

Ananthakrishnan Narayanan

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Willing to relocate

HIRING ASSESTS

- Wide research experience in the field of nonlinear optics, with special focus on electrical and optical properties of nonconjugated conducting polymers at Photonics Material Research Lab, Auburn Univ.
- Strong background in electro-optic (linear and nonlinear) measurements, time resolved interferometry, optical spectroscopy and other nonlinear optical measurement techniques.
- Hands on experience in microelectronic fabrication techniques, femtosecond pulsed/tunable lasers, semiconductor lasers/solid state laser, He-Ne laser, nonlinear crystals, optical detectors, spectrum analyzers, X-ray diffraction, AFM, SEM, EPR, hardware/software data acquisition etc.
- Strong leadership, team skills and financial acumen, served as President for prestigious organizations.
- Sound verbal and written communication skills - National level debater, Staff Writer for Auburn Univ.'s weekly newspaper, Editor - International Student Newsletter.

EDUCATION

Pursuing Ph.D., Mechanical Engineering, Auburn Univ., Auburn AL. - November 2009 (expected)

- GPA 3.78/4.00
- Diverse coursework from seven different departments to supplement the interdisciplinary research work at Photonic Materials Research Laboratory.

Bachelor of Engineering, Electronics & Instrumentation Engineering, Bharathidasan Univ., Tamil Nadu, India

- *First Class with Distinction.*

WORK EXPERIENCE

- Jan 05- Present: *Graduate Research Assistant*, Photonic Materials Research Laboratory, Auburn Univ.
- Jan 08- Present: *Graduate Teaching Assistant*, Department of Mechanical Engineering, Auburn Univ.
- May 07- Present: *Webmaster*, Office of Dean of Students, Auburn Univ. (www.auburn.edu/deanofstudents)
- May 05-Aug 05: *Engineering Intern*, Micro sensors Laboratory, Auburn Univ.
- Aug 04- Jan 05: *Graduate Teaching Assistant*, Department of Mechanical Engineering, Auburn Univ.
- Nov 03-Jan 04: *Research Associate*, Lucas TVS, Chennai, India.

RESEARCH PROJECTS

- **Nano-optics**: Studied the nano-optical (nano-metallic) properties of non-conjugated conducting polymers, like iodine doped poly(β -pinene) and iodine doped polynorbornene.
- **Time resolved interferometry**: Investigated the nonlinear refractive index and nonlinear absorption coefficient of poly(β -pinene) at different wavelengths (700nm-850nm). Measurements was made using 150 fs pulses from a Ti:Sapphire laser using a pump-probe technique. Exceptionally large α_2 of 2.6 cm/MW at 810nm and n_2 of 2×10^{-5} cm²/MW at 800nm was recorded.
- **Open aperture Z-scan measurements**: Open aperture Z scan measurements were carried out of to find the nonlinear absorption coefficient poly(β -pinene) and the results were consistent with the α_2 measurements using the pump probe technique.
- **Birefringence measurements/Electro-optics**: Performed Field Induced Birefringence measurements to determine the nonlinear optical susceptibility and Kerr coefficients of nonconjugated conducting polymers at 800nm and 1550nm. Kerr coefficient of poly(β -pinene) was found to be more than fifty times that of nitrobenzene. Also conducted Electro-optic and Electro-absorption measurements on organic single crystal films.
- **EPR Spectroscopic measurements**: Studied the mechanism of cation radical formation (upon doping) in a nonconjugated conducting polymer, poly(β -pinene) using EPR technique. Area under the EPR curve was found to be directly proportional to the dopant concentration. Hyperfine splitting was observed at high doping levels due to reduction in distance between the radical cation and the iodine anion.
- **Preparation and characterization of novel electro-optic materials**: Currently preparing a novel single crystal film involving a combination of an organic material and a dye IR 125. The single crystal film, due to its strong absorption in longer wavelengths (800nm -1000nm) is expected to be a better electro-optic material at these wavelengths.
- **Photovoltaic measurements**: Performed Photovoltaic measurements on a composite involving poly(β -pinene) and C₆₀. An optimized composition was experimentally determined.

PUBLICATIONS

Journal Publications

- Palthi, A., **Narayanan, A.**, Thakur, M. “Photovoltaic effect in a composite involving the nonconjugated conductive polymer, Poly(β -pinene) and C_{60} .” In print, *J. Macromol. Sci., Pure Appl. Chem.*
- **Narayanan, A.**, Palthi, A., Titus, J., Thakur, M. “Single-Crystal Film of a Combination of Organic Materials involving a Molecular Salt and a Laser Dye; Electro-optic Effect.” In print, *Solid State Commn.*
- **Narayanan, A.**, Palthi, A., Thakur, M. “Electrical and Optical properties of a Novel Nonconjugated Conducting Polymer, Polynorbornene.” *J. Macromol. Sci., Pure Appl. Chem.*, (2009), 46(4), 455-460.
- **Narayanan, A.**, Ramamurthy, V., Duin, E., Thakur, M. “EPR Spectroscopic Studies of Radical Cations in a Novel Nonconjugated Conducting Polymer, Poly(β -pinene).” *J. Macromol. Sci., Pure Appl. Chem.*, (2008) 45(2), 195-198.

Journal Publications (submitted/under review)

- **Narayanan, A.**; Titus, J.; Thakur, M. “Off-resonant electro-optic measurements in a nonconjugate conducting polymer: poly(β -pinene).” (under preparation)

Conference Publications: (Most recent only)

- **Narayanan, A.**; Thakur, M.; “Electro-optic measurements in a novel conjugated conducting polymer: Polynorbornene.” APS Spring Meeting 2009.
- **Narayanan, A.**; Palthi, A.; Thakur, M. “Electrical and Optical Properties of a Novel Nonconjugated Conductive Polymer, Polynorbornene” APS Spring Meeting 2008.
- Palthi, A.; **Narayanan, A.**; Thakur, M. “Photovoltaic Effect in a Composite involving the nonconjugated Conductive Polymer, Poly(β -pinene) and C_{60} ” APS Spring Meeting 2008.
- Titus, J.; **Narayanan, A.**; Thakur, M. “Quadratic Electro-optic Measurements in the Nonconjugated Conductive Polymer, Poly(β -pinene) at 800 nm and 1550 nm” APS Spring Meeting 2008
- **Narayanan, A.**; Titus, J.; Thakur, M. “Electro-optic Measurements in Single-Crystal Films of a Combination of Materials Involving DAST and IR-125” APS Spring Meeting 2007.
- **Narayanan, A.**; Titus, J.; Thakur, M. “Nonlinear Refractive Index in a Novel Nano-optical Material Based on the Nonconjugated Conductive Polymer, poly(β -pinene)” APS Spring Meeting 2007.
- **Narayanan, A.**; P.Vippa, H.Rajagopalan, J.Titus, M.Thakur, "Single-crystal films of a combination of materials involving DAST and IR125 for nonlinear optical applications" APS Spring meeting 2006.

COMPUTER AND SOFTWARE SKILLS

IT/Computing:

- Proficient in MS office to process and present information.
- Operating System: Windows, Linux, Unix
- Web Development Software: Frontpage, Dreamweaver, Flash, PHP
- Programming skills: C, C++, Matlab, Mathematica, Labview, ANSYS, Solid Edge

LEADERSHIP AND TEAM INITIATIVES

- 2008- Current: Voting Member: Student Communication Board
- 2006- Current: Honorary Member, Web design committee, India Cultural Association of East Alabama.
- 2007 - 2008: President, International Student Organization, Auburn Univ.
- 2007-2008: Voting Member: International Education Advisory Council
- 2006 - 2007: President, Indian Student Association, Auburn Univ.
- 2003- 2004: Cultural Secretary, Shanmugha College of Engineering, Tanjore, India

OTHER ACCOMPLISHMENTS

- Who’s Who Among Students in American Universities and Colleges - 2008.
- Graduate Research Fellowship, Auburn Univ.
- Management scholarship for all-round performance, Shanmugha College of Engineering, India.
- ‘The Best Outgoing Student’ Kendriya Vidyalaya, Chennai, India in the year 2000.
- **Nominated to represent India in debating in the SAARC Cultural Exchange Festival.**
- Won First Place in debate in South Zone Inter-Univ. Youth Festival for two consecutive years (2001-02).
- Won several prizes representing school and college in various regional and national level debates.