VENU GOPAL ACHANTA

PROFESSOR
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(a) Professional Preparation

Andhra University	Visakhapatnam	Maths, Physics, Electronics	B. Sc. 1992
University of Hyderabad	Hyderabad	Physics (Quantum Optics)	M.Sc. 1994
TIFR	Mumbai	Exciton dynamics	Ph.D. (Physics) 2000
Tokyo University	Tokyo	Ultrafast all-optical switch	Ph.D.(Electronics) 2006
FESTA Laboratories	Tsukuba, Japan	All-optical switch	NEDO Fellow, 2000-2003
Basic Research labs, NEC	Tsukuba, Japan	Microcavity design	JST Fellow, 2003-2004

(b) Appointments at TIFR

- Professor(H) 2018
- Associate Professor(G) 2012
- Reader(F) 2006
- Fellow(E) 2004

(c) Recognition and Fellowships

- Japan Science and Technology (JST) Fellow 2003-2004
- New Energy and Industrial Technology Development Organization (NEDO) Fellow 2000-2003

(d) Leadership and Administrative roles

- Senate Member of IISER, Berhampur
- Indian Coordinator for Global Nanophotonics network – a consortium of universities from 10 countries (Australia, China, India, Japan, Philippines, Singapore, South Korea, Taiwan, UK, USA)
- Editorial board member of Scientific Reports
- Associate Editor of Encyclopedia of Applied Physics (Wiley, 2017-)
- Review editorial board member of Frontiers in Physics (Frontiers journals)
- Executive council member of Optical Society of India (OSI)
- Senior member of IEEE
- Member of OSA and OSI
- Adjunct faculty at IISER, Berhampur
- Adjunct faculty of Department of Chemical Sciences and Department of High Energy Physics, TIFR
- Chair of Grievance Cell of TIFR, Grievance Redressal officer for persons with disabilities for TIFR
- Chair of Student Canteen committee
- Member of Institute Stores and Procurement Policy Advisory Committee, as well as Safety committee
- Instrumental in setting up and managing the department cleanroom facility
- Member of Institute Covid task force
- Started the TIFR – VIIT, Pune undergraduate internship program
- Scientific advisor to Navsons Technologies, a start-up
- Curriculum advisor for Vidyalankar Institute of Technology, Mumbai

(e) Research interests

Planar architectures for information processing based on a combination of metal-dielectric and all-dielectric metamaterials and photonic structures. Broadband metamaterials, plasmon dynamics and plasmon mediated modulation of material properties.

(f) Research Projects undertaken during 2004-

(a) *TIFR :* 3 major projects with total budget of about Rs. 900 lakhs

(b) External projects– 9 funded by NICT, Japan; UKIERI, Swedish Research Council, DST (~$1 Million)

(g) Publications:120 (*https://scholar.google.co.in/citations?user=ZgLTn-EAAAAJ&hl=en*) ***4 Invited Review Articles.***

Selected:

1. A. Kala, F. A. Inam, S. A> Biehs, P. Vaity, Venu Gopal Achanta, "Hyperbolic metamaterial with quantum dots for enhanced emission and collection efficiencies", Adv. Opt. Mater. (Accepted).
2. K. Mehta, Venu Gopal Achanta, S. Dasgupta, "Generation of non-classical states of photons from the metal-dielectric interface: a novel architecture for quantum information processing", Nanoscale 12, 256 (2020).
3. Banoj Kumar Nayak, S. S. Prabhu, Venu Gopal Achanta, "Hot carrier dynamics in a dispersionless plasmonic system", J. Appl. Phys. 126, 213105 (2019).
4. A. Nagarajan, K. Vivek, M. Shah, Venu Gopal Achanta, and G. Gerini, "A broadband plasmonic metasurface superabsorber at optical frequencies: Analytical design framework and demonstration", Adv. Opt. Mat. 1800253 (2018).
5. Goutam Rana, Prathmesh Deshmukh, Shalom Palkhivala, Abhishek Gupta, S. P. Duttagupta, S. S. Prabhu, Venu Gopal Achanta, and G. S. Agarwal, "Quadrupole-Quadrupole Interactions to Control Plasmon-Induced Transparency", Phys. Rev. Appl. 9, 064015 (2018).
6. A. N. Kalish, R. S. Komarov, M. A. Kozhaev, Venu Gopal Achanta, S. A. Dagesyan, A. N. Shaposhnikov, A. R. Prokopov, V. N. Berzhansky, A. K. Zvezdin, V. I. Belotelov, "Magnetoplasmonic quasicrystals: an approach for multiband magneto-optical response", Optica 5, 617 (2018).
7. V. J. Yallapragada, G. Mulay, Ch. N. Rao, A. P. Ravishankar, Venu Gopal Achanta, "Direct measurement of the Goos-Hanchen shift using a scanning quadrant detector and a polarization maintaining fiber", Rev. Sci. Instrum. 87, 103109 (2016).
8. L. V. Thekkekara, Venu Gopal Achanta, and S. Dutta Gupta, "Optical reflectionless potentials for broadband, omnidirectional antireflection", Opt. Express 22, 17382 (2014).
9. S. Kasture, A.P. Ravishankar, V.J. Yallapragada, R. Patil, V.V. Nikesh, G. Mulay, and V. G. Achanta, "Plasmonic quasicrystals with broadband transmission enhancement", Sci. Rep. 4, 5257 (2014).
10. I. J. Luxmoore, N. A. Wasley, A. J. Ramsay, A. C. T. Thijssen, R. Oulton, M. Hugues, S. Kasture, Venu Gopal Achanta, A. M. Fox, M. S. Skolnick, "Semiconductor waveguide circuit for coupling an InGaAs quantum dot spin to a path encoded photon." Phys. Rev. Lett. 110, 037402 (2013).
11. V. I. Belotelov, L E. Kreilkamp, I. A. Akimov, A. N. Kalish, D. A. Bykov, S. Kasture, V. J. Yallapragada, Venu Gopal Achanta, A. M. Grishin, S. I. Khartsev, M. Nue-E-Alam, M. Vailiev, L L. Doskolovich, D. R. Yakovlev, K. Alameh, A. K. Zvezdin, and M. Bayer, "Plasmon mediated magneto-optical transparency", Nature Commun. 4, 2128 (2013).
12. V. I. Belotelov, I. A. Akimov, M. Pohl, V. A. Kotov, S. Kasture, A. S. Vengurlekar, Venu Gopal Achanta, D.R. Yakovlev, A.K. Zvezdin, M. Bayer, "Enhanced magneto-optical effects in magnetoplasmonic crystals", Nature NanoTech. 6, 370-376 (2011).
13. A. Ramsay, Venu Gopal Achanta, E. M. Gauger, A. Nazir, B. W. Lovett, A. M. Fox, M. S. Skolnick, "Damping of exciton Rabi rotations by acoustic phonons in optically excited InGaAs/GaAs quantum dots", Phys. Rev. Lett. 104**,** 017402 (2010).
14. Rajesh Kumar, A. S. Vengurlekar, Venu Gopal Achanta, T. Mèlin, F. Laruelle, B. Etienne, and J. Shah, "Exciton Formation and Relaxation Dynamics in Quantum Wires", Phys. Rev. Lett. 81, 2578 (1998).

(h) Synergistic Activities

- Represented India in the 1st BRICS Photonics working group meeting which prepared recommendations to BRICS ministerial meeting, Moscow, 1-2 March 2018.
- **Conference Organization:** Organized Nanophotonics conferences in 2015 (Goa) and 2012 (Hyderabad) and School on Nanophotonics in 2012 (Hyderabad), short courses at National Laser Symposium (NLS 2013), Fluorescence Correlation Spectroscopy (FCS 2015), The International Conference on Fiber Optics and Photonics (2016).
- Served on the IEEE senior member selection panel
- **Teaching:** courses covering Semiconductors, Condensed Matter Physics, NanoPhotonics, Quantum Optics, Experimental Techniques, Numerical Methods at TIFR, Mumbai; Center for Excellence in Basic Sciences (CBS), Mumbai; IISER, Berhampur. Short courses in various national and international conferences.
- **Course coordinator for TIFR graduate school** involved in both curriculum development and smooth functioning of courses (2009-2013).
- **Institute committees** including as Chair of Grievance and Student Canteen, and member of safety committee. Instrumental in setting up and operation of department cleanroom.
- **Community work:** Co-chair and Chair of TIFR colony resident's association (2015-2017). Co-opted member in 2020 for COVID related work.
- **Undergraduate Program:** Initiated the successful undergraduate program with VIIT, Pune which started with 3 students, evolved into 200 student program across departments.
- Talks in INSPIRE camps for pre-university students.
- Lectures at teacher training programs organized at various places around the country.
- More than 100 invited talks in National and international conferences and universities and institutes around the world.

(i) Personnel Trained

(a) ***Postdoctoral associates****:* 6, currently faculties at various universities within India

(b) ***PhD Students*** *: 2 current.* 3 from TIFR (**2013 Best Thesis award**). Co-guided 7 students from IITs and other universities. 1 Master student from TIFR. All are well placed as postdocs or working in companies.

(c) ***JRFs*** *:* 5, doing PhDs at different universities in US and Europe

(d) ***Other students*** *:* About 30 Engineering and Science undergraduate students trained, all doing PhDs or are with various companies after completing MS.