

W. JUD READY, PH.D.  
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**SPECIALIZATIONS:**

Management and leadership in engineering, research & development focused on materials innovation. Interests include electronic & aerospace materials, photovoltaics, batteries, supercapacitors, piezoelectrics, cold cathodes, thin film deposition, carbon nanotube, graphene and other nanomaterial manufacture & use, printed wiring boards, accelerated life testing, reliability assessment, and failure mode analysis of electronic packaging & components.

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**CAREER NARRATIVE:**

Dr. W. Jud Ready is the Deputy Director, Innovation Initiatives for the Georgia Tech ‘Institute for Materials.’ He has also been an Adjunct Professor in the School of Materials Science & Engineering at Georgia Tech and a Principal Research Engineer on the research faculty of Georgia Tech Research Institute (GTRI) for over a dozen years. Prior to joining the Georgia Tech faculty, he worked for a major military contractor (General Dynamics) as well as in small business (MicroCoating Technologies). He has served as PI or co-PI for grants totaling ~\$17M awarded by the Army, Navy, Air Force, DARPA, NASA, NSF, NIST, industry, charitable foundations and the States of Georgia and Florida. His current research focuses primarily on energy, aerospace, nanomaterial applications and electronics reliability. Dr. Ready has published numerous refereed publications on electronic and nanoscale materials and his research developments have been presented at well-over two dozen international conferences. He has served as an expert witness in criminal and civil cases and he has provided testimony to the Georgia State House Science & Technology Committee. He has patents awarded in the United States (#6,846,370; 6,994,757; 8,350,146; 8,474,805; 8,604,681; 8,774,890; 8,919,752; 9,058,954) and abroad, with several others pending in the U.S. and abroad as well.

The Electronic, Magnetic and Photonic Materials Division (EMPM) of The Minerals, Metals and Materials Society (TMS) named Dr. Ready as a 2002 “Young Leader.” He has served as Chair for the TMS Nanotechnology Committee, TMS Education Committee and TMS Membership & Student Development Committee. He was elected to the TMS Board in 2005 (Director, Membership & Student Development) and again in 2010 (Director, Content Development & Dissemination). In 2015, he received the Brimacombe Medal from TMS that rewards a mid-career individuals for sustained excellence and achievement in business, technology, education, public policy, or science related to materials science and engineering. Dr. Ready is also the recipient of the “Innovative Research Award” by GTRI in 2013; the “Outstanding Undergraduate Research Mentor Award” by the Georgia Institute of Technology (2009); the “Young Leader International Scholar Award” by the Japan Institute of Metals (2005); and the “Red Flag Award” by the Georgia Department of Natural Resources (2001). Dr. Ready also serves on the TMS Electronic Packaging and Interconnect Materials Committee and the TMS Public and Government Affairs Committee.

He has also been involved in a variety of peer review activities for archival journals, scholarships and federal agencies and continues to be a session organizer for numerous national and international symposia/conferences. Dr. Ready is also a Senior Member of IEEE, and a member of the Materials Research Society (MRS). Dr. Ready is a helicopter and instrument-rated fixed wing pilot and has served as Board Chairman for the non-profit /501(c)(3) Yellow Jacket Flying Club, Inc. since 2010. He also is a Trustee of the Georgia Tech Athletic Association Association, as well as the Georgia Tech Alumni Association, and recently served on the Georgia Tech Executive Board, as well as Faculty Assembly.

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DEGREES HELD:

- Doctor of Philosophy in Materials Science, 2000  
*Georgia Institute of Technology; Atlanta, Georgia 30332*  
Dissertation: "Reliability Investigation of Printed Wiring Boards Processed with Water Soluble Flux Constituents."  
Minor: Electrical Engineering
- Master of Science in Metallurgical Engineering, 1997  
*Georgia Institute of Technology; Atlanta, Georgia 30332*  
Thesis: "Factors Which Enhance Conductive Anodic Filament (CAF) Formation."
- Bachelor of Materials Engineering, 1994  
*Georgia Institute of Technology; Atlanta, Georgia 30332*  
Metallurgical Specialization.  
Design experience with lead free solder alloys and multichip modules.
- Diploma, 1989  
*Chapel Hill High School; Chapel Hill, North Carolina 27514*

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POSITIONS HELD:

*Georgia Tech Research Institute; Atlanta, Georgia 30332*

- Principal Research Engineer; 2011 - Present
- Senior Research Engineer; 2007 – 2011
- Research Engineer II; 2003 – 2007

Responsibilities: Developed research thrust in nanotechnology with focus on carbon nanotube production and applications. Served as Principal Investigator and conducted sponsored research of carbon nanotube technologies for numerous electronic applications – including terascale interconnects, supercapacitors, field emission and photovoltaics. Prepared proposals for internal and external sponsored research programs. Secured over \$7.5M in research funding. Conducted reliability analysis using RELEX software and other tools. Served as expert witness in criminal and civil cases. Served on source selection evaluation boards. Conducted thermal reliability analysis for microwave transmit/receive modules and photonic switching time delay units.

*Georgia Institute of Technology; Atlanta, Georgia 30332*

- Deputy Director, Innovation Initiatives, Institute for Materials; 2013 -- Present
- Adjunct Professor; 2003 – Present
- Instructor; 1999

Responsibilities: Conducted and coordinated translational research with industrial partners. Mentored and served as research advisor for 5 high school, 70+ BS, 6 PhD, 2 MS and 2 co-op students, as well as 3 high school teacher summer interns, conducting nanoscale materials explorations. Taught multiple offerings of a three credit hour undergraduate course in material science and engineering (MSE2001) to 90+ students per semester (over 1,000 students to date). Developed full curriculum that included lectures, demonstrations, comprehensive examinations and a multi-disciplinary design/research project. Consistently received exceptionally favorable course reviews (available upon request). Also co-taught multiple offerings of a professional education course (1.75 CEU) entitled 'Military Power and Energy Needs for the Future.'

*Exponent Failure Analysis Associates; Atlanta, Georgia 30326*

- Senior Manager; 2012 (six month industrial sabbatical)

Responsibilities: Charged with significantly increasing Exponent's materials and metallurgical consulting efforts by identifying, developing, and securing new business opportunities in the Southeast. Analyzed a wide variety of materials failures using field inspections, engineering analysis and experimental testing.

*MicroCoating Technologies; Atlanta, Georgia 30341*

- Government Grants Manager; 2002 – 2003
- Research Engineer; 2000 – 2002

Responsibilities: Prepared proposals for sponsored research programs. Managed, organized and facilitated the company-wide preparation and submittal of research proposals for government and corporate funding in excess of \$40M for 2002. Research grant awards for the year were the most ever (~\$4M) in company history (dating back to 1994) and exceeded the combined value of grants from both 2000 and 2001. Conducted sponsored research in the areas of vapor deposited thin films, nanopowders, organic light emitting diodes, low-k and high-k dielectrics, graded index photonics, optical waveguides, voltage tunable capacitors and frequency agile devices. Developed process improvements to increase yield and reliability of integrated passive components (resistors and capacitors) for printed wiring boards (PWB). Implemented design of experiment (DOE) techniques to analyze variability in resistor quality and isolate the influences of the various contributing factors on reproducibility. Designed testing methodology and equipment to evaluate response of resistors to environmental fluctuations.

*General Dynamics Advanced Technology Systems; Greensboro, North Carolina 27301*

- Senior Reliability Engineer; 2000

Responsibilities: Performed failure mode effects and criticality analysis (FMECA) for radio frequency (RF) and fiber optic communication equipment. Performed process optimization. Developed reliability growth models. Implemented process and design enhancements. Designed testing methodology to evaluate impact of water soluble cleaning solutions on component reliability.

*Georgia Institute of Technology; Atlanta, Georgia 30332*

- Graduate Research Assistant; 1994 – 2000

Responsibilities: Conducted PWB and multi-layer board (MLB) failure analysis. Designed accelerated life testing (ALT) programs to investigate impact of soldering flux and substrate interactions on PWB reliability. Investigated high density interconnect (HDI) electronic packaging technologies. Performed materials characterization with optical microscopy, scanning electron microscopy (SEM), transmission electron microscopy (TEM), energy dispersive x-ray spectroscopy (EDS), applied metallography, electron and x-ray diffraction (XRD). Implemented hardware and software solutions for testing programs, data acquisition, data analysis and system consolidation. Initiated numerous efficiency increasing and cost saving measures. Regularly maintained and made necessary repairs to laboratory equipment. Performed scheduling and training for use of lab equipment. Served as administrator for laboratory computer network. Managed day-to-day activities of lab personnel.

*Georgia Institute of Technology; Atlanta, Georgia 30332*

- Undergraduate Research Assistant; 1993 – 1994

Responsibilities: Performed x-ray crystallographic analysis on a variety of materials, including terrestrial and space grown (STS-67; CHAMPS) gallium arsenide (GaAs) thin films and nanophase powders. Analyzed metallic torsion samples through the use of x-ray texture (pole figure) analysis. Wrote FORTRAN programs to manipulate data. Constructed safety shielding for x-ray generation equipment. Conducted PWB and MLB failure analysis. Performed materials characterization with optical microscopy, SEM, TEM, EDS, applied metallography, x-ray crystallography and electron diffraction. Implemented

hardware and software solutions for testing programs, data acquisition, data analysis and system consolidation.

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U.S. PATENTS:

1. # 9,058,954 – Carbon Nanotube Field Emission Devices and Methods of Making Same (June 2015)
2. # 8,919,752 -- Microalloyed Spring (December 2014)
3. # 8,774,890 -- Electrode Arrays and Methods of Making and Using Same (July 2014)
4. # 8,604,681 -- Cold Cathodes and Ion Thrusters and Methods of Making and Using Same (Dec. 2013)
5. # 8,474,805 -- Microalloyed Spring (July 2013)
6. # 8,350,146 -- Three Dimensional Multi-junction Photovoltaic Device (January 2013)
7. # 6,994,757 -- Electrically Resistive Materials (February 2006)
8. # 6,846,370 -- Electrically Resistive Materials (January 2005)

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INTERNATIONAL PATENTS:

1. European Union # EP1278215 -- Electrically Resistive Materials
2. Australia # 2006297870 – Three Dimensional Multi-junction Photovoltaic Device
3. China # ZL200680006941.X -- Three Dimensional Multi-junction Photovoltaic Device
4. South Korea # 1009832320000 -- Three Dimensional Multi-junction Photovoltaic Device
5. Canada # CA2598490 -- Three Dimensional Multi-junction Photovoltaic Device

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EXTERNAL RESEARCH FUNDING: (\$8,432,375 AS PI; \$17,162,375 WITH CO-PIs)

- Space (\$4,701,856 as PI; \$10,250,000 with co-PIs)
  1. “Carbon Nanotube Field Emitters as Cold Cathodes for Hall Effect Thrusters (Phase 1)”; DARPA; \$480,000 (\$1.25M with co-PIs); 06/2007 – 07/2009; HR0011-07-C-0056
  2. “Carbon Nanotube Field Emitters as Cold Cathodes for Hall Effect Thrusters (Phase 2)”; DARPA; \$3,050,000 (\$6.5M with co-PIs); 09/2009 – 07/2011; HR0011-09-C-0142
  3. “Comprehensive Study of Plasma-Wall Sheath Transport Phenomena”; Air Force; \$650,000 (\$2.5M with co-PIs); 07/2011 – 07-2016; FA9550-11-1-0160.
  4. “Carbon Nanotube-Based Hall Effect Thrusters”; Air Force; \$404,856; 09/2012 – 03/2013; N0017806D4752-FG01
  5. “Aluminum Nanopowder Fabrication for Nano-Satellite Propulsion Applications”; Air Force; \$100,000; 08/2002 – 08/2003; F49620-02-C-0104
  6. “Carbon Nanotube (CNT) Based Electrochemical Double Layer (ECDL) Supercapacitor for Human Spaceflight Applications.”; NASA; \$15,000; 04/2006 – 12/2006; NNNJ06HE48G
  7. “Space Shuttle Sensor Wire”; NASA; \$2,000; 08/2008 – 12/2008
- Power & Energy (\$1,099,139)
  1. “Embedded Chip-scale Electrochemical Double Layer (ECDL) Supercapacitors with Pseudocapacitive Functionalization and Tailored Ionic Liquid-Based Electrolytes”; NASA-JPL; \$65,000; 10/2015 – 09/2016; NNN12AA01C
  2. “Earth Abundant Photovoltaic Cells”; CASIS; \$200,000; 05/2013 – 05/2014; NNH11CD70A
  3. “Generation IV Photovoltaic Cells Based on Carbon Nanotubes”; Air Force; \$250,000; 05/2006 – 11/2007; FA9550-06-1-0460
  4. “Carbon Nanotube (CNT) Use in Electrochemical Double Layer (ECDL) Capacitor for Pulse Power and High Energy Density Applications.”; Army; \$195,000; 04/2003 – 09/2004; DASG60-03-1-0004
  5. “AMRDEC-UARC Supercapacitors”; Army; \$134,139; 03/2012 – 12/2012; W31P4Q-08-D-0006-0030
  6. “Silicon-Coated Carbon Nanotube Anodes for Li-ion Batteries”; NASA; \$100,000; 02/2010 – 09/2010; NNX10AG09G

7. “AMRDEC Supercapacitors (III)””; Army; \$95,000; 03/2011 – 12/2011; W31P4Q05A0030
  8. “AMRDEC Supercapacitors (II)””; Army; \$50,000; 08/2009 –09/2010; W31P4Q-08-D-0006-0018
  9. “AMRDEC Supercapacitors (I)””; Army; \$25,000; 06/2008 – 12/2008; W31P4Q-08-D-0006-0030
  10. “CZTS Photovoltaics””; NSF; \$20,000; 12/2011 – 06/2012; ECCS-1125775
  11. “Carbon Nanotube (CNT) Based Electrochemical Double Layer (ECDL) Supercapacitor for NASA Applications””; NASA; \$15,000; 03/2005 – 12/2005; NNJ05HA25G.
  12. “Flexible Carbon Nanotube Based Photovoltaics””; NASA; \$15,000; 02/2008 – 12/2008
- *Materials Science & Engineering* (\$1,160,747 as PI; \$2,760,000 with co-PIs)
    1. “Fabrication of Polymer-Based Electrooptic Devices.”; Air Force; \$750,000; 03/2003 – 03/2005; F33615-03-C-5406
    2. “DURIP: PECVD””; Navy; \$260,000; 04/2009 –04/2010; N00014-09-1-0865
    3. “Neural Prosthetic Failure Mechanisms””; DARPA; \$100,000 (\$2.76M with co-PIs); 01/2011 – 07/2012; N66001-11-1-4014
    4. “NIST Support of June MGI Mtg.”; NIST; \$15,000; 09/2014; 60NANB14D189
    5. “ONR Support of June MGI Mtg.”; Navy; \$15,000; 06/2014 – 11/2014; N00014-14-1-0547
    6. “Reliability Prediction Using Relx Software.”; Navy; \$5,000; 01/2004 – 09/2005
    7. “Metallurgical Analysis for Florida v. Decker (Case #2002-CF857Z)””; State of Florida; \$9,435; 11/2005 –10/2006.
    8. “Materials Science Demonstration Kit””; TMS Foundation; \$4,800; 01/2006 – 12/2006.
    9. “Titanium and Silver Coated Polymers””; NASA; \$1,512; 08/2010 – 08/2011
  - *Industry Sponsored* (\$1,124,770)
    1. “Solid-state Electrochemical Gas Sensors for Solid Combustion and Emissions””; Emisense, LLC; \$307,858; 08/2014 – 06/2017
    2. “Glass Ribbons””; Corning Glass Inc.; \$290,755; 07/2014 – 12/2016
    3. “Future Advanced in Electronics Materials & Processes””; Universal Technology Corp.; \$150,000; 05/26/2015-10/31/2015; FA8650-11-D-5703
    4. “Carbon-Nanotube-Based Photovoltaics””; Intellectual Property Partners, LLC; \$118,000; 11/2005 –09/2006
    5. “Electrochemical Micro-Capacitors Utilizing Carbon Nanostructures””; EngeniusMicro, LLC; \$69,000; 09/2014 – 12/2014; HQ0727-14-P-1426
    6. “Photovoltaic Cells Based on Carbon Nanotubes””; NewCyte, Inc.; \$45,781; 08/2006 – 06/2007; FA9550-06-C-0092
    7. “Materials Developments for Encell””; Encell Technology, Inc.; \$56,846; 10/2011 – 05/2012
    8. “NuDisc””; Olympic Studio LLC; \$40,240; 10/2014 - 04/2015
    9. “Battery Testing””; BP America Production Co.; \$17,500; 12/2014 - 12/2015
    10. “Nanoenhanced Toxic Industrial Chemical Sensors””; Engenius Micro, LLC; \$17,330; 08/2011 – 04/2012
    11. “Carbon Nanotube Functionalized Fabrics””; Milliken Research Corporation; \$10,000; 03/2007 – 12/2007
    12. “Carbon Nanotube Functionalized Fabrics””; United Technologies Research Center; \$1,460; 04/2009 – 10/2009
  - *Nanomaterials* (\$345,863)
    1. “Reactive Nanoparticles (II)””; Navy; \$134,206; 08/2012 – 11/2011; N61331-09-P-3525
    2. “Reactive Nanoparticles (I)””; Navy / DTRA; \$100,000; 09/2009 –04/2010; N61331-08-P-3568
    3. “NER: Representations of Active Nanostructures Across Scientific, Popular, and Policy Realms of Discourse””; NSF; \$33,039 (with co-PIs - \$85,417); 09/2007 – 10/2008; SES-0708413
    4. “Nanoelectronics””; Navy; \$40,000; 08/2010 – 08/2011; 05-D-3834-0011
    5. “Nanotechnology Knowledge Diffusion””; NSF; \$18,618; 09/2008 –08/2011; SBE-0830207

6. “Terrascale Interconnect Based on Carbon Nanotubes”; NIST; \$20,000; 09/2007 – 12/2008; RA134107SU1774

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PEER REVIEWED PUBLICATIONS:

1. Joiner, Corey; Campbell, Philip; Tarasov, Alexey; Beatty, Brian; Perini, Chris; Tsai, Meng-Yen; Ready, William; Vogel, Eric, “Graphene-Molybdenum Disulfide-Graphene Tunneling Junctions with Large-area Synthesized Materials.” Under Review at *ACS Applied Materials & Interfaces* (2016).
2. Philip Campbell, Alexey Tarasov, Corey Joiner, Jud Ready, and Eric Vogel. “Band Structure Effects on Resonant Tunneling in III-V Quantum Wells versus 2D Vertical Heterostructures.” Accepted for publication in *Journal of Applied Physics* (2016).
3. Philip M. Campbell, Alexey Tarasov, Corey A. Joiner, Meng-Yen Tsai, Georges Pavlidis, Samuel Graham, W. Jud Ready, and Eric M. Vogel, “Field-Effect Transistors based on Wafer-Scale, Highly Uniform Few-Layer P-type WSe<sub>2</sub>” Accepted for publication in *Nanoscale* (2016).
4. Koushik Ramachandran, Timothy Pruyn, Timothy Huang, Yushu Wang, Preet M. Singh, W. Jud Ready, Rosario A. Gerhardt, Venky Sundaram, and Rao Tummala. “Investigation of Copper Plated-Through-Holes in Glass Fiber Reinforced Epoxy Substrates Using AC Impedance Spectroscopy.” Accepted for publication in *Journal of Materials Science: Materials in Electronics* (2015).
5. Philip M. Campbell, Alexey Tarasov, Corey A. Joiner, W. Jud Ready, and Eric M. Vogel. “Enhanced Resonant Tunneling in Symmetric 2D Semiconductor Vertical Heterostructure Transistors.” DOI: 10.1021/nn507174c; *ACS Nano* (2015).
6. Lake A. Singh, Graham Sanborn, Stephan Turano, Mitchell L. R. Walker and W. Jud Ready, “Operation of Spindt-Type, Carbon Nanotube Cold Cathodes in a Hall Effect Thruster Environment.” *IEEE Transactions on Plasma Science*, Vol. PP, Issue 99 (2014).
7. Robert Fisher, Ravi Konjeti, Morgan Watt and W. Jud Ready. "Atomic Layer Deposition of Titanium Oxide for Pseudocapacitive Functionalization of Vertically-Aligned Carbon Nanotube Supercapacitor Electrodes" *ECS Journal of Solid State Science and Technology*, Volume 4, Number 2, M1-M5, (2014).
8. Alexey Tarasov, Philip M. Campbell, Meng-Yen Tsai, Zohreh Razavi Hesabi, Janine Feirer, Samuel Graham, W. Jud Ready, and Eric M. Vogel, “Wafer-Scale Device Fabrication using Few-Layer Synthetic Molybdenum Disulfide.” DOI: 10.1002/adfm.201401389; *Advanced Functional Materials* (2014).
9. Koushik Ramachandran; W. Jud Ready; P. Markondeya Raj; Venky Sundaram; Rao Tummala, “Insulation Reliability of Fine-pitch Through-vias in Glass Fiber Reinforced Halogen-free Epoxy Substrates.” *Journal of Materials Science: Materials in Electronics*, DOI: 10.1007/s10854-014-1784-7 (2014).
10. Graham Sanborn, Stephan Turano, and W. Jud Ready, “Oxygen Plasma Resurrection of Triode Type Carbon Nanotube Field Emission Cathodes.” *Diamond and Related Materials*, Vol. 43, pp. 1-4, (2014).
11. Tingting Ma, Alan L. Porter, Ying Guo., Jud Ready, Chen Xu and Lidan Gao. “A Technology Opportunities Analysis Model: Applied to Dye-Sensitized Solar Cells for China.” *Technology Analysis & Strategic Management*, Vol. 26, pp. 87-104, DOI: 10.1080/09537325.2013.850155, (2013).
12. Robert Fisher, Morgan Watt, and Jud Ready, “Functionalized Carbon Nanotube Supercapacitor Electrodes: A Review on Pseudocapacitive Materials” *Journal of Solid State Science and Technology*, Vol. 2, pp. M3170-M3177, (2013).
13. R. Reit, J. Nguyen and W.J. Ready, “Growth Time Performance Dependence of Vertically Aligned Carbon Nanotube Supercapacitors Grown on Aluminum Substrates.” *Electrochimica Acta*. Vol. 91, pp. 96–100, (2013).
14. G.P. Sanborn, S.P. Turano, P. Collins., and W.J. Ready. “A Thin Film Triode Type Carbon Nanotube Field Emission Cathode.” *Applied Physics A*, Vol. 110, Page 99-104, (2013).
15. Kara Evanoff, Jim Benson, Mark Schauer, Igor Kovalenko, David Lashmore, W. Jud Ready, and Gleb Yushin. “Ultra Strong Silicon-Coated Carbon Nanotube Nonwoven Fabric as a Multifunctional Lithium-Ion Battery Anode.” *ACS Nano*, pp. 9837–9845, (2012)

16. Nguyen, Justin J.; Turano, Stephan; Ready, W. Jud, “The Synthesis of Carbon Nanotubes Grown on Metal Substrates: A Review.” *Nanoscience and Nanotechnology Letters*, Vol. 4, pp. 1123-1131, (2012).
17. Kara Evanoff, Javed Khan, Alexander A. Balandin, Alexandre Magasinski, W. Jud Ready, Thomas F. Fuller, and Gleb Yushin. “Toward Ultra-Thick Battery Electrodes: Aligned Carbon Nanotube - Enabled Architecture” *Advanced Materials*. Vol. 24, pp. 533–537 (2012).
18. J. Flicker and W. J. Ready, “Derivation of Power Gain for Three Types of Three Dimensional Photovoltaics Cells Based on Tower Arrays with Flat Tops and Smooth, Vertical Sidewalls.” *Progress in Photovoltaics: Research and Applications*. Vol. 19, pp. 667-675 (2011).
19. J. Nguyen, K. Evanoff, and W. J. Ready, “Amorphous and Nanocrystalline Silicon Growth on Carbon Nanotube Substrates.” *Thin Solid Films*. Vol. 519, pp.4144–4147, (2011).
20. Williams, L. T., Walker, M. L. R., Kumsomboone, V. S. and Ready, W. J., “Lifetime and Failure Mechanisms of an Arrayed Carbon Nanotube Field Emission Cathode,” *IEEE Transactions on Electron Devices*. Vol. 57, pp. 3163-3168, (2011).
21. X.J. Wang, J.D. Flicker, B.J. Lee, W.J. Ready and Z.M. Zhang, “Visible and Near-infrared Radiative Properties of Vertically Aligned Multi-walled Carbon Nanotubes.” *Nanotechnology*, Vol. 20 pp. 215704-215713, (2009).
22. Jack Flicker and Jud Ready, “Simulations of Absorbance Efficiency and Power Production of Three Dimensional Tower Arrays for Use in Photovoltaics.” *Journal of Applied Physics*, Vol. 103, pp. 113110 (2008).
23. K.L. Kepple, G.P. Sanborn, P.A. Lacasse, K.M. Gruenberg, W.J. Ready, “Improved Fracture Toughness of Carbon Fiber Composite Functionalized with Multi Walled Carbon Nanotubes, *Carbon*, Vol. 46, pp. 2026 –2033, (2008).
24. S.P. Turano, J.D. Flicker; W.J. Ready, “Nanoscale Coaxial Cables Produced From Vertically Aligned Carbon Nanotube Arrays Grown via Chemical Vapor Deposition and Coated with Indium Tin Oxide via Ion Assisted Deposition.” *Carbon*, Vol. 46, No. 5, pp. 723-728, (2008).
25. W.J. Ready and Stephan P. Turano. “Chemical Vapor Deposition Synthesis of Self Aligned Carbon Nanotube Arrays.” *Journal of Electronic Materials*, Vol. 35, No. 2, pp. 192-194, (2006).
26. W.J. Ready and L. J. Turbini. “The Effect of Flux Chemistry, Applied Voltage, Conductor Spacing and Temperature on Conductive Anodic Filament Formation.” *Journal of Electronic Materials*, Vol. 31, No. 11, pp. 1208-1224, (2002).
27. Laura J. Turbini, Westin R. Bent, and W. Jud Ready. “Impact of Higher Melting Lead-Free Solders on the Reliability of Printed Wiring Assemblies.” *Journal of Surface Mount Technology*, Vol. 13, No. 4, pp. 10-14, (2000).
28. W. J. Ready, and L. J. Turbini. “A Comparison of Hourly vs. Daily Testing Methods for Evaluating the Reliability of Water Soluble Fluxes.” *IEEE Transactions on Components, Packaging, and Manufacturing Techniques - Part B, Advanced Packaging*, Vol. 23, No. 2, pp. 285-292, (2000).
29. W. Jud Ready, Laura J. Turbini, Roger Nickel, and John Fischer. “A Novel Test Circuit for Detecting Electrochemical Migration and Conductive Anodic Filament.” *Journal of Electronic Materials*, Vol. 28, No. 11, pp. 1158-1163, (1999).

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PUBLICATIONS IN PROCEEDINGS:

1. Ma, T., Porter, A.L., Ready, J. Xu, C., Gao, L., Wang, W., and Guo, Y. “A Technology Opportunities Analysis Model: Applied to Dye-Sensitized Solar Cells for China,” *4th International Seville Conference on Future-oriented Technology Analysis*, (2011).
2. Flicker JD, Ready WJ, “Three dimensional carbon nanotube photovoltaics,” *10AICHe - 2010 AICHe Annual Meeting, Conference Proceedings*, (2010).
3. Lacasse PA, Ready WJ, “Carbon nanotube based tunable microbattery,” *9AICHe - 2009 AICHe Annual Meeting, Conference Proceedings*, (2009).

4. Williams LT, Walker MLR, Kumsomboone VS, Ready WJ. “Experimental characterization of carbon nanotube field emission cathode lifetime,” *45th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit, Conference Proceedings*, (2009).
5. Mousa, O.F. Kim, B.C.; Flicker, J.; Ready, J., “A Novel Design of CNT-based Embedded Inductors”: *2009 IEEE 59th Electronic Components and Technology Conference (ECTC 2009)*, p 497-501, (2009).
6. Laura J. Turbini, Westin R. Bent, and W. Jud Ready. “Impact of Higher Melting Lead-Free Solders on the Reliability of Printed Wiring Assemblies.” *Proceedings of Surface Mount Technology Association International*, pp. 383-387, (2000).
7. W.J. Ready, B.A. Smith, L.J. Turbini, and S.R. Stock. “Analysis of Catastrophic Field Failures Due to Conductive Anodic Filament (CAF) Formation.” *Materials Research Society Symposium Proceedings Vol. 515, Electronic Packaging Materials Science X*, pp.45-51, (1998).
8. W.J. Ready and L.J. Turbini. “Conductive Anodic Filament Formation: A Materials Perspective.” *Proceedings of the 3<sup>rd</sup> Pacific Rim International Conference on Advanced Materials and Processes*, pp. 1977-1982, (1998).
9. W. Jud Ready, Laura J. Turbini, Roger Nickel, and John Fischer. “A Novel Test Circuit for Detecting Electrochemical Migration.” *Proceedings of the International Conference on Electronic Assembly: Materials and Process Challenges*, pp. 63-67, (1998).
10. W.J. Ready and L.J. Turbini. “Factors which Enhance Conductive Anodic Filament Formation.” *4<sup>th</sup> International Conference on Composites Engineering*, pp. 101-102, (1997).
11. W.J. Ready, L.J. Turbini, S.R. Stock and B.A. Smith. “Conductive Anodic Filament Enhancement in the Presence of a Polyglycol-Containing Flux.” *International Conference on Electronic Assembly Proceedings*, Vol. 2, pp. 1102-1 - 1102-11, (1996)
12. W.J. Ready, L.J. Turbini, S.R. Stock and B.A. Smith. “Conductive Anodic Filament Enhancement in the Presence of a Polyglycol-Containing Flux.” *34th IEEE International Reliability Physics Symposium Proceedings*, pp. 267-273, (1996).
13. S.R. Stock, L.L. Dollar, G.B. Freeman, W.J. Ready, L.J. Turbini, J.C. Elliott, P. Anderson and G.R. Davis. “Characterization of Conductive Anodic Filament (CAF) by X-ray Microtomography and by Serial Sectioning.” *Electronic Packaging Materials Science VII Symposium, Materials Research Society Symposium Proceedings*, Fall 1993, pp. 65-69, (1993).

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OTHER PUBLICATIONS:

1. R.E. Camacho, A.R. Morgan, M.C. Flores, T.A. McLeod, V.S. Kumsomboone, B.J. Mordecai, R. Bhattacharjea, W. Tong, B.K. Wagner, J.D. Flicker, S.P. Turano, and W.J. Ready, “Carbon Nanotube Arrays for Photovoltaic Applications” *JOM*, Vol. 58, No. 3, pp 39-42, (2007).
2. J.M. Boyea, R.E. Camacho, S. P. Turano and W. J. Ready, “Carbon Nanotube-Based Supercapacitors: Technologies and Markets” *Nanotechnology Law and Business*, pp.585-593, (2007).
3. W. Jud Ready & Apparao M. Rao. “Forward.” *Journal of Electronic Materials*, Vol. 35, No. 2, pp. 191 (2006).
4. S. Arapelli, H. Fireman, P. Moloney, P. Nikolaev, L. Yowell, C.D. Higgins, K. Kim, P.A. Kohl, S.P. Turano, and W.J. Ready. “Carbon Nanotube-Based Electrochemical Double-Layer Capacitor Technologies for Spaceflight Applications.” *JOM*, Vol. 57, No. 12, pp 26 – 31, (2005).
5. Jud Ready. “God Speed, John Glenn.” *Space News*, Vol. 9, No. 33, p. 19, (1998).
6. Jud Ready. “Public Relations Agent Glenn.” *Space News*, Vol. 9, No. 6, p. 15, (1998).
7. W.J. Ready, S.R. Stock, G.B. Freeman, L.L. Dollar and L.J. Turbini. “Microstructure of Conductive Anodic Filaments Formed During Accelerated Testing of Printed Wiring Boards.” *Circuit World*, Vol. 21, No. 4, pp. 5-10, (1995).
8. W.J. Ready, S.R. Stock, G.B. Freeman, L.L. Dollar and L.J. Turbini. “Microstructure of Conductive Anodic Filaments Formed During Accelerated Testing of Printed Wiring Boards.” *IPC News & Technology Review*, Vol. 35, No. 6, pp. 29-33, (1994).



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INVITED PRESENTATIONS:

1. *Materials Research Society Fall Meeting*, Boston, MA, “MRS Bulletin Special Issue – Materials & Engineering: Propelling Innovation,” (2015).
2. *Engineered Nanomaterials in Aerospace Applications*, Materials Research Society Webinar, “Carbon Nanotube-Based Electron Emitters & Solar Cells in Orbit,” (2015).
3. *International Space Station R&D Conference*, Boston, MA, “Materials Science Research: Testing and Manufacturing in Space,” (2015).
4. *National Special Communications Board Technology Forum*, Chantilly, VA, “Nanostructured Electrodes,” (2015).
5. *Workshop on Nanomaterials for Aerospace*, Hampton, VA, “ALICE in Wonderland - A Story of Carbon Nanotube Electron Emission in Space,” (2014).
6. *TMS Annual Meeting & Exhibition*, San Diego, CA, “ALICE in Wonderland - A Story of Carbon Nanotube Electron Emission in Space,” (2014).
7. *Center for Advancement of Science in Space (CASIS) and Silicon Valley Space Center (SVSC) Summit on Launching Commercial Space Enterprises*, San Jose, CA, “Nanomaterials for Solar Cells,” (2013).
8. *Alternative Energy and Energy Efficiency Conference*, Tashkent, Uzbekistan “Alternative Energy Solutions Enabled by Nanotechnology,” (2013).
9. *First Sustainable Nanotechnology Organization Conference*, Arlington, VA, “Direct to Discovery (D2D): An Innovative Digital Approach to Extending University-based Nanoscience into K-12 Classrooms in the US and Abroad,” (2012).
10. *Composites at Lake Louise (CALL) Conference*, Lake Louise, Alberta, Canada, “Improved Fracture Toughness of Carbon Fiber Composite Functionalized with Multi-walled Carbon Nanotubes,” (2009)
11. *Georgia General Assembly - House Science and Technology Committee*, Atlanta, GA, “Alternative Energy in Georgia,” (2008).
12. *2nd Integration & Commercialization of Micro & Nanosystems International Conference & Exhibition*, Hong Kong, China, “Carbon Nanotube Based Devices for Electronic Applications,” (2008)
13. *MicroNanoReliability Congress*, Berlin, Germany, “Arrhenius or Erroneous? An Extrapolation of Accelerated Aging and Degradation Models from Micro to Nano,” (2007).
14. *TMS Annual Meeting & Exhibition*, Orlando, FL. “Carbon Nanotube-Based CdTe/CdS Photovoltaics,” (2007).
15. *Georgia Tech Homecoming*, Atlanta, GA, “Nanotechnology Applications at Georgia Tech,” (2006).
16. *Space and Missile Defense Conference and Exhibition*, Huntsville, AL, “Nanotechnology Applications for Advanced Defense Systems,” (2006).
17. *Technology Association of Georgia*, Atlanta, GA, “Nanotechnology – Reality & Myth,” (2006).
18. *Southeastern US Omics-Nano Mission to British Columbia and Alberta*, Vancouver, Canada “Nanofabrication @ Georgia Tech,” (2006).
19. *Japan Institute of Metals*, Tokyo, Japan, “Single Wall Carbon Nanotube-Based Electrochemical Capacitors for Space Exploration Applications,” (2006).
20. *Georgia General Assembly - House Science and Technology Committee*, Atlanta, GA, “Nanotechnology in Georgia Today,” (2006)
21. *Oak Ridge National Laboratory and Imperial College of London Nanoscience Workshop*, Oak Ridge, TN, “Carbon Nanotube-Based Photovoltaics,” (2005).
22. *NASA Nanotechnology for Power & Energy Storage Working Group*, Houston, TX, “Carbon Nanotube-Based Opportunities for Power & Energy,” (2004).
23. *DARPA Workshop on Sustainable MicroScale Power Sources*, Vail, CO, “Carbon Nanotube-Based Opportunities for Sustainable MicroScale Power Sources,” (2004).

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CONTRIBUTED PRESENTATIONS:

1. *TMS Annual Meeting & Exhibition*, Nashville, TN “Highly Uniform Synthesis of Large-Area, Few-Layer WSe<sub>2</sub>” (2016).

2. *SRC TECHCON*, Austin, TX, “Resonant Tunneling Characteristics of 2D versus 3D Devices” (2015).
3. *TMS Annual Meeting & Exhibition*, Orlando, FL “Interfacial Effects on MoS<sub>2</sub> Device Performance” (2015).
4. *Graphene and Beyond*, State College, PA, “Highly Uniform, Large Area MoS<sub>2</sub> for Device Applications” (2014).
5. *National Space and Missile Materials Symposium (NSMMS)*, Huntsville, AL, “ALICE in Wonderland - A Story of Carbon Nanotube Electron Emission in Space,” (2014).
6. *National Space and Missile Materials Symposium (NSMMS)*, Huntsville, AL, “Carbon Nanotube-Based Textured CZTS Photovoltaic Cells on the International Space Station,” (2014).
7. *TMS Annual Meeting & Exhibition*, San Antonio, TX, “Growth Time Performance Dependence of Vertically Aligned Carbon Nanotube Supercapacitors Grown on Aluminum Substrates,” (2013).
8. *TMS Annual Meeting & Exhibition*, Orlando, FL, “Vertically-Aligned Carbon Nanotubes Grown Directly on Al for Supercapacitor Applications,” (2012).
9. *TMS Annual Meeting & Exhibition*, Orlando, FL, “Fabrication of a Thin Film Triode Type Carbon Nanotube Field Emission Cathode,” (2012)
10. *ASME Nano-Heat Transfer*, Atlanta, GA, “Microwave Post-Treatment of Carbon Nanotubes for Increasing Interfacial Conductivity,” (2012).
11. *Carbon for Energy Conference*, Stone Mountain, GA, “Vertically-Aligned Carbon Nanotubes Grown Directly onto Metal Substrates for Supercapacitor Electrodes,” (2012).
12. *Materials Research Society Spring Meeting*, San Francisco, CA. “Ultra-strong Silicon-Coated Carbon Nanotube Nonwoven Fabric as Multifunctional Lithium Ion Battery Anodes,” (2012).
13. *Materials Research Society Spring Meeting*, San Francisco, CA. “Towards Ultra-thick Battery Electrodes: Aligned Carbon Nanotube – Enabled Architecture,” (2012).
14. *Carbons for Energy Applications Workshop*, Stone Mountain, GA. “Towards Ultra-Thick Battery Electrodes: Aligned Carbon Nanotube – Enabled Architecture,” (2012).
15. *TMS Annual Meeting & Exhibition*, Orlando, FL. “Towards Ultra-Thick Battery Electrodes: Aligned Carbon Nanotube – Enabled Architecture,” (2012).
16. *Nano@Tech*, Atlanta, GA, “Carbon Nanotube-Based Applications,” (2012).
17. *TMS Annual Meeting & Exhibition*, San Diego, CA. “3DCNTPV Devices: Production,” (2011).
18. *ECS Fall Meeting*, Boston, MA. “Ultra-thick Silicon-Coated Vertically Aligned Carbon Nanotube Anodes for Lithium Ion Batteries,” (2011).
19. *Materials Research Society Spring Meeting*, San Francisco, CA. “Silicon-Coated Vertically Aligned Carbon Nanotube as High Capacity Anodes for Lithium Ion Batteries,” (2011).
20. *TMS Annual Meeting & Exhibition*, San Diego, CA. “Silicon-Coated Vertically Aligned Carbon Nanotube as High Capacity Anodes for Lithium Ion Batteries,” (2011).
21. *4th International Seville Conference on Future-Oriented Technology Analysis (FTA)*, Seville, Spain, “A Technology Opportunities Analysis Model: Applied to Dye-Sensitized Solar Cells for China,” (2011).
22. *International Field Emission Symposium*, Sydney, AU, “Fabrication of Intrinsic Carbon Nanotube Field Emission Arrays,” (2010).
23. *TMS Annual Meeting & Exhibition*, Seattle, WA, “Amorphous Silicon Deposited on Vertically-Aligned Carbon Nanotube Arrays for Three Dimensional Photovoltaics,” (2010).
24. *TMS Annual Meeting & Exhibition*, Seattle, WA. “3DCNTPV Devices: Full Theoretical Model,” (2010).
25. *TMS Annual Meeting & Exhibition*, Seattle, WA. “Silicon-Decorated Carbon Nanotubes as High Capacity Anodes for Lithium Ion Batteries,” (2010).
26. *American Carbon Society Annual World Conference on Carbon*, Clemson, SC. “Silicon-Decorated Carbon Nanotubes as High Capacity Anodes for Lithium Ion Batteries,” (2010).
27. *Materials Research Society Spring Meeting*, San Francisco, CA, “Amorphous Silicon Deposited on Vertically-Aligned Carbon Nanotube Arrays for Three Dimensional Photovoltaics,” (2010).

28. *AIChE Annual Meeting*, Salt Lake City, UT. “3DCNTPV Devices: Theoretical Basis and Experimental Application,” (2010).
29. *Materials Research Society Spring Meeting*, Boston, MA. “Direct to Discovery (D2D): An Innovative Digital Approach to Extending University-based Nanoscience into K-12 Classrooms in the US and Abroad,” (2010).
30. *ECS Fall Meeting*, Vienna, Austria. “Silicon-Decorated Carbon Nanotube Arrays as High Capacity Anodes for Lithium Ion Batteries,” (2009).
31. *Materials Research Society Spring Meeting*, San Francisco, CA “Amorphous Silicon Grown on Carbon Nanotube Arrays,” (2009).
32. *Materials Research Society Spring Meeting*, San Francisco, CA. “3DCNTPV Devices: Cell Production and Results,” (2009).
33. *Materials Science & Technology Conference*, Pittsburgh, PA “Characterization of Amorphous Silicon Grown Directly onto Carbon Nanotube Arrays,” (2009).
34. *Sigma Xi Annual Meeting and Conference*, Houston, TX, “Amorphous Silicon Deposited on Vertically-Aligned Carbon Nanotube Arrays,” (2009).
35. *45th Joint Propulsion Conference*, Denver, CO, “Experimental Characterization of Carbon Nanotube Cold Cathode Lifetime Operation,” (2009).
36. *IEEE 59th Electronic Components and Technology Conference (ECTC)*, San Diego, CA, “A Novel Design of CNT-Based Embedded Inductors,” (2009).
37. *TMS Annual Meeting & Exhibition*, San Francisco, CA. “3DCNTPV Devices: Cell Production and Results,” (2009).
38. *ACS National Meeting & Exposition*, New Orleans, LA, “Manufacture and Characterization of a Layered Carbon Fiber Material Covered with Carbon Nanotubes,” (2008).
39. *TMS Annual Meeting & Exhibition*, New Orleans, LA. “3DCNTPV Devices: Absorption Increase in Efficiency,” (2008).
40. *60th Southeastern Regional Meeting of the ACS*, Nashville, TN, “A Piezoelectric Nanogenerator Design Using Carbon Nanotubes,” (2008).
41. *Nanoscale Technology, Fabrication and Characterization Workshop*. Atlanta, GA, “Carbon Nanotube Based Applications,” (2006).
42. *Strategic Energy Initiative (SEI) Energy Research Exposition*, Atlanta, GA, “Carbon Nanotube Based Photovoltaics,” (2006).
43. *TMS Annual Meeting & Exhibition*, San Antonio, TX, “Evaluation of the Field Emission properties of Carbon Nanotubes,” (2006).
44. *Materials Research Society Fall Meeting*, Boston, MA, “Single Wall Carbon Nanotube-Based Electrochemical Capacitors for Space Exploration Applications,” (2005).
45. *National Consortium for Specialized Secondary Schools of Mathematics, Science and Technology Conference*, Atlanta, GA, “Carbon Nanotube-Based Applications,” (2005).
46. *Nano@Tech*, Atlanta, GA, “Carbon Nanotube-Based Applications,” (2005).
47. *TMS Annual Meeting & Exhibition*, San Francisco, CA, “Alignment of Carbon Nanotubes via Electrically Biased Thermal Filament Chemical Vapor Deposition,” (2005).
48. *Georgia Tech Materials Council Nanomaterials Forum*, Atlanta, GA “The Importance of Collaboration Among Nanoscientists,” (2004).
49. *5<sup>th</sup> Georgia Tech Conference on Nanoscience and Nanotechnology*, Atlanta, GA, “Electron Beam Lithography Patterned Substrates for Carbon Nanotube Growth,” (2004).
50. *5<sup>th</sup> Georgia Tech Conference on Nanoscience and Nanotechnology*, Atlanta, GA, “Controlled Synthesis of Carbon Nanotubes,” (2004).
51. *5<sup>th</sup> Georgia Tech Conference on Nanoscience and Nanotechnology*, Atlanta, GA, “Purification of Carbon Nanotubes for use as Active Materials in Electrochemical Double Layer Capacitors,” (2004).
52. *TMS Annual Meeting & Exhibition*, Seattle, WA. “The Effect of Flux Chemistry, Applied Voltage, Conductor Spacing and Temperature on Conductive Anodic Filament Formation,” (2002).

53. *TMS Annual Meeting & Exhibition*, Indianapolis, IN. “Examining the Nature and Morphology of Conductive Anodic Filament Formation,” (2001).
54. *Surface Mount Technology Association International*, Chicago, IL. “Impact of Higher Melting Lead-Free Solders on the Reliability of Printed Wiring Assemblies,” (2000).
55. *TMS Annual Meeting & Exhibition*, Nashville, TN. “Reliability Investigation of Printed Wiring Boards Processed with Water Soluble Flux Constituents,” (2000).
56. *TMS Annual Meeting & Exhibition*, San Diego, CA. “A Novel Test Circuit for Automatically Detecting Conductive Anodic Filament Formation,” (1999).
57. *3<sup>rd</sup> Pacific Rim International Conference on Advanced Materials and Processes (PRICM)*, Honolulu, HI. “Conductive Anodic Filament Formation: A Materials Perspective,” (1998).
58. *International Conference on Electronic Assembly: Materials and Process Challenges*, Atlanta, GA “A Novel Test Circuit for Detecting Electrochemical Migration,” (1998).
59. *Materials Research Society Spring Meeting*, San Francisco, CA. “Analysis of a Catastrophic Field Failure due to Conductive Anodic Filament (CAF) Formation,” (1998).
60. *Life Cycle Systems Engineering Workshop*, Huntsville, AL. “Conductive Anodic Filament Formation: A Potential Reliability Problem for Fine-Line Circuits,” (1997).
61. *4<sup>th</sup> International Conference on Composites Engineering*, Honolulu, HI “Factors which Enhance Conductive Anodic Filament Formation,” (1997).
62. *Materials Research Society Fall Meeting*, Boston, MA. “Assessment of Continuous Monitoring of Surface Insulation Resistance Readings for Early Detection of Dendritic Formation,” (1996).
63. *International Conference on Electronic Assembly*, Atlanta, GA. “Conductive Anodic Filament Enhancement in the Presence of a Polyglycol-Containing Flux,” (1996).
64. *34th IEEE International Reliability Physics Symposium*, Dallas, TX. “Conductive Anodic Filament Enhancement in the Presence of Certain Polyglycol-Containing Fluxes,” (1996).
65. *International Conference on Solder Fluxes and Pastes*, Atlanta, GA. “Microstructure of Conductive Anodic Filaments Formed During Accelerated Testing of Printed Wiring Boards,” (1994).
66. *Materials Research Society Fall Meeting*, Boston, MA. “Characterization of Conductive Anodic Filament (CAF) by X-ray Microtomography and by Serial Sectioning,” (1993).

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CONFERENCE ORGANIZER AND CHAIRMANSHIPS:

1. *Materials Research Society Spring Meeting*, Phoenix, AZ; Conference Co-Chair; (2017).
2. *Materials Research Society Fall Meeting*, Symposium EE: “Beyond Graphene—2D Materials and Their Applications,” Boston, MA; Symposium Organizer; (2015).
3. *TMS Annual Meeting & Exhibition*, “Materials Innovation Plenary: Innovation in Materials & Manufacturing,” San Antonio, TX; Symposium Organizer; (2013).
4. *Materials Research Society Fall Meeting*, Symposium W: “Carbon Nanomaterials,” Boston, MA; Symposium Organizer; (2012).
5. *Materials Design at Georgia Tech (MADE@GT)*, Atlanta, GA; Conference Chair; (2012).
6. *TMS Annual Meeting & Exhibition*, “Nanomaterials: Materials and Processing for Functional Applications,” Various Locations; Symposium Chair & Organizer; (2006 – 2012).
7. *TMS Annual Meeting & Exhibition*, “Federal Funding Workshop: The Materials Genome Initiative,” Orlando, FL; Symposium Organizer; (2012).
8. *TMS Annual Meeting & Exhibition*, “IOMMS Global Materials Forum: Materials in a Green Economy: An International Perspective,” Orlando, FL; Symposium Organizer; (2012).
9. *Materials Science & Technology*, “The Materials Genome Initiative,” Columbus, OH; Symposium Organizer; (2011).
10. *Materials Science & Technology*, “Nanotechnology for Energy, Environment, Healthcare and Industry,” Columbus, OH; Symposium Organizer; (2011).
11. *TMS Annual Meeting & Exhibition*, “Federal Funding Workshop: Materials Science Funding,” San Diego, CA; Symposium Organizer; (2011).

12. *Materials Research Society Fall Meeting*, Symposium B: “Carbon-Based Electronic Devices-- Processing, Performance, and Reliability,” Boston, MA; Symposium Chair; (2010).
13. *Composites at Lake Louise (CALL) Conference*, Alberta, CANADA; Session Chair; (2009).
14. *2nd Integration & Commercialization of Micro & Nanosystems International Conference & Exhibition*, Hong Kong, CHINA; Session Chair; (2008).
15. *Federation of Materials Societies Biannual Meeting*, “Materials Education for the 21st Century Workforce” Washington, DC; Symposium co-Chair; (2004).
16. *TMS Annual Meeting & Exhibition*, “Thin Films & Interfaces,” San Diego, CA; Symposium Organizer; (2003).

SOCIETY & ORGANIZATION MEMBERSHIPS:

- Senior Member, Institute of Electrical and Electronics Engineers (IEEE)
- Life Member, The Minerals, Metals and Materials Society (TMS)
- Member, Materials Research Society (MRS)

BOARD-LEVEL LEADERSHIP ACTIVITIES:

2015 – Present	Trustee, Georgia Tech Alumni Association
2014 – Present	Trustee, Georgia Tech Athletic Association
2011 – Present	Board Member, NLA Diagnostics, Inc.
2010 – Present	Board Chairman, Yellow Jacket Flying Club, Inc. [501(c)3]
2008	Member, Agonn Systems Scientific Advisory Board
2010 – 2014	Director, TMS (Content Development & Dissemination)
2010 – 2012	Member, Georgia Tech Executive Board
2005 – 2008	Director, TMS (Membership & Student Development)
2000 – 2001	Member, Packaging Research Center (PRC) Industry Advisory Board

OTHER LEADERSHIP ACTIVITIES:

2015 – Present	GTAA Transfer Appeal Committee
2015 – 2018	GTAA Committee on Compliance and Equity
2015 – 2018	GT Alumni Magazine Task Force
2012 – 2014	Chairman, TMS Critical Materials Sub-Committee
2008 – 2012	Georgia Tech Faculty Assembly
2010 – 2012	Georgia Tech Student Activities Committee
2007 – 2012	Georgia Tech Undergraduate Research Advisory Group
2004 – 2012	Faculty Advisor, Yellow Jacket Flying Club
2008 – 2010	Georgia Tech Faculty Statutes Committee
2007 – 2009	Chairman, TMS Nanomaterials Committee
2004 – 2007	Vice Chairman, TMS Nanomaterials Committee
2004 – 2006	Chairman, TMS Education Committee
2003 – 2004	Secretary, Atlanta-ASM
2002 – 2004	Vice Chairman, TMS Education Committee
2004 – 2005	Chairman, TMS Young Leaders Committee
2002 – 2004	Vice Chairman, TMS Young Leaders Committee
2002 – 2003	TMS “Young Leader” Sponsored by EMPMD
2001 – 2003	Chairman, Atlanta-ASM Membership Committee
2000 – 2001	Chairman, PRC Embedded Passives Alliance
1997 – 1999	President, Georgia Tech ASM/TMS

HONORS/AWARDS:

2015 “Brimacombe Medal” by TMS

2014	Advisor of “Best PhD Thesis” (awarded to Graham Sanborn) by Sigma Xi
2013	“Innovative Research Award” by the Georgia Tech Research Institute.
2011	“Barry Crouse Service Award” by the Yellow Jacket Flying Club, Inc.
2009	“Outstanding Undergraduate Research Mentor Award” by Georgia Institute of Technology.
2005	“Young Leaders International Scholar” awarded by Japan Institute of Metals and TMS.
2002	“Squirrel Award” by MicroCoating Technologies, Inc.
2001	“Red Flag Award” by Georgia Department of Natural Resources Environmental Protection Division for Environmental Activism.
2000	Finalist., BP/Amoco “Outstanding Graduate Teaching Assistant Award”
1999	Atlanta Chapter of SMTA Scholarship Recipient.
1998	IMAPS Educational Foundation Grant Recipient.
1997	Atlanta Chapter of ASM International: Graduate Student Award.
1993	Undergraduate Dean’s List.

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PROFESSIONAL DEVELOPMENT COURSES:

1. GTRI – Excellence in Government Contracting; 2003
2. GT-OOD – Project Management Basics; 2003
3. GTRI– Introduction to Project Management; 2003
4. GTRI – Excellence in Project Management; 2003
5. GTRI – Excellence in Industrial Contracting; 2003
6. GTRI – Stress Management; 2003
7. GTRI – Team Building; 2004
8. GTRI – Time Mastery; 2004
9. GT-OOD – MS Project 2002 (XP) – Level 1; 2004
10. GT-OOD – Successful Meeting Management; 2004
11. GTRI – Guy Morris Memorial Mentor/Mentee Program; 2003-2004.
12. GTRI – Initial Security Briefing; 2004
13. GTRI – Project Director’s Curriculum; 2003-2004
14. GTRI – Project Directors Refresher Course; 2006
15. GTRI – Introduction to Primavera; 2007
16. DLPE – Transmit/Receive Modules for Phased Array Radar: Components, Construction, and Cost (1.5 CEU); 2008
17. DLPE – Phased Array Antennas for Radar and Communications (2.25 CEU); 2008
18. DLPE – Fundamental of Earth Remote Sensing (1.5 CEU); 2008
19. GT-OOD – Communicating at the Next Level; 2009
20. GT-OOD -- Coaching and Team Building Skills for Managers and Supervisors; 2009
21. GT-OOD – Managing Multiple Projects; 2009
22. GT-OOD – Enhancing Your Value as an Experienced Manager; 2009
23. GT-OOD – Excelling as a Manager or Supervisor; 2009
24. GT-OOD – Emerging Leaders Certificate Program; 2009-2010
25. GT-OOD – Recognizing and Handling Burnout; 2010
26. GT-OOD – Leading with Emotional Intelligence; 2010
27. GT-OOD – Seven Habits of Highly Effective People; 2010
28. Franklin-Covey Institute – Seven Habits for Managers; 2010
29. Franklin-Covey Institute – Unleashing Talent; 2010
30. Emory Executive Education – Managerial Leadership Program; 2010
31. GTRI -- Fundamentals of Modern Systems Engineering; 2010
32. GTRI -- The 4 Imperatives of Great Leaders; 2010
33. ELA – Cross-Disciplinary Leadership Training Program; 2011
34. GTRI -- DSS Pre-Inspection Training; 2011
35. GTRI -- Handling Difficult Conversations; 2011

36. GTRI -- Inspiring Trust; 2011
37. GTRI -- Assignments and Leave; 2012
38. GTRI -- Managing Your Staff; 2012
39. GTRI -- Talent Acquisition; 2012
40. AFCEA – Leadership Forum; 2012
41. GTRI -- Annual Compliance Training; 2013
42. GTRI -- Annual Security Refresher Briefing; 2013
43. GTRI -- Annual Security Refresher Certification ; 2013
44. GTRI – Compensation; 2013
45. GTRI -- Mastering Communication Skills; 2013
46. GTRI -- Promotion Process and Job Evaluation; 2013
47. GTRI -- Reducing Organizational Risk; 2013
48. GTRI -- Terminations and Resignations; 2013
49. MBDi -- Mastering Business Development Implementation Training; 2013
50. MBDi -- Leadership & Psychology in Business Development; 2014
51. GTRI – Sales and Marketing Skills for Engineers; 2014
52. GTRI – Even a Geek Can Speak; 2014

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OTHER ACTIVITIES:

- *Professional*

2015 – Present 2014	Lightfoot, Franklin & White, LLC; Science Advisor Expert Witness for Federal Defender Capital Habeas Corpus Unit, Middle District of Alabama in Walter Lee Moody case.
2013 – Present	<i>MRS Bulletin</i> ; 2015 Volume Editor
2011 – Present 2010	<i>Journal of Advanced Materials</i> ; Peer Reviewer Alabama EPSCoR External Advisory Board Member
2009 – 2011 2008	Milton High School Science Mentor TMS Presidential Scholarship Reviewer
2007 – 2011	Morris Brandon Elementary School Science Mentor
2007 – Present	Simmons Bedding Company; Metallurgy Advisor
2007 – Present 2007	Department of Energy; Peer Review Panelist U.S. Army SAR/GMTI RADAR Source Selection Evaluation Board; Advisor
2006 – Present	<i>Journal of Electronic Materials</i> ; Peer Reviewer
2006 – Present	Georgia Intern-Fellowships for Teachers (GIFT) Program Mentor
2005 – Present	<i>Carbon</i> ; Peer Reviewer
2005 – Present	National Nanotechnology Infrastructure Network (NNIN) Youth Camp Mentor
2005 – 2006	Associate Editor <i>Journal of Electronic Materials</i>
2005– 2006	Expert Witness for State of Florida in Double Homicide/Arson Case #2002-CF857Z.
2004 – Present	National Science Foundation; Peer Review Panelist
2004 – 2006	Arnall Golden Gregory, LLP; Advisor for Nanotechnology
2004 – 2006	VirtualBLUE; Consultant on Small Business Innovation Research (SBIR) Proposals
2003 – 2005	Bingham-McCutchen, LLP; Consultant and Expert Witness on Conductive Anodic Filament Formation and Growth
2002 – 2006	TMS Gilbert Chin Scholarship Reviewer
- *Civic / Personal*

2014 – Present	Cub Scout Leader
2011 – Present	Youth Basketball Coach

2009 – Present      Treasurer, HoHo Boat Basin Association  
2009 – 2012        Youth Soccer Coach  
2009 – 2011        Wildwood Civic Association President  
2006                Atlanta Neighborhood Planning Unit C “Park Task Force” Member  
2005 – Present     Atlanta Citizens Emergency Rescue Team (ACERT)  
2005 – 2009        Wildwood Civic Association Vice President  
2005                Foreman, Fulton County Grand Jury  
2003 – 2010        Wildwood Civic Association Park Committee Chairman  
1997 – Present     Founder, Underwood Brook Adopt-a-Stream

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LANGUAGE FLUENCY:

- English and Spanish.
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COMPUTER LANGUAGES:

- LabView, HTML, FORTRAN, and BASIC.
- 

SKILLS / EQUIPMENT USED:

- *Professional*  
Substantial public speaking experience. Active security clearance. Clean room experience. SEM, TEM, FIB, EDS, XRD, XRF, CVD, IAD, MBE, optical microscopy, and applied metallography. Familiar with DOE, ALT, FMECA, MIL-HDBK-217, MIL-STD-202, MIL-STD-810, RELEX and other reliability testing procedures.
  - *Personal*  
Private Pilot (Instrument Rated Fixed Wing Single Engine Land; Rotorcraft / Helicopter), Licensed Amateur Radio Technician (KG4KLE), YMCA Advanced Open Water SCUBA Certification. National Safety Council First Aid & Level 2 CPR Certifications. YMCA Infant CPR Certification.
- 

REFERENCES:

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