurty, File Number: CRG/2022/005533), **60.5 lakhs** Title: An optical near field micro/nanomanipulator for bioreheology and as a single molecule probe.

(7) DST-RSF, as Co-PI Russia Science Federation, PI is Prof. R Chandrashekar), **85 lakhs**, Approved in 2024, Title: "Self-Healing Non-linear Optical Crystal as New Materials for All-Organic Photonic Integrated Circuit".DST/INT/RUS/RSF/P-71/2023

Student-centric projects submitted by me:

(8) UGC BSR fellowship project, 2015-19, **15 Lakhs**, Chakradhar Sahoo.

(9) UGC MANU fellowship project,2016-21, **20 Lakhs**, Md Abu Tahir.

(10) PMRF fellowship project, 2021-25**, 40 Lakhs**, Nitin Chaudhary.

(11) PMRF fellowship project,2021-25, **40 lakhs**.
(12) PMRF Fellowship Project, 2023-27, **40 lakhs**, Bedanta Kumar Deka.

Additionally, the University's Internal Budget supported for upgradation of femtosecond laser:
(a) VC supported from XII plan Grant, **1 crore**
(b) DST purse Supported **68 Lakhs**.

Fellowship Award

- **UoH Chancellor's Award 2023,** for excellence in the contributions of teaching and research at the University of Hyderabad.
- **Best Poster Award:** UFS 2024 – International conference held at NISER, Bhubaneswar**,** Poster – Ultrafast Exciton Dynamics in TMDCs studied using mid-IR pulses, Bedant K Deka, Sri Ram G Naraharisetty.
- **Best Poster award**: "Unraveling the intraband ultrafast carrier dynamics in a few layer MoS_2 by probing with mid-IR pulses" Vinod Rajput, T N Narayanan, Sri Ram G Narahrisetty; ICFAST-2022 (International conference on frontier areas of science & technology) India Japan Science and technology conference 9-10 Sept 2022, University of Hyderabad.
- **Best poster award:** "Broadband super black stainless-steel surface fabricated by nanosecond laser irradiation". Md Abu Taher, Desai Narayana Rao, Sri Ram G Naraharisetty DocID: 5089, DAE_BRNS National Laser Symposium (NLS-28), VIT Chennai, Chennai, January 8-11, 2020
- Outstanding Student Poster Award at 235th National ACS Meeting in New Orleans, LA, 6^{th} to 10^{th} April 2008
- Louisiana Board of Reagents Grant, March 2007.
- Best teaching assistant award of 2006 from Tulane University, New Orleans, USA.
- CSIR – NET (Council of Scientific and Industrial Research – Junior Research Fellowship) award in the year 2003.
- Merit Scholarship during M.Sc at the University of Hyderabad, which is awarded for securing first rank in the Common Entrance examination.
- Best undergraduate student of Sir C.R.Reddy College, Eluru, West Godavari, AP, India in the year 2000, which is awarded for securing top scores in the college from Math, Physics, and Chemistry groups.

Research Guidance:

1. Ramya Emusani, 12PHPH25, **Co-guide along with Prof. D. Narayana Rao. Degree awarded in 2018.**
2. Chakradhar Sahoo, 14PHPH06, enrolled Ph.D. student in 2014.
   (UGC BSR fellowship after joining my group, Degree awarded in 2020). Worked as a PDF at the prestigious Okinawa Institute of Science and Technology, Japan. Published Nature and Science Paper in 2020-21. Currently **Marie Sklodowska-Curie fellowship** (Aarhus University, Denmark).
3. Md Abu Taher, 15PHPH 18, enrolled Ph.D. student in 2015.

(UGC-MANU fellowship got after joining my group, Degree awarded in 2022) . Currently Post Doc at IIT Kanpur.

4. Thirunaukkarasu K, From May 2019 to December 2021. (With a couple of publications from our group he Joined as a Ph.D. student at the **Institute of Optics, Jean Monnet University, France**)
5. Vinod Rajput, 16PHPH06 **(Degree awarded in 2024**) **(Working as Post Doctoral fellow at Sederberg Photonics lab,** SFU (Simon Fraser University) Vancouver Campus, Canada). Quantum control in mid-IR semiconductor devices. Also worked King Fahd University of Petroleum and Minarals, Dammam, Saudi Arabia.
6. Sajin Ponnan, 17PHPH25 (**Degree awarded in June 2025**).
   (Joined with UGC-CSIR Fellowship).

Ongoing research students:

7. Nitin Chowdary 20PHP04 (2021) **PMRF fellow.**
8. Shilpa 20PHPH11 (2021) (**currently paid in IoE**)
9. Bedanta K Deka 22PHPH16 (Joined in Jan 2023, **PMRF Fellow**.
10. Chintan Sudharshan 23PHPH53 (Joined in April 2024, BBL fellowship).
11. **Two more students will be joining in the July 2025 admissions.**

Currently, One Post Doc, Dr. K Santhosh (Ph.D IISER Mohali, and a postdoc at John Hopkins) working with me.
(2). Dr. Poojita Bommareddy, worked as Post Doc from July 2023 to April 2024.

Motivation: (1) I try my best **not to keep** any Ph.D. students under our UGC BBL fellowship, it saves our university budget and also student gets extra fellowship. (2) I do not depend nor look for external groups/foreign collaborations particularly doing experiments. I home-built every setup that I plan to do and many people will come to be for collaboration (this is my strength as we can do experiments depending on the science to be explored). All my publications are from the experiments that are performed in my lab. My students are in demand and they get post-docs because of the training they got in my lab (3) I collaborate for materials across several disciplines.

IM.Sc Students working on long-term research projects (introduced new trend of involving undergraduates in full-time research activity in the School of Physics. Latter other colleagues also did the same)**.**

12. Hiteswar Prasad, 15IPMP03, Worked in our research lab for 2.5 years and submitted two publications. Pursuing Ph.D. in France ENS Paris
13. M. Sethupathy, 15IPMP05, worked in our research lab for 2.5 years and submitted one publication. Currently pursuing a Ph.D. in Canada, University of Alberta
14. Bharath. V, 16ICMC18, admitted to the University of Strasbourg, France.
15. Navaneethan, 14IPMP05, published two journals and currently working in a company.
16. Namitha L S 18ILMB20 (currently working undergraduate research student)
17. Vinay Gudala 18IPMP17 (PhD student in Newzeland)
18. Niloofar sulthana19IPMP17 (currently working undergraduate research student)
19. Shamna19IPMP11 (currently working undergraduate research student)

20. Srivardhan 20IPMP12 (currently working undergraduate research student).

Patents

1. *"A self-cleaning superhydrophobic broadband ultralow reflective stainless-steel sheet material and its fabrication process thereof"* Application no.- 202441017110, ref. no.- TEMP/E 1/19457/2024-CHE, 2024
2. " ANALYTE-SPECIFIC TUNABLE NANOSCALE RESONATING SUBSTRATES FOR ULTRA-SENSITIVE SURFACE-ENHANCED RAMAN SPECTROSCOPY (SERS)" *Patent filed by University of Hyderabad.*

Publications

1. "Single Molecule Raman Sensing Enabled by Tunable Nanoscale Resonating Grids" Nitin Chaudhary, Poojita Bommareddy, Chinta Sudharshan, Shilpa Magalassery, Sri Ram G Naraharisetty, Under Peer Review, 2025. (First time in the literature we showed single molecule detection with very high signal to noise ratio)
2. "Mid-IR Probing Unveils Vanadium Doping-Induced Unsaturation of Defect States in Monolayer MoS_2"; Shilpa Mangalassery, Dipak Maity, Bedant K. Deka, Tharangattu N. Narayanan, Sri Ram G. Naraharisetty, Under Review, (Revision submitted), 2025.
3. "Wavelength-Dependent Correlation of LIPSS Periodicity and Laser Penetration Depth in Stainless Steel"; Nitin Chaudhary, Chavan Akash Naik, Shilpa M, Jai Prakash Gautam and Sri Ram G Naraharisetty, Journal of nanotechnology, 16,1302-1315, **2025** (Impact factor 3). https://doi.org/10.3762/bjnano.16.95
4. "Broadband laser protection and enhanced nonlinear optical response of samarium-metal–organic framework-based white/black carbon hybrids", M. Saravanan, Vinod K Rajput, K. Suresh, Sri Ram G Naraharisetty, Sajan D. George, and I. Vetha Potheher; Nanosale, 17, 13777-13786, 2025 (IF 5.8) DOI: 10.1039/D5NR00865D
5. "*Synthesis, structural, spectroscopic and theoretical insights into a new malononitrile derivative: A candidate for nonlinear optical applications*". Vidya L, Shilpa Mangalassery, Aparna V, Aparna Raj, Neelima S, Monu Joy, G Anilkumar, Sri Ram G Naraharisetty, C Sudarsanakumar, Journal of Molecular Structure, 139312, 1319, **2025, (IF 4.0**). https://doi.org/10.1016/j.molstruc.2024.139312
6. Solvent Polarity Dependent Ultrafast Relaxation Kinetics of ADS800AT Dye; Sajin Ponnan, Narayana Rao D, Sri Ram G Naraharisetty, 2**024** Journal of Fluorescence. https://doi.org/10.1007/s10895-024-03932- (IF**3.1**).
7. *"Carrier Dynamics of Excited State Absorption in Germanium using Mid-IR probe Pulses"* Vinod K Rajput, Md Abu Tahir, D. Narayana Rao, Sri Ram G Naraharisetty, Optical Materials,154, 115744, **2024**, (IF **4.2**).

8. "*Direct Laser Write-Read-Erase in a Functional Molecular Phase Change Material–Polymer Nanocomposite Thin Film*", Ritesh Singh Maurya, Nitin Chaudhary, P. Srujana, Vinod K. Rajput, Sri Ram G. Naraharisetty, T.P. Radhakrishnan, Advanced optical materials, 2302279, **2024**, (**Impact factor 10**) .https://doi.org/10.1002/adom.202302279,
9. " *Excited state energy relaxation dynamics in near-infrared dye via transient absorption spectroscopy"*, Sajin Ponnan, Shilpa Mangalaserry, D Narayana Rao, Sri Ram G Naraharisetty, 53,P 4786-4795. Journal of Optics, **2024**, (IF **2.1**)https://doi.org/10.1007/s12596-023-01652-6
10. *"*An insight into Structural, Spectroscopic and Nonlinear Optical Application of a Promising Malononitrile Derivative: (*Z*)-2-(3-chloro-3-(4-chlorophenyl) allylidene)malononitrile*"* Vidya L, Avijit Ghosh,, Neelima S, G Anilkumar, Sri Ram G Naraharisetty, C Sudarsanakumar; Chemical Physics Impact, Vol 8, 100640, 2024 (IF **3.1**).
11. "*Sensing, detoxification and bactericidal applications of nitrogen-doped carbon dots*" Sai Kumar Tammina, Jyothi L, Joti Vinoth Kumar, Harshal Srivastava, Sri Ram G Naraharisetty, Diamond and Related Materials, 144, 111013, **2024**. (Impact factor **4.1**) https://doi.org/10.1016/j.diamond.2024.111013
12. "*Highly Sensitive and Stable Surface Enhanced Raman Scattering Measurements on Special Ladder-Like Nanostructures*" Shilpa Mangalassery, Nitin Chaudhary, Sri Ram G Naraharisetty, Surface and Interfaces,42,103454, **2023**(**IF 6.2**). https://doi.org/10.1016/j.surfin.2023.103454
13. "*Anisotropic Nonradiative recombination of carriers in a Few Layered MoS_2 Probed by Mid-IR Ultrafast Spectroscopy*", Vinod K. Rajput, Dipak Maity, Bedanta K. Deka, Tharangattu N. Narayanan, Sri Ram G. Naraharisetty, The Journal of Physical Chemistry C 127, 27, 13120–13129, 2023, **IF 4.2**)
14. "*Nonlinear optical and photoluminescence studies on Dy^{3+}-Sm^{3+} co-doped zinc aluminoborosilicate glasses for optical limiting and W-LEDs applications*", M. Monisha, Vinod K Rajput, Sri Ram G Naraharisetty, M. Saravanan, M. I. Sayyed, Sudha D Kamath, Physica Scripta, **98,** 095945, 2023. DOI:10.1088/1402-4896/acef6b;**2.6**
15. "Microstructured Ultra-Black Thin Stainless-Steel Sheets Fabricated by Sagnac Interferometric Based Ultrafast Laser Patterning" Thirunaukkarasu K, Nitin Chaudhary, Sajin Ponnan, Md Abu Taher, Vinod K Rajput, A. K Sharma, K. V. Sri Ram, and Sri Ram G Naraharisetty; ACS Appl. Eng. Mater. 2023, 1, 1255-1262. https://doi.org/10.1021/acsaenm.3c00059; ISSN 2574-0962.
16. "*Compact optical scheme for generation of ultrafast mid-IR laser pulses***"** Vinod k Rajput, Prasenjit Jana, Sajin Ponna, Sri Ram G Naraharisetty, Pramana – J. Phys. (2022) 96:198. (Impact factor 2.7)
17. "*Controlled periodicities of ladder-like structures via femtosecond laser of wavelength from 400 nm to 2200nm*" Md Abu, Taher, Nitin Chowdary, Thirunaukkarasu K, Vinod k Rajput, Sri Ram G Naraharisetty, Surface and Interfaces 28, 101622, 2022. (**IF 6.2**)
18. "*Mechanically and thermally stable thin sheets of broadband antireflection surfaces fabricated by femtosecond lasers*", Thirunaukkarasu K, Md Abu Taher, Nitin Chaudhary, Vinod K Rajput, Jai Prakash Gautam, Sri Ram G Naraharisetty, Optics and Lasers Technology, 150, 107935, 2022.(Impact **factor 5.0**)

19. "*Wavelength dependent cubic nanoparticles formation on copper surfaces by femtosecond laser irradiation "* Md Abu, Taher, D. N. Rao, Sri Ram G Naraharisetty, Asian Journal of Physics 30, (12), 1637-1646, 2021. (This paper was submitted to honor my teacher, a special issue in his name) http://asianjournalofphysics.in/
20. " *The validity of Triple contact line theory from hydrophilic to superhydrophobic surfaces*" MA Taher, VK Rajput, Navaneethan, Sri Ram G Naraharisetty**,** Journal of Physics D: Applied Physics**,** 55, 055305, 2021 (**Impact factor 3.4**) https://doi.org/10.1088/1361-6463/ac30b8
21. "*Synthesis, Crystal Structure, Biological Evaluation, DFT Calculations and Third Order Nonlinear Optical Studies of Pyrazolines*" Swarnagowri Nayak, Vinay Parol, Gangadhar Hari, K. S. R. Pai, Rajeev K. Sinha, N. K.Lokanath, Sri Ram G Naraharisetty, Santosh L. Gaonkar, 2021, Journal of Molecular Structure, 130780, 1243, 2021 https://doi.org/10.1016/j.molstruc.2021.130780 (impact factor 3.81)
22. "*A third-order nonlinear optical single crystal of 3, 4-dimethoxy-substituted chalcone derivative with high laser damage threshold value: a potential material for optical power limiting*", Vinay Parol, A.N. Prabhu, Md Abu Taher, Sri Ram G. Naraharisetty, N.K. Lokanath, and V. Uphadhyaya, Journal of Materials Science: Materials in Electronics, Vol 31, 9133-9150, 2020 (Impact factor 2.8) https://doi.org/10.1007/s10854-020-03443-2
23. "*A long chain based bromo and methyl-substituted chalcone derivatives; experimental and theoretical approach on nonlinear optical single crystals*", Vinay Parol, V Upadhyaya, A N Prabhu, N K Lokanath, Md Abu Taher and Sri Ram G Naraharisetty, Materials Research Express, Vol 7, Issue 5, 055101,2020. (Impact factor 1.93). https://doi.org/10.1088/2053-1591/ab8b88
24. "*Optical and biomedical applications of eco-friendly biosynthesized Silver Nanospheres using Zingiber officinale root extract*" by Ramya, Emusani; L, Jyothi; P, Vivek Vardhan; Naraharisetty, Sri Ram Gopal; Narayana Rao, D; Nano Express 1, 1, 2020, 010021. https://doi.org/10.1088/2632-959X/ab85d1
25. "*Broadband absorption of nanostructured stainless steel surface fabricated by nanosecond laser irradiation*", Md Abu Taher, Sajin Ponnan, Hiteshwar Prasad, D. Narayana Rao, Sri Ram G. Naraharisetty, Vol 31, 17 , P 175301, Nanotechnology 2020 (IOP Nanotechnology, Impact factor 4.0) https://doi.org/10.1088/1361-6528/ab674e
26. "*Novel Synthesis and Study of Nonlinear Absorption and Surface-Enhanced Raman Scattering of Carbon Nanotubes Decorated with Silver Nanoparticles*", Nabil A. Saad, E. Ramya, V. Saikiran, Sir Ram G. Naraharisetty and D. Narayana Rao, 533, 110703,2020 chemical physics, Impact 3.48, https://doi.org/10.1016/j.chemphys.2020.110703
27. "Super Black Stainless Steel Surface Fabricated by Nanosecond Laser Irradiation," M. A. Taher, S. R. G. Naraharisetty and D. N. Rao, *2020 Conference on Lasers and Electro-Optics (CLEO)*, 2020, pp. 1-2, paper JW2B.21 https://doi.org/10.1364/CLEO_AT.2020.JW2B.21
28. "*Ellipsoidal droplet formation on the anisotropic superhydrophobic copper surface*", Md Abu Taher, Hitheswar P, Navanith P K, D N Rao, Sri Ram G Naraharisetty, Surf. Topogr.: Metrol. Prop. 7 (2019) 035001. (impact 2.44) https://doi.org/10.1088/2051-672X/ab2d80
29. "*Saturable and reverse saturable absorption of Cu_2O-Ag Nanoheterostructure*"; Nabil A. Saad, Mudasir H. Dar, E. Ramya, Sri Ram G Naraharisetty and D.

Narayana Rao, Journal of Materials Science, Volume 54, Issue 1, pp 188–199,2019. (Impact 4.7) https://doi.org/10.1007/s10853-018-2811-5

30. "*Ultrafast pump-probe signal detection using a data acquisition card*", Chakradhar Sahoo, M. Sethupathy, Nabil A Saad, D. Narayana Rao, Sri Ram G. Naraharisetty; Journal of Instrumentation, Vol 13, Issue10, P10027, 2018. (Impact 1.37) **DOI** 10.1088/1748-0221/13/10/P10027
31. "*High Optical Energy Storage and Two-Photon Luminescence from Solution-Processed Perovskite-Polystyrene Composite Microresonators*", Mari Annadhasan, Uppari Venkataramudu, Nikolai V Mitetelo, Evgeniy A Mamonov, Chakradhar Sahoo, Sri Ram Gopal Naraharisetty, Tatiana V Murzina, Rajadurai Chandrasekar, ACS Appl. Energy Mater. 2019, 2, 1, 428–435 (Impact: 7.0) https://doi.org/10.1021/acsaem.8b01459
32. " *A Two-Photon Pumped Supramolecular Upconversion Microresonator*", Jada Ravi, Dasari Venkatakrishnarao, Chakradhar Sahoo, Sri Ram Gopal Naraharisetty, Nikolai Mitetelo, Alexander A Ezhov, Evgeniy Mamonov, Tatiana Murzina, Rajadurai Chandrasekar; ChemNanoMat Vol 4, Issue 8,764-768, 2018. (Impact 3.7) DOI: 10.1002/cnma.201800196
33. *" Terahertz radiation and second-harmonic generation from a single-component polar organic ferroelectric crystal*", Uppari Venkataramudu, Chakradhar Sahoo, Solaiappan Leelashree, Mottamchetty Venkatesh, Damarla Ganesh, Sri Ram Gopal Naraharisetty, Anil Kumar Chaudhary, Sanyadanam Srinath, Rajadurai Chandrasekar; Journal of Materials Chemistry C, Vol 6, Issue 35, 9330-9335, 2018. (impact 8.1) https://doi.org/10.1039/C8TC02638F
34. "*Photonic Microresonators from Charge-Transfer in Polymer Particles - toward Enhanced and Tunable Two-Photon Emission*", Vattikunta, Radhika; Venkatakrishnarao, Dasari; Sahoo, Chakradhar; Naraharisetty, Sri Ram G; Narayana Rao, Desai; Müllen, Klaus; Chandrasekar, Rajadurai, Submitted *to ACS Applied Materials & Interfaces*, 10, Issue 19, 16723-16730, 2018. (Impact 10.4) https://doi.org/10.1021/acsami.8b01600
35. "*Optical and biomedical applications of eco-friendly biosynthesized metal NPs using Trigonella foenum-graecum leaf extract*", Ramya Emusani; Jyothi L; Sri Ram G Naraharisetty; Narayana Rao Desai; Applied Nanoscience Vol 8, Issue 4, pp 771–783, 2018. (Impact 3.7) https://doi.org/10.1016/j.saa.2020.118595
36. "*Chiral organic photonics: self-assembled micro-resonators for enhanced circular dichroism effect in the non-linear optical signal"***.** Venkatakrishnarao, C. Sahoo, E. A. Mamonov, I. A. Kolmychek, A. I. Maydykovskiy, N. V. Mitetelo, V. B. Novikov, Sri Ram G. Naraharisetty, T. V. Murzina, and R. Chandrasekar, J. Mater. Chem. C, 5, 12349-12353, 2017. (Impact 8.1) https://doi.org/10.1039/C7TC04621A
37. "*ABCD Matrix formalism to determine non-linear refraction coefficient by Z-scan technique*", Chakradhar Sahoo, V. Sreeramulu, Sri Ram G. Naraharisetty, and D. Narayana Rao, *Current Science*, Vol 112, No.5,1015-1019, 2017 (Impact 1.2) https://www.jstor.org/stable/24912494

38. "*2D Arrangement of Polymer Microsphere Photonic Cavities Doped with Novel N-Rich Carbon Quantum Dots Display Enhanced One- and Two-Photon Luminescence Driven by Optical Resonances*", Dasari Venkatakrishnarao, Chakradhar Sahoo, Radhika Vattikunta, Mari Annadhasan, Sri Ram G. Naraharisetty, and Rajadurai

Chandrasekar; *Adv. Optical Mater.* 2017, 1700695, DOI: 10.1002/adom.201700695. (Impact 10.1)

39. "*Ultrafast laser-induced reproducible nano-gratings on molybdenum surface*", Mudasir H Dar, Nabil Momen, Chakradhar Sahoo, Sri Ram G Naraharisetty and Narayana Rao Desai, *Laser Physics Letters.* 14 026101, 2017. (Impact 2.3) **DOI** 10.1088/1612-202X/aa5129
40. "*Overview of Laser ranging instruments*", Sri Ram Gopal Naraharisetty, Saji A Kuriakose; Signatures, Letters ISRC-AC (Indian Society of Remote Sensing), Vol.22, No.3, 2010. https://www.isrs-india.org/
41. "*C-D Modes of Deuterated Side Chain of Leucine as Structural Reporters via Dual-Frequency Two-Dimensional Infrared Spectroscopy* ", Sri Ram G. Naraharisetty, Valeriy M. Kasyanenko, Jorg Zimmermann, Megan C. Thielges, Floyd E. Romesberg and Igor V. Rubtsov; Journal of Physical Chemistry B, **113**, 4940-4946, 2009. (Impact 2.93) https://doi.org/10.1021/jp8112446
42. "*Bond Connectivity Measured via Relaxation-Assisted Two- Dimensional Infrared Spectroscopy*", Sri Ram G. Naraharisetty, Valeriy M. Kasyanenko, and Igor V. Rubtsov; Journal of Chemical Physics; **128**, 104502, 2008. (Impact 3.488) DOI:10.1063/1.2842071
    a. Selected for ***Virtual Journal of Ultrafast Science***, Volume 7, Issue 4, April 2008.
    b. Selected fo*r* ***Virtual Journal of Biological Physics Research****,* Volume 15, Issue 6,15thMarch 200*8.*
43. "*Relaxation-assisted dual-frequency two-dimensional infrared spectroscopy: measuring distances and bond connectivity* ", Igor V. Rubtsov, Sri Ram G. Naraharisetty, Christopher Keating and Valeriy M. Kasyanenko; Springer Series in Chemical Physics, **92**, 400-402, 2009. (Impact 0.3), DOI: 10.1007/978-3-540-95946-5_129
44. "*The 2DIR spectroscopy on CD modes of Leucine-d_{10} side chain*", Sri Ram G. Naraharisetty, Valeriy M. Kasyanenko, Jorg Zimmermann, Megan C. Thielges, Floyd E. Romesberg and Igor V. Rubtsov; Springer Series in Chemical Physics, **92**, 589-592, 2009. (Impact 0.3) DOI: 10.1007/978-3-540-95946-5_192
45. "*A relaxation-assisted 2D IR spectroscopy method*" Dmitry V. Kurochkin, Sri Ram G. Naraharisetty, and Igor V . Rubtsov; Proceedings of National Academy of Sciences USA, **104**(36), 14209-14214, 2007. (Impact 12.78) DOI: 10.1073/pnas.0700560104
46. **"***C-D Modes as Structural Reporters via Dual-Frequency 2DIR Spectroscopy*", Sri Ram G. Naraharisetty, Dmitry V. Kurochkin, and Igor V. Rubtsov; Chemical Physics Letters **437**, 262-266, 2007. (Impact 2.328) https://doi.org/10.1016/j.cplett.2007.02.020
47. "*Relaxation Assisted 2D IR Using Weak Vibrational Modes* ", Kurochkin, D. V.; Naraharisetty, S. G.; Rubtsov, I. V., Springer Series in Chemical Physics, **88**, 344-346, 2007. (Impact 0.3) DOI: 10.1007/978-3-540-68781-8_111
48. "*Dual frequency 2D IR on the interaction of weak and strong IR modes*"**,** Dmitry V. Kurochkin, Sri Ram G. Naraharisetty, and Igor V. Rubtsov; Journal of Physical Chemistry A, **109**, 10799-10802, 2005. Impact 2.781, https://doi.org/10.1021/jp055811+

49. "*Spectral phase based medical image processing*" S.-R. Kothapalli, C.S. Yelleswarapu, Sri Ram G. Naraharisetty**,** P. Wu, and D. V. G. L. N. Rao; Academic Radiology **12**, 708-721, 2005. Impact 5.482 DOI: 10.1016/j.acra.2004.09.017

Conferences organization:

1. *12th DAE BRNS Theme meeting on Ultrafast Sciences(UFS 2025)Technical Program Committee member, November 13-15, 2025*
2. *Frontiers in Physics, 3rd & 4th March 2023, Organising committee member.*
3. Organizing committee member, ICFAST-2022 (International conference on frontier areas of science & technology) India Japan Science and technology conference 9-10 Sept 2022, University of Hyderabad.
4. Member organizing committee of Recent Advances in Optical Sciences (RAOS) conference, 26-27 April 2014, School of Physics and ACRHEM, University of Hyderabad.
5. Joint-convener, School of Physics, University of Hyderabad has successfully conducted Frontiers in Physics-2014 (FIP-2014) annual meeting held from 17th-18th October 2014.
6. Co-convener, "Recent Trends in Quantum Optics" on the 10th December 2016 at the Raman Auditorium, Science Complex, University of Hyderabad.

Research Experience

- **March 2014- till date,** Associate/Assistant Professor, School of Physics, and University of Hyderabad.
    1. Established a state-of-the-art femtosecond laser facility at the School of Physics, the first of its kind in India, capable of producing two independently tunable femtosecond laser pulses across the 350 nm to 10 μm spectral region.
    2. Developed a home-built pump/probe spectroscopy setup, universally applicable to wavelengths ranging from UV, Visible, near IR, and Mid IR regions.
    3. **Unique in the country**: We developed a mid-IR pulse generation system that delivers an excellent signal-to-noise ratio in pump-probe experiments. This system can be pumped at any wavelength and probed with tunable mid-IR (2 to 10 μm) in monolayer 2D materials, few-layered 2D materials, and bulk materials to explore carrier dynamics. Many exciting results are expected in the coming years.
    4. **Carrier Dynamics in topological materials:** For the first time in the literature, we reported anisotropic lattice cooling (phonon modes) in a few-layer MoS2 system, tracking the role of defect states in exciton relaxation. We also extracted valley-dependent electron dynamics in TMDC materials.
    5. Established Laser Surface Patterning for fabricating metallic superhydrophobic surfaces with contact angles greater than 170°. Our experiments and modeling support TCL theory and contradict the widely accepted Cassie and Wenzel models.
    6. **Exciting Result:** Technological proof of fabricating highly efficient antireflective metal surfaces for space applications, in collaboration with the Indian Space

Research Organisation (ISRO) for satellite applications. Nearly perfect absorbing surfaces (99.2%) have been fabricated in our laboratory

7. Demonstrated excellent heat conduction ability of these black surfaces for efficient thermal management of satellites. We are exploring their use as efficient heat sinks for electronics, semiconductor industry.
8. Additionally, these self-cleaning superhydrophobic stainless steel surfaces can harvest solar energy with high efficiency for heating, which we will explore soon for water heaters.
9. For the first time in the literature, we demonstrated resonating nanostructures (grid-shaped LIPSS) that can enhance SERS signals, increasing detection sensitivity by several orders of magnitude. Achieved single molecule level of sensing.

- **Dec 2009 – Feb 2014,** working as a scientist at SAC, ISRO, Ahemadabad.
    1. Proficient in optical design software ZEMAX. Experience in designing high-resolution polar satellite telescopes for different bands, focal plane assembly of the telescopes, segmented mirrors telescopes, etc.
    2. Testing and assembly of large telescope optics by interferometric techniques. Currently working on the realization of the Cartosat-2C payload.
    3. Developed a method for onboard calibration of detector degradation for future Cartosat-2C telescope using non-sequential ray analysis of ZEMAX.
    4. IITP project: A new fast effective technique to correct the saturated PSF is proposed and successfully demonstrated for the saturated PSF's obtained by the Cartosat-2/2A satellites. The algorithm was developed in MATLAB.
- **Spring 2005 - Summer 2009**, Graduate Research Assistant in Prof. Igor V Rubtsov (Femtosecond Laser Spectroscopy lab), Tulane University, New Orleans, LA. As the first Ph.D. student in this laboratory, I had an opportunity to build a world-class laboratory from scratch.

  Instrumentation:
    1. Experience with Ultrafast lasers (Ti: sapphire, 806 nm, 44 fs): Alignment of the regenerative amplifier, control of pulse shape, pulse measurement: autocorrelation, heterodyne detection, FROG, etc.
    2. Experience in building optical parametric amplifiers (OPA) and difference frequency generation units (DFG). Rich experienced in generating IR pulses with wide tunabilty (1000 to 3300 cm^{-1}) using a combination of home-built OPA and DFG units.
    3. Design and building dual-frequency two-dimensional IR spectroscopy setup. This includes interfacing many instruments such as Linear motors, Spectrometers, HgCdTe detectors, etc into the data acquisition.
    4. Experience in handling linear FTIR (Fourier transform IR) spectrometers and their data analysis.
    5. Experience in building calibration of submicron mechanical motion systems using a Michelson interferometer setup and a silicon photodiode.
    6. Experience in building purging instrumentation (dry gas and nitrogen-based).
    7. Experience in data analysis and simulation using MatLab.

8. Mentored Undergraduate Student Christopher Keating at Tulane University for the academic year 2007-08 we synchronized two femtosecond laser pulses with an adjustable delay from pico-second to milli-second range. Later, he joined our lab as a PhD student.
9. Mentored undergraduate Student Michael Halsted at Tulane University for the academic year 2006-07 we designed and constructed a flow cell for 2DIR measurements.
10. Worked as a teacher in physics and mathematics (undergraduate engineering physics) at Educational Resource Center (ERC), Tulane University, worked during spring 2005 to fall 2009

Exciting Results:

1. A completely new method Relaxation Assisted 2DIR Spectroscopy (RA 2DIR) developed and demonstrated its ability as an analytical tool to measure the atomic distances, it has increased the scope of femtosecond laser spectroscopy.
2. Built Dual frequency 2DIR setup, only the second laboratory in the world. Using this setup up the weakest IR transitions, CD modes (Carbon Deuterium), is used for obtaining three-dimensional structural constraints. These IR transitions are not possible to study from linear spectroscopy techniques.

- **Fall 2003 – Fall 2004**, Graduate Research Assistant in Prof DVGLN Rao's (Research work: Medical Image Processing lab and optical power limiting), Physics dept, Univ. of Mass. Boston, MA.
    1. Optical power limiting: Design and development of new protection devices from high-power lasers. Experience in Z-scan for measuring optical nonlinearities of new materials.
    2. Experience in Medical Image Processing: Detection of early breast cancer by identifying the microcalcifications in the mammograms by Fourier filtering techniques.

- **Academic year 2002-2003**, Worked as a Lecturer for M.Sc Physics students at Shadan College, an affiliated college of Osmania University, Hyderabad, India. I taught courses on Quantum Mechanics, Statistical Mechanics, and Optics labs for Masters students. During this period I took the GRE and TOEFL exams to pursue PhD in the USA.

- **Academic years 2000-2002**, M.Sc Physics with quantum optics specialization at University of Hyderabad. Also did project work on solving nonlinear differential equations, and numerical approximation approaches (worked with Dr. Prashanth K Panigrahi).

Invited Talks:

1. *"Experiments that paved the way for quantum mechanics & Hands on experiments", 22nd May 2025, Refresher course, UGC MMTTC, UoH.*
2. *Chief Guest for National Sceince Day and delivered talk about Raman Spectroscopy, 28 Feb 2025,Muffakham Jah College of Engineering & Technology*
3. *"Writing with Femtosecond Laser Light for Societal and Industrial Applications: Tunable Periodicity for Single-Molecule SERS Detection and Perfect Black Bodies for Space Technologies"Workshop on Ion/Laser beams in Nano-Science(WINS), Feb19-20, 2025, Center for Nanotechnology, UoH.*
4. *"Experiments that paved the way for quantum mechanics", 29th May 2024, Refresher course, UGC MMTTC, UoH.*
5. "*Applications of Ultrafast Laser Patterning: Fabrication of Absolute Black Surface For Energy Harvesting and Controlled Periodic Structures for Sensing*", National seminar on recent development in the energy materials, 28th March 2024, Mahatma Gandhi Univerisity, Nalgonda.
6. *" Radiant Realms: Exploring the Basics of Optics"* 7th March 2024, UGC, HRDC, UoH.
7. *" First Principles of Optics", National Science Day 2023, Razole, B.R. Ambedkar Konaseema District, AP.*
8. Delivered plenary lecture: "Applications and fabrication of controlled periodic nanostructures via femtosecond laser direct writing" E-workshop on Advanced Spectroscopy for Emerging Materials from Dec 22-23, 2021, National Physical Laboratory, New Delhi.
9. " Super black stainless steel surface fabricated by nanosecond laser irradiation giving low reflectivities close to 0.5% over the broad wavelength range of 250-1800 nm and even lower (0.14%) over 250-850 nm" Md Abu Taher, D. Narayana Rao, Sri Ram G Naraharisetty; IEEE Xplore, Conference on Lasers and Electro-Optics (CLEO) 2020, San Jose, CA, USA. ISSN**:** 2160-8989, INSPEC Accession Number: 19983774 (10-15 May 2020)
10. "Laser irradiated surfaces" Workshop on processing and characterization of Thin films, During 3rd – 9th January 2018, UGC-NRC center, SoP, University of Hyderabad.
11. *"Applications of LASERS",* 5th May 2018, National level teachers training workshop, Navodaya Vidyalaya Samiti, Hyderabad.
12. "Advanced techniques of ultrafast infrared spectroscopy", 19th-21st May 2017, Workshop on Photonics, SRIBS, M.G. University, Kottayam.
13. "Coherent Multidimensional Spectroscopy - Molecular motion picture", 8th February 2017, Ether, CV Raman Auditorium, University of Hyderabad.
14. "2DIR spectroscopy- Tool to probe vibrational energy transport", 19th -23rd Feb 2017, International conference on "Advances in Biological systems and Materials science in Nanoworld, IIT-BHU, Varanasi
15. "Stray light suppression in optical payloads via nanostructured absorbing surfaces fabricated by femtosecond laser patterning", 15th Feb 2016, Laboratory for Electro-Optics Systems (LEOS), Bangalore, Indian Space Research Organisation (ISRO).
16. "Two Dimensional Infrared Spectroscopy", 13th April 2015, School of Chemistry, University of Hyderabad.
17. "Multidimensional spectroscopy" UCG sponsored, Departmental seminars, 18th February 2015, School of Physics, Central University Pondicherry

18. **"**Novel approaches in Dual Frequency 2DIR spectroscopy" Recent Advances in Optical Sciences (RAOS), 26th-27th April 2014, University of Hyderabad.
19. "Ultrafast nonlinear spectroscopy: 2DIR spectroscopy" 17th September 2009 at ACRHEM (Advanced Center for Research of high energy materials), University of Hyderabad, Hyderabad, India.
20. " Advances in ultrafast lasers and applications" Workshop on Advances in optics and photonics, 18th to 23rd March 2019, UGC NRC, University of Hyderabad.
21. With M. Senthil Kumar) "Modeling and evaluation of stray light control of modified Ritchey- Chretien telescope using ZEMAX software", Proceedings of IOCL International conference on optics and Optoelectronics, PD-ODT-02, 5th to 8th March (2014)
22. "2DIR spectroscopy " *Refresher Course in Materials Chemistry* - 2018 (5-25, Sep 2018), UGC Academic Staff College, University of Hyderabad.
23. Presentation at the prestigious Conference on Ultrafast Phenomena, Titled "Relaxation-assisted dual-frequency two-dimensional infrared spectroscopy: measuring distances and bond connectivity", 9-13th June 2008 at Stresa (Lago Maggiore), Italy.
24. Presentation at International Symposium on Molecular Spectroscopy, 63rd Meeting, Titled "Dual Frequency 2DIR Spectroscopic studies on weak IR modes", 16-20th June 2008 at Ohio State University, Columbus, USA.
25. Delivered a seminar talk entitled **"**Hydrogen Bonding: New Discoveries and Interpretations**"**, on 5th April 2006 at the Department of Chemistry, Tulane University, New Orleans, LA, USA.
26. "Power limiting and Optical Switching in a novel device", 6th December 2004 at the Department of Physics, University of Massachusetts Boston, Boston, MA, USA.
27. "Optical power limiting with azobenzene doped twisted nematic liquid crystals**",** 14th October 2004, Frontiers in Optics 2004 and Laser science XX, The 88th Optical Society of America Annual Meeting, Rochester, NY, USA.

Conference Presentations/ proceedings:

- "Simultaneous dual-scale subwavelength gratings formation over a broad wavelength range" Md Abu Taher, D. N. Rao, Sri Ram G Naraharisetty, Frontiers in optics 2021, Optical Society of America, JW7a.61, 1-4, November 2021, Washington DC, United States
- "Laser-Induced periodic surface structures on stainless steel surfaces with effects of irradiated wavelengths" Md Abu Taher, D. N. Rao, Sri Ram G Naraharisetty, OSA Technical Digest, JTu1A.52, 3-7 October 2021, Washington, DC United States, Optical Society of America.
- "Super Black Stainless Steel Surface Fabricated by Nanosecond Laser Irradiation", Md Abu Taher, Narayana Rao, Sri Ram Naraharisetty; (JW2A.5), 3364381 CLEO (Conference on Lasers and Electro-Optics) 10 – 15 May 2020, San Jose, California, USA.
- "Broadband super black stainless-steel surface fabricated by nanosecond laser irradiation". Md Abu Taher, Desai Narayana Rao, Sri Ram G Naraharisetty DocID: 5089,

DAE_BRNS National Laser Symposium (NLS-28), VIT Chennai, Chennai, January 8-11, 2020. **(Best poster award).**

- "Ellipsoidal droplet on the anisotropic non-wetting copper surface" Md Abu Taher, Hitheswar Prasad, Navanith Krishnan P K, Narayana Rao Desai, Sri Ram G Naraharisetty, Student conference in optics and photonics, SCOP- PRL, Ahmedabad 24-26 September 2019.
- "Home Built Transient absorption Spectrometer" Sajin Ponnan, Sri Ram G Naraharisetty, SCOP-2019, at PRL, 24-26 September 2019 Ahmadabad.
- "Anisotropic superhydrophobicity on patterned copper surfaces", Md Abu Taher, Hitheswar Prasad, Navanith Krishnan P K**,** Narayana Rao Desai, Sri Ram G Naraharisetty, DocID:4047, DAE_BRNS National Laser Symposium (NLS-27), RRCAT Indore, Dec 3-6, 2019
- "Anti-Reflection Properties of Metallic Surface Fabricated By Pulsed Laser Irradiation" Md Abu Taher, Hiteswar Prasad, Sri Ram G Naraharisetty, CP-05.10, DAE, BRNS, National Laser Symposium(NLS-26), December 20-23, 2017, BARC, Mumbai.
- 'Mimicking Lotus leaf properties by small scale patterning' Hitheswar Prasad, Md Abu Tahir, D Narayana Rao, Sri Ram G Naraharisetty, Poster presentation, National Conference on Physics of Small Scales and Advanced Materials-2017, September 2017, School of Physics, University of Hyderabad
- "Broadband antireflective surface is a reality with small scale structure" Md Abu Taher, Hitheswar Prasad, D Narayana Rao, Sri Ram G. Naraharisetty. National Conference on Physics of Small Scales and Advanced Materials-2017, September 2017, school of Physics, University of Hyderabad

- "Fabrication of Metallic Superhydrophobic Surfaces Using Femtosecond Laser Writing" Hitheswar Prasad, Md Abu Taher, Sri Ram G Naraharisetty, CP-05.16, DAE, BRNS, National Laser Symposium(NLS-26), December 20-23, 2017, BARC, Mumbai.
- Chakradhar Sahoo, M. Sethupathy, D. Narayana Rao, N. Sri Ram Gopal. "Pump-Probe signal detection by a single DAQ card" NLS-2017, 20-23, Dec. 2017.
- " Excited State lifetime measurement of NIR dye using a cost-effective home-built pump-probe spectroscopic technique", Chakradhar Sahoo, M. Sethupathy, Sri Ram G. Naraharisetty, 02-04 November, Ultrafast Science 2017, University of Hyderabad.
- **"**The 2DIR Spectroscopy on CD Modes of Leucine-d_{10} side Chain", Sri Ram G Naraharisetty, Valeriy M Kasyanenko, Jorg Zimmermann, Megan Thielges, Floyd E Romesberg, and Igor V Rubtsov; Conference on Ultrafast Phenomena, June 9-13, 2008, Stresa (Lago Maggiore), Italy.
- "Novel Labeling Strategy for Structural Measurements in Proteins via 2DIR Spectroscopy", Sri Ram G. Naraharisetty, Valeriy Kasyanenko**,** Igor V. Rubtsov; poster presentation at 235 American Chemical Society (ACS) National Meeting, April 2008, New Orleans, LA , USA
- **"C**-D Modes as potential structural reporters via Dual Frequency 2D IR Spectroscopy**",** Sri Ram G. Naraharisetty, Igor V. Rubtsov; poster presentation at 233 American Chemical Society (ACS) National Meeting, March 2007, Chicago, IL, USA.
- **"**Implementation of weak IR modes in Dual Frequency 2D IR Spectroscopy", Dmitry V. Kurochkin, Sri Ram G. Naraharisetty, Igor V. Rubtsov; poster presentation 231 American Chemical Society (ACS) National Meeting, March 2006, Atlanta, GA, USA.

Performed Responsibilities:

- IoE Nodal officer of the School of Physics, taking care of all the IoE responsibilities of the School.
- In-charge faculty for all the IoE staff at the school of physics
- IoE reports, fund utilization, and PDF have all been proceeded by me for 3 years.
- Purchase committee member of the School of Physics for 3 years.
- UGC NRC implementation committee member, School of Physics, UoH.
- FESEM operation in-charge faculty. Played an important role in keeping the multi-crore facility in working condition, and made a permanent solution to avoid such heat failures.
- Every year served as a committee member in either Ph.D. or M.Sc entrance exam question paper preparation.
- Member of New Physics Building Committee member: Worked with administration in design, implementation, progress monitoring, and future fund needs, SoP, UoH.
- Two times went for conducting the entrance examinations.
- UV Visible Spectrometer and Fluorescence spectrometer are common facilities in charge.
- UHTA(University of Hyderabad Teachers Association) served as the school representative.
- In students, elections served as faculty observers many times.
- Served as a committee member of the Category change merit selection scheme (Promotion for technical officers to the scientific category from all centers of ISRO) for the years 2011 and 2012.
- Served as Graduate Student Representative of the School of Sciences, year 2008, Tulane University.
- Served Tulane Karate Club as Vice President, Treasurer, and General Secretary in different semesters from 2005-08. I am a **Black-Belt** in Japanese Shotokan Karate. (www.tulane.edu/~karate/)