

Assistant Professor
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 College of Science and Engineering
 Texas Christian University

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RESEARCH
INTERESTS

Nanotechnology, nanoscale characterization, nanomaterials synthesis and functionalization. Optical and physical characterization of carbon nanotubes and graphene. Development of nanomaterials with tunable optical and electronic properties, microelectronic and optoelectronic devices. Applications of nanomaterials in biotechnology, development and characterization of nanomaterials-based biological sensors for cancer detection and drug transport vehicles, drug and gene delivery for cancer therapeutics, fluorescence microscopy of bio-nanomaterials.

EDUCATION

Rice University,

Ph.D. in Applied Physics

May 2011

Ph.D. thesis: "Advanced Characterization and Optical Properties of Single-Walled Carbon Nanotubes and Graphene Oxide". Advisor: Prof. R. Bruce Weisman

Master of Science

Jan 2008

University of Tennessee, Knoxville,

Department of Physics and Astronomy

Bachelor of Science in Physics (minors: Chemistry and Mathematics)

May 2005

Summa cum laude.

Kazan State University,

Department of Chemical Physics

Diploma with Distinction

June 2006

US equivalent Master of Science, Summa cum laude.

PROFESSIONAL
EXPERIENCE**Central Connecticut State University, (New Britain, CT)**

Department of Physics and Engineering Physics

Assistant Professor

August 2014 - Present

Chair of Departmental Research Committee

Co-chair of Departmental Curriculum Committee

Research: Development of graphene-based materials for optical biosensor applications, biological internalization and clearance of carbon nanotubes.

Rice University, (Houston, TX)

Complimentary Postdoctoral Appointment

September 2011 - August 2014

Characterization of nanomaterials for biotechnology, carbon nanotube-based anticancer drug delivery. Optical characterization of graphene oxide.

Ensyce Biosciences Inc., (Houston, TX)

Research Scientist

July 2011 - August 2014

Development of nomaterials-based molecular imaging and cancer therapeutics agents. Carbon nanotube-assisted delivery of siRNA.

IBM T. J. Watson Research Center, (Yorktown Heights, NY)

Scientific Advisor: Dr. Phaedon Avouris

Research intern

July 2008 - October 2008

Fabrication and characterization of graphene and carbon nanotube-based optoelectronic devices.

Honda Research Institute, USA Inc., (Columbus,OH)

Scientific Advisor: Dr. Avetik R. Harutyunyan

Research intern

July 2007 - September 2007

Development of nanomaterials characterization methods. Preferential nanotube synthesis.

HONORS AND
AWARDS

2015: Nominated and accepted for Marquis Who is Who in America 2015 directory.
2013: Biography is published in Marquis Who is Who in America 2013 directory.
2012: Qualified as Outstanding Researcher for US Permanent Residence (received Oct 2012).
2010: National Research Council of National Academy of Science Postdoctoral Fellowship.
2009: Micron Technology Best Presentation Award at Rice Quantum Institute Colloquium.
2007: Best Poster Presentation Nominee at Materials Research Society Fall Meeting.
2007 - 2011: Welch Foundation Predoctoral Fellowship.
2004: Univ. of Tennessee Robert Talley Award for Outstanding Undergraduate Research.
2003: Judson Hall Robertson Memorial Award in Analytical Chemistry.
2002 - 2004: National Dean's List
2002: Univ. of Tennessee, Dept. of Physics Outstanding First Year Student Award.

PROFESSIONAL
SOCIETIES

- American Physical Society
- Materials Research Society
- Electrochemical Society

BOOKS AND
BOOK CHAPTERS

A.V. Naumov *Optical Properties of Graphene Oxide*. Book Chapter, *Graphene Oxide. Fundamentals and Applications*. Wiley Publishing, Oxford, UK. Wiley Publishing, Oxford, UK. ISBN: 978-1-119-06940-9, **2016**.

A.V. Naumov *Single-Walled Carbon Nanotubes and Graphene Oxide: Advanced Characterization and Optical Properties*, Book, LAP LAMBERT Academic Publishing, Saarbrcken, Germany, ISBN: 978-3-659-11154-9 **2012**.

PUBLICATIONS

E. Sizemore, Md. T. Hasan, G. R. Akkaraju, **A. V. Naumov** *Multifunctional Graphene Oxide Platforms for Drug Delivery Imaging and Cancer Sensing*. Manuscript in Preparation.

M. Castillo, C. Pho, S. V. Dzyuba and **A. V. Naumov** *Chirality-Selective Photoluminescence of Single-Wall Carbon Nanotubes in Imidazolium Ionic Liquids: Effect of the Anion*. Manuscript in press at Chem Comm.

Md. T. Hasan, B. J. Senger, M. Culp, **A. V. Naumov** *Optical Band Gap alteration of Graphene oxide via Oxidative Treatment*. Manuscript in press at Nature Scientific Reports.

Md. T. Hasan, B. J. Senger, P. Mulford, C. Ryan, H. Doan, Z. Gryczynski, **A. V. Naumov** *Modifying Optical Properties of Reduced/Graphene Oxide with Controlled Ozone and Thermal Treatment in Aqueous Suspensions*. *Nanotechnology* **2017**, 28 (6).

A. V. Naumov, F. Grote, M. Overgaard, A. Roth, C.E. Halbig, K. Nrgaard, D. M. Guldi, S. Eigler *Graphene Oxide A One- versus Two-Component Material*. *JACS* 138 (36), pp 11445-11448, **2016**.

A.V. Naumov, D.A. Tsyboulski, S.M. Bachilo and R.B. Weisman *Length-dependent Optical Properties of Single-Walled Carbon Nanotube Samples*. *Chemical Physics* **2013**, (422), 255-263.

J. K. Streit, S. M. Bachilo, C. Y. Khripin, **A. Naumov**, M. Zheng and R. B. Weisman *Measuring Single-Walled Carbon Nanotube Length Distributions from Diffusional Trajectories*. *ACS Nano* **2012**, 6 (9), pp 8424 - 8431.

JD. L. Kirkpatrick, M. Weiss, **A. Naumov**, G. Bartholomeusz, R. B. Weisman and O. Gliko *Carbon nanotubes: Solution for the therapeutic delivery of siRNA?* *Materials* **2012**, 5(2), 278-301.

C. C. Galande, A.D. Mohite, **A.V. Naumov**, W. Gao, H. Gao, L. Ci, A. Srivastava, R.B. Weisman, P.M. Ajayan *Quasi-Molecular Fluorescence from Graphene Oxide*. *Scientific Reports*, **2011**, 1 (85)

A.V. Naumov, S. Ghosh, D.A. Tsybouski and R.B. Weisman *Sources of Absorption Backgrounds in Single-Walled Carbon Nanotube Spectra*. *ACS Nano*, **2011**, 5 (3), pp 1639-1648.

M. Freitag, M. Steiner, **A. Naumov**, J. P. Small, A. A. Bol, V. Perebeinos and P. Avouris *Carbon Nanotube Photo- and Electroluminescence in Longitudinal Electric Fields*. *ACS Nano*, **2009**, 3 (11), pp 3744-3748.

M. Steiner, M. Freitag, V. Perebeinos, **A. Naumov**, J.P. Small, A.A. Bol and P. Avouris *Gate-Variable Light Absorption and Emission in a Semiconducting Carbon Nanotube*. *Nano Lett.*, **2009**, 9 (10), pp 3477-3481 .

A.V. Naumov, O.A. Kuznetsov, A. R. Harutyunyan, A.A. Green, M.C. Hersam, D.E. Resasco, P. N. Nikolaev and R. B. Weisman *Quantifying the Semiconducting Fraction in Single-Walled Carbon Nanotube Samples through Comparative Atomic Force and Photoluminescence Microscopies*. *Nano Lett.*, **2009**, 9 (9), 3203-3208.

A.V. Naumov, S. M. Bachilo, D.A. Tsybouski and R. B. Weisman *Electric Field Quenching of Carbon Nanotube Photoluminescence*. *Nano Lett.*, **2008** , 8 (5), pp 1527-1531.

V.Yu. Kotov, V.I. Naumov, **A.V. Naumov** *The Investigation of the Processes in the Boundary Layer During the Unstable Fuel Vaporization*. The Proceedings of the Annual All Russian Conference The Combustion Processes in The Power Generation Installations: Acoustics, Diagnostics, Ecology. May 15-17, Kazan, **2001**, pp.79-81.

INVITED
TALKS

Single-walled carbon nanotubes as multimodal agents for biological imaging and drug delivery, Electrochemical Society Meeting, San Diego, CA June **2016**.

Biological Applications of Carbon Nanomaterials, Texas A and M University of Commerce, Commerce, TX January **2016**.

CONFERENCE
PRESENTATIONS

Graphene Oxide: A Modifiable Platform for Drug Delivery Imaging and Sensing. Electrochemical Society Meeting, New Orleans, LA May **2017**.

Variation of Optical Properties and Electronic Structure of Graphene Oxide in Aqueous Suspension Under Oxidative and Thermal Treatment. Materials Research Society Conference, Boston, MA November **2016**.

Optical properties of graphene oxide and its biological and optoelectronics applications. Texas Chapter of American Vacuum Society, Richardson, TX August **2016**.

Introduction of Nanomaterials to Biological Cells for Development of Anti-Cancer Drug Delivery Vehicle. Texas Chapter of American Vacuum Society, Richardson, TX August **2016**.

Optical Properties of Graphene Oxide under Oxidative and Thermal Treatment. Texas Chapter of American Vacuum Society, Richardson, TX August **2016**.

Theoretical and Experimental Study of Optical Properties of Graphene Oxide Under Oxidative and

Thermal Treatment. APS Texas Chapter Meeting, Beaumont, TX March **2016**.

Controllable Modification and the Study of Optical Properties of Graphene Oxide. Materials Research Society Conference, Boston, MA December **2015**.

The Study of the Origins of Photoluminescence in Graphene Oxide. 2015 Joint Fall Meeting of the APS and AAPT New England Sections; Hanover, NH November **2015**.

Variation of optical properties of single-walled carbon nanotubes with length. Fall 2015 Joint Meeting of the Texas Section of the AAPT, Texas Section of the APS and Zone 13 of the Society of Physics Students, Waco, TX October **2015**.

Controllable Modification of Optical Properties of Graphene Oxide. Electrochemical Society Spring Meeting, Chicago, IL May **2015**.

Altering the Optical Properties of Reduced Graphene Oxide by Ozone Treatment. Spring 2015 Meeting of the APS New England Section, Boston, MA April **2015**.

Development of graphene oxide materials with controllably modified optical properties. American Physical Society March Meeting, San Antonio, TX March **2015**.

Modifying Optical Properties of Reduced Graphene Oxide by Controlled Functionalization. Materials Research Society Conference, Boston, MA December **2014**.

Length-Dependent Optical Properties of Single-Walled Carbon Nanotube Samples. Materials Research Society Conference, Boston, MA November **2013**.

Single-walled carbon nanotubes for delivery of siRNA: Antitumor efficacy comparing formulated complexes in EGFR overexpressing A431 xenografts. American Association for Cancer Research - National Cancer Institute - European Organization for Research and Treatment of Cancer International Conference: Molecular Targets and Cancer Therapeutics, Washington, DC, April **2013**.

Single-walled carbon nanotubes provide a safe and effective means for delivery of siRNA. American Association for Cancer Research - National Cancer Institute - European Organization for Research and Treatment of Cancer International Conference: Molecular Targets and Cancer Therapeutics, San Francisco, CA, November **2011**.

Aromatic molecule-like fluorescence from Graphene Oxide. American Physics Society March Meeting, Dallas, TX, March **2011**.

Absorption Backgrounds in Single-Walled Carbon Nanotube Spectra. Materials Research Society Conference, Boston, MA November **2010**.

Direct Measurements of Exciton Mobility in Single-walled Carbon Nanotubes Using Far-Field Near-Infrared Fluorescence Microscopy. Materials Research Society Conference, Boston, MA November **2010**.

Probing Coupled Electronic and Vibrational States in Graphene Oxide Using Fluorescence Spectroscopy. Materials Research Society Conference, Boston, MA November **2010**.

Absorption Backgrounds in Single-Walled Carbon Nanotube Spectra. 24th Annual Summer Research Colloquium, Rice Quantum Institute, Rice University, Houston, TX, August **2010**.

Probing coupled electronic and vibrational states in Graphene Oxide using Fluorescence

spectroscopy. NT10: 11th International Conference on the Science and application of Nanotubes 2010, Montreal, Quebec, Canada June **2010**.

Safety of single-walled carbon nanotubes for delivery of siRNA. American Association for Cancer Research - National Cancer Institute - European Organization for Research and Treatment of Cancer International Conference: Molecular Targets and Cancer Therapeutics, Berlin, Germany, November **2009**.

Quantifying Semiconducting Fraction in Single-Walled Carbon Nanotube Samples Through Comparative Atomic Force and Photoluminescence Microscopies. 23d Annual Summer Research Colloquium, Rice Quantum Institute, Rice University, TX, August **2009**.

Quantitative characterization of the semiconducting fraction in single-walled carbon nanotube samples. Materials Research Society Fall Meeting, Boston, MA, November **2008**.

Electric Field-Induced Effects on Single-Walled Carbon Nanotube Photoluminescence. American Physics Society March Meeting, New Orleans, LA, March **2008**.

Structure-dependent Electric Field Effects on Carbon Nanotube Photoluminescence. Materials Research Society Fall Meeting, Boston, MA November **2007**.

Influence of External Electric Field on Fluorescence of Single-Walled Carbon Nanotubes in Dielectric Matrix. Electrochemical Society 211 Meeting, Chicago, IL, May **2007**.

Electric Field Quenching of Carbon Nanotube Fluorescence. Materials Research Society Fall Meeting, Boston, MA, November **2006**.

Electric Field Effects on Carbon Nanotube Fluorescence. 20th Annual Summer Research Colloquium, Rice Quantum Institute, Rice University, Houston, TX, August **2006**.

Investigation of the Transformation/Destruction of Carbon 70 in a Photochemical Reaction. American Physical Society, Southeast Section Meeting, Oak Ridge, TN, November **2004**.

Methods of Separation of Chiral Carbon Nanotubes. The American Association of Physics Teachers, Tennessee Chapter Meeting, Knoxville, TN, March **2004**.

Toward the Separation and Enantiomeric Excess of Chiral Carbon Nanotubes. American Physics Society March Meeting, Austin, TX, March **2003**.