

Shanthi Iyer

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Professional Preparation

Delhi University, Delhi, India Physics B.Sc. 1974
Delhi University, Delhi, India Physics M.Sc. 1976
Indian Institute of Technology, Delhi, India Physics Ph.D 1983

A. Appointments

2010 - Present Joint Faculty, Nanoengineering, Joint School of Nanoscience and Nanoengineering, Greensboro, NC

2006-Present - Research Professor, Dept. of Electrical and Computer Engineering, NC A&T SU, Greensboro, NC

1997 – 2005 - Professor, Dept. of Electrical Engineering, NC A&T SU, Greensboro, NC

1991 – 1997 Associate Professor, Dept. of Electrical Engineering, NC A&T SU Greensboro, NC

1986 – 1991 Assistant Professor, Dept. of Electrical Engineering, NC A&T SU, Greensboro, NC

1981 - 1985 Adjunct Assistant Professor, Dept. of Electrical Engineering, NCA&T SU, Greensboro, NC

B. Recent Publications(out of 51)

1. Pavan Kumar Kasanaboina, Estiak Ahmad, Jia Li, Lewis Reynolds, Yang Liu and Shanthi Iyer, “Self Catalyzed Growth of Dilute Nitride GaAs/GaAsSbN/GaAs Core-Shell Nanowires by Molecular Beam Epitaxy”, Appl. Phys. Lett. 107, 103111 -5(2015).
2. Pavan Kumar Kasanaboina, Sai Krishna Ojha, Shifat Us Sami, C. Lewis Reynolds Jr., Yang Liu and Shanthi Iyer, “Bandgap Tuning of GaAs/GaAsSb Core-Shell Nanowires Grown by Molecular Beam Epitaxy”, Semiconductor Science and Technology, 30, 105036(10pp) (2015).
3. Ngoc Nguyen, Briana McCall, Robert Alston, Ward Collis, and Shanthi Iyer, “The Effect of Annealing Temperature on the Stability of Gallium Tin Zinc Oxide Thin Film Transistors” Sem. Sci. Tech. 30, 105004 (2015).
4. Pavan Kumar Kasanaboina, Sai Krishna Ojha, Shifat U. Sami, Lewis Reynolds, Yang Liu and **Shanthi Iyer**,“Tailoring of GaAs/GaAsSb core-shell structured nanowires for IR photodetector applications”, Proc. SPIE 9373, Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling XII, 937307 (February 27, 2015); doi:10.1117/12.2080572.

5. Robert Alston, **Shanthi Iyer**, Tanina Bradley, Jay Lewis, Garry Cunningham and Eric Forsythe, "Investigation of the effects of deposition parameters on indium-free transparent amorphous oxide semiconductor thin-film transistors fabricated at low temperatures for flexible electronic applications", SPIE OPTO, 90050D-90050D-10., 25th Feb 2014, SanFrancisco, CA.
6. S. Iyer, L. Reynolds, T. Rawdanowicz, S. Krishna Ojha, P. Kumar Kasanaboina and A. Bowen;" A Study of Ga Assisted Growth of GaAs/GaAsSb Axial Nanowires by Molecular Beam Epitaxy". Chapter 3 Nanoscience and Nanoengineering: Advances and Applications, Ajit D. Kelkar, Dan Herr and James G. Ryan; CRC Press.: Boca Raton FL, ISBN 978-1-4822-3119-9, 2013, pages 31-49.
7. N. Patra, S. Bharatan, J. Li, and S. Iyer, "Annealing Studies of Heteroepitaxial InSbN/GaAs Grown by MBE for Long Wavelength Infrared Detectors", J. Appl. Phys.083107 (2012).
8. N. Patra, S. Bharatan, J. Li, M. L. Tilton and S. Iyer, MBE, "Growth and Characterization of InSb_{1-x}N_x on GaAs for LWIR Applications", Journal of Applied Physics, 111, (08) 2012.
9. S. Bharatan, **S. Iyer**, J. Li, L. Reynolds and T. Rawdanowicz, "A Study of MBE Grown InGaAsSbN/GaSb Single Quantum Wells", J. Vac. Sci. Technol.B, 29, 03C112-(1-6) (2011)
10. L.Wu, S. Iyer, K. Gibson, J. Li K. Matney, J. Reppert , A. M. Rao, and J. Lewis, "A Study of Low-Temperature Growth of III-V Alloys for Transparent Layers", J. Vac. Sci. Tech. B,27, 2375-2383(2009).
11. Kalyan Nunna, **S. Iyer**, L.Wu, J. Li, S.Bharatan, X.Wei, R.T. Senger, and K.K. Bajaj, "Nitrogen Incorporation and Optical Studies of GaAsSbN/GaAs Single Quantum Well Heterostructures" *J. Appl. Phys.*102, 053106 (2007).
12. S. Bharatan **S. Iyer**, K. Matney, K. Nunna, W. J. Collis, J. Reppert, A. M. Rao and P. R.C. Kent, "The Effects of Annealing on the Structural, Optical and Vibrational Properties of Lattice-Matched GaAsSbN/GaAs Grown by Molecular Beam Epitaxy" *J. Appl. Phys.*102, 023503 (2007)
13. **S. Iyer**, L. Wu, J. Li, S. Potoczny, K. Matney and P. R. C. Kent, "Effects of N Incorporation on the Structural and Photoluminescence Characteristics of GaSbN/GaSb Single Quantum Wells", *J. Appl. Phys.* 101, 113508-13 (2007).
14. Kalyan Nunna, **S. Iyer**, L. Wu, S. Bharatan, Jia Li, K.K. Bajaj, X.Wei, and R.T. Senger, "Optical Studies of MBE Grown GaAsSbN/GaAs Single Quantum Well Structures" *J. Vac. Sci. Tech.* 25, 1113-16, (2007).
15. Jia Li, **Shanthi Iyer**, Sudhakar Bharatan, Liangjin Wu, Kalyan Nunna, Ward Collis, K. Bajaj, and K. Matney "Annealing Effects on the Temperature Dependence of the

Photoluminescence of GaAsSbN Single Quantum Wells”- *J. Appl. Phys.* **98**, 013703(1)-(6) (2005)

E. Synergistic Activities

1. Initiated and developed NCA&TSU’s Molecular Beam Epitaxy (MBE) Laboratory, associated research program and educational component. (1994 - current)
2. Director of the Center of Excellence for Battlefield Capability Enhancements (2004-2010) funded by Army Research Office, with focused on developing technologies for environmentally stable flexible panel displays. Has been responsible for developing the associated synthesis, testing and fabrication laboratories for amorphous oxide thin film transistors in collaboration with Research Triangle Institute International Inc. Also collaboratively developed and delivered a “Display Technology” course at an undergraduate cum graduate level providing a broad overview of information displays.
3. Graduate level courses have been developed and offered regularly on “Thin Film Technology for Device Fabrication”, Compound Semiconductor Materials and Devices”, and “Fundamentals of Nanoengineering: Physical Principles”.
4. DoD National HBCU/MI Committee Member (2010) to assess HBCU’s participation in their educational and research programs.
5. Outstanding Senior Researcher Award –2006/7 (NCA&TSU and College of Engineering) and Excellence in Research in College of Engineering Award-1993 (NCA&TSU).

F. Collaborators & Other Affiliations in the last 48 months

Forsythe, E. (ARL, MD); Lew Reynolds (NCSU, NC), Abhishek Motayed (N5 Sensors, MD), Lewis, J (RTI International, NC), Madan Dubey (ARL, MD) and Jeffrey White (ARL, MD)

G. Post Graduate Students Advised (52) and Currently Supervising (8)

H. Postdoctoral Researchers Sponsored (5): Jia Li, Sudhakar Bharatan, Tanina Bradley, Liangjin Wu and Jie Li.