Neal Pfeiffenberger

Conshohocken, PA - Email me on Indeed: indeed.com/r/Neal-Pfeiffenberger/de7cfd6166416a08

Product developer with 8+ years experience in the chemical industry specializing in polymeric electronic materials. Proven skills in directing cross functional/global teams, leading external validation partner and university relationships, as well as developing intellectual property for new materials and applications.
Authorized to work in the US for any employer

WORK EXPERIENCE

Editorial Board Member

Institute of Research Engineers and Doctors (IRED) - Work at Home - January 2014 to Present

Reviewed and edited top research papers in the Electronics Division (http://journals.theired.org/about-ired.html)

Senior Scientist - Energy Storage Solutions, Specialties T&I

SABIC Innovative Plastics - Exton, PA - August 2012 to Present

Materials Science, Electrical and Thermal, Specialties T&I, Exton, PA
• Defined and delivered Critical To Quality (CTQ's) of high temperature thermoplastic capacitor film from external validation partners
• Defined, developed, and optimized appropriate electrical tests to support validation partners and next generation film development
• Translated key electrical learnings back to material requirements and process optimization along the value chain and within a cross-functional team
• Developed electrical specification translation package/score card for an on-time DC-DC converter commercialization
• Directed external technical relationships at validation partners, tolling partners, and universities in order to meet next generation product milestones
• Taught reliability analysis using Six Sigma/DOE/Gage R&R methods for laboratory test design optimization
• Coached and mentored electrical engineers and scientists in the fundamentals of dielectric materials
• Led new equipment installations via Management of Change (MOC) documents, Pre-Safety Start-up Reviews (PSSR), and Standard Operating Procedures (SOP) while coordinating with site safety/EHS
• Chaired the Industrial Advisory Board (IAB) for I/UCRC: Center for Dielectrics and Piezoelectrics (CDP) Conference
• Programmed, designed, and commissioned electrical equipment for capacitor reliability analysis using Labview and Python, enabling polymer down selection
• Developed a deep understanding film test methods for wound capacitors which was translated to film requirements via a Y-y-x flow down
• Directed an external consultant who specializes in dielectric polarization fundamentals
• Scoped equipment, vendors, and pricing to successfully install a polymer thin film dielectrics test facility, reducing external testing cost by $30k/year.
• Completed Failure Mode Effects Analysis (FMEA) to determine where in the value chain a failure was occurring in the capacitor fabrication process enabling on time sample delivery
• Certified on robust design of experiments/taguchi method for data analysis, which was used for polymer scale up, saving $50k/year in trial costs.

Editorial Board Member for Optics and Photonics Journal

OPJ - January 2011 to Present

Reviewed and edited top research journal articles in optics, sensors, RF, characterization, and photonic materials disciplines (www.scirp.org/journal/opj)

Graduate Research Assistant - Materials Science and Engineering,

Virginia Tech - Blacksburg, VA - September 2007 to August 2012

Materials Science and Engineering, Center for Photonics Technology, Blacksburg, VA

• Designed and optimized sapphire photonic crystal fibers for coal gasification pressure and temperature sensing

• Experienced in fiber characterization and signal analysis including opto-mechanical setup, modal propagation (beam profiler), sensing (CTS, oscilloscope, spectrometer, monochromater, detector), Zemax, laser use (OPO, HeNe, SLED), and fiber polishing techniques

• Programmed and modeled multiple transport processes, modal volume, and photonic band gaps using combination of COMSOL Multiphysics, Matlab for imaging, and MIT Photonic Bands software for single and multi-mode optical fibers

• Proficient in grain size analysis using Scanning Electron Microscope (SEM)/Electron Backscatter Diffraction (EBSD) with ImageJ

Senior Electrical Engineer - Building Innovations/DPT/Tyvek

DuPont - Richmond, VA - May 2007 to July 2012

•Authored and executed plant maintenance through standard procedures, hazard assessments, quality control, and safety audits

•Led photovoltaic testing facility installation

•Certified as Six Sigma Green Belt in updated building codes for Building Innovation PV Roof integration project

•Developed testing protocol for pressure sensitive butyl adhesives in characterization, rheology, and adhesion peel strength

•Led recruiting of undergraduate co-ops from Virginia Tech and Penn State

Graduate Research Co-op, MS&E Department, Experimental Station

DuPont - Wilmington, DE - May 2009 to August 2009

•Characterized optics and electronic structure of ceramics, polymers, and other optic materials using VUV/UV/Vis spectroscopy and ellipsometry

•Simulated structural mechanics and thermal responses for optical concentrators using COMSOL Multiphysics

Undergraduate Research Coop

DuPont Nonwovens (Tyvek) - Richmond, VA - September 2005 to May 2007

•Led and authored patents for high speed rotary spray spun fiber formulation, and optimal polymer and solvent formulation for Nonwovens market

•Wrote operating procedure and hazard assessment for shear spinning technology scale up from R&D to bench scale

•Organized characterization and testing of new samples created by solution spun fiber process

•Managed project on investigation of alternative methods for melt-blow fiber production

•Developed computer simulation for fiber laydown and electrostatics of new polymer/solvent formulations

• Project lead on alternative methods for the production of melt-blown fibers at the Spruance site.

Undergraduate Research Assistant, Semiconductor Spectroscopy

Penn State University - University Park, PA - October 2004 to May 2007

Semiconductor Spectroscopy lab (Dr. Patrick M. Lenahan), Engineering Science, Univ. Park PA

• Trained on Si and SiC wafer preparation techniques for high dielectric constant gate dielectrics and their applications in embedded systems

• Analyzed atomic scale defects in MOS systems using Spin Dependent Recombination (SDR) and Electron Spin Resonance (ESR)

Teaching Assistant for ENGR409 - Leadership in Organizations

Penn State University - September 2004 to May 2007

Leadership in Organizations for Engineering Leadership and Development Minor (ELDM)
• Graded papers and exams, participated in class discussions, and held office hours.

EDUCATION

PhD in Materials Science and Engineering

Virginia Polytechnic Institute and State University - Blacksburg, VA
2007 to 2012

B.S. in Electrical Engineering

Pennsylvania State University - University Park, PA
2002 to 2007

SKILLS

Excel (10+ years), Matlab (4 years), Labview (2 years), CAD (4 years), Linux (6 years), Mac OS X (10+ years), Minitab (6 years), Python (1 year), Lotus Notes (6 years), Solidworks (3 years), C++ (2 years), COMSOL Multiphysics 3.4-4.2a, Zemax 12, MIT Photonic Bands (MPB), Cadence (Pspice), BenchVue, LogicWorks 4, NIH ImageJ, Keyence VHX-5000, Programming in Machine Language (HCS12 Micro-Controller), AutoCad, ProEngineer, Electro 6.0, Documentum, JMP, DesignExpert, DCS, and RSView.

LINKS

https://www.linkedin.com/in/neal-pfeiffenberger-00753b39

AWARDS

The 2007 Pennsylvania State University Dr. James M. Slick Engineering Cooperative Education Student of the Year Award recipient

May 2007

The 2002 Edward J. Clarke, Jr. Memorial Scholarship recipient

January 2002

Engineering Cooperative Education and Internship Program Professional Development Award

May 2007

CERTIFICATIONS

Six Sigma Green Belt DMADV

November 2011 to Present
Efficient Solar Cell Roofing Installations Green belt project with DuPont DPT

Labview Core 1 Certification

April 2011 to Present

PATENTS

Solution spun fiber process (#USPTO Application No. 20100032872, US patent issue February 2010)

February 2010

Solution spun fiber process. US patent issue February 2010, (USPTO Application No. 20100032872, Class 264465). E I Du Pont De Nemours And Company Legal Patent Records Center Wilmington, DE, US. Larry R. Marshall, Jack Eugene Armantrout, Tao Huang, John R. Moore, Neal Pfeiffenberger

PUBLICATIONS

Sapphire photonic crystal fibers

2010

Sapphire photonic crystal fibers. Neal Pfeiffenberger, Gary Pickrell, Karen Kokal, and Anbo Wang, Opt. Eng. 49, 090501 (2010), DOI:10.1117/1.3483908.

Modeling of Electromagnetic Wave Propagation of Nano-Structured Fibers for Sensor Applications.

July 22, 2009

Modeling of Electromagnetic Wave Propagation of Nano-Structured Fibers for Sensor Applications. Neal T. Pfeiffenberger, Dr. Gary R. Pickrell. The American Ceramic Society. Advances in Energy Materials. Part 3: Nanotechnology for Power Generation. p. 115-122. July 22, 2009.

Identification of Deep Level Defects in SiC Bipolar Junction Transistors.

2006

Identification of Deep Level Defects in SiC Bipolar Junction Transistors. P.M. Lenahan, N.T.Pfeffenberger, T.G.Pribicko, and A.J.Lelis, Materials Science Forum, volume 527-529,567 (2006), (Peer Reviewed), 2006.

Examining Defects in Solid Core 2-D Photonic Band-Gap Fibers (SC-PBG) with High Index Inclusions

September 1, 2010

N.T. Pfeiffenberger, G.R. Pickrell. The American Ceramic Society. Advances in Materials Science for Environmental and Nuclear Technology. Ceramic Transactions, Volume 222. September 2010.

Optical properties of polymeric materials for concentrator photovoltaic systems

February 25, 2011

R.H. French, J.M. Rodriguez-Parada, M.K. Yang, R.A. Derryberry, N.T. Pfeiffenberger. Solar Energy Materials and Solar Cells, ISSN 0927-0248, DOI: 10.1016/j.solmat.2011.02.025.

Finite Element Modeling of Sapphire Photonic Crystal Fibers

2011

N.T. Pfeiffenberger, G.R. Pickrell. Advances in Nanomaterials and Nanostructures, Volume 229 (eds K. Lu, N. Manjooran, M. Radovic, E. Medvedovski, E. A. Olevsky, C. Li, G. Singh, N. Chopra and G. R. Pickrell), John Wiley & Sons, Inc., Hoboken, NJ, USA. (2011), DOI: 10.1002/9781118144602.ch10

Thermal Stress Measurement and Modeling in Plasma Spray Deposits Used for Attaching Fiber Optic Sensors

http://www.ijm-me.org

2012

Amanda Krause, Gary Pickrell, Neal Pfeiffenberger, Robert Bodnar, and Robert Greenlaw. International Journal of Material and Mechanical Engineering, 2012, 1: 32-37.

Modal reduction in 6-rod bundled single-crystal sapphire photonic crystal fibers

http://dx.doi.org/10.1117/12.919999

May 1, 2012

Neal Pfeiffenberger, Gary Pickrell. Proc. SPIE 8370, Fiber Optic Sensors and Applications IX, 837004 (May 1, 2012); doi:10.1117/12.919999;

Finite Element Modeling for Mode Reduction in Bundled Sapphire Photonic Crystal Fibers

2012

Pfeiffenberger, N. T. and Pickrell, G. R. (2012). Advances in Synthesis, Processing, and Applications of Nanostructures: Ceramic Transactions, Volume 238 (eds K. Lu, N. J. Manjooran, R.-i. Murakami and G. Pickrell), John Wiley & Sons, Inc., Hoboken, NJ, USA. doi: 10.1002/9781118511428.ch9

Sapphire Photonic Crystal Fiber Chemical Sensing

2014

Neal Pfeiffenberger, Gary Pickrell, Brian Scott, Cheng Ma, Anbo Wang. Chemical Sensors 2014, No. 4: 1.

ADDITIONAL INFORMATION

SELECTED CONFERENCE PRESENTATIONS

Oral

Polyetherimide Dielectric Breakdown Mechanisms. N.T. Pfeiffenberger*, M.A. Sanner, M.F Niemeyer, A. Bolvari. Center for Dielectrics and Piezoelectrics Fall 2013 Meeting, Raleigh, NC Octorber 2013. *Presenting Author

Finite Element Modeling for Mode Reduction in Bundled Sapphire Photonic Crystal Fibers. N.T. Pfeiffenberger*, G.R. Pickrell. MS&T 2011, Pittsburgh, PA October 19, 2011. *Presenting Author

Random-Hole Optical Fiber Sensors and Their Sensing Applications. K. Wang, B. Scott, N.T. Pfeiffenberger*, G.R. Pickrell. MS&T 2011, Pittsburgh, PA October 20, 2010. *Presenting Author

Finite Element Modeling of Sapphire Photonic Crystal Fibers. N.T. Pfeiffenberger*, G.R. Pickrell. MS&T 2010, Houston, TX October 21, 2010. *Presenting Author

Examining Defects in Solid Core 2-D Photonic Band-Gap Fibers (SC-PBG) with High Index Inclusions. N.T. Pfeiffenberger*, G.R. Pickrell. MS&T 2009, Pittsburgh, PA October 28, 2009. *Presenting Author

Modeling of Electromagnetic Wave Propagation of Nano-Structured Fibers for Sensor Applications. N.T. Pfeiffenberger*, G.R. Pickrell. MS&T 2008, Pittsburgh, PA October 8, 2008. *Presenting Author

Poster

Identification of Deep Level Defects in SiC Bipolar Junction Transistors. P.M. Lenahan, N.T.Pfeiffenberger*, T.G.Pribicko, and A.J.Lelis. Poster Presentation ICSCRM 2005 Pittsburgh, PA September 20, 2005. *Presenting Author

PATENT DISCLOSURES SUBMITTED

Polycarbonate films for capacitors, methods of manufacture, and articles manufactured therefrom. Application number: […] A1 Filed: Aug 28, 2014 Issued: Mar 5, 2015 Assignee: Sabic Global Technologies BV
Inventors: James Mahood, Matthew Frank Niemeyer, Mark A. Sanner, Anne E. Bolvari, Neal Pfeiffenberger
Abstract: A film comprises a phthalimidine copolycarbonate comprising first repeating units and second repeating units different from the first repeating units, wherein the first repeating units are phthalimidine carbonate units; and the second repeating units comprise bisphenol carbonate units that are not the same as the first repeating phthalimidine carbonate units; and a second polycarbonate that is not a phthalimidine copolycarbonate; wherein the film has: a glass transmission temperature of greater than 170°C; a dielectric constant at 1 kHz, 23°C and 50% relative humidity of at least 3.0; a dissipation factor at 1 kHz, 23°C and 50% relative humidity of 1% or less; and a breakdown strength of at least 800 Volt/micrometer.

Capacitor Films, Methods Of Manufacture, And Articles Manufactured Therefrom. Application number: […] Filed: May 30, 2014 Issued: December 4, 2014 Assignee: Sabic Global Technologies BV
Inventors: Roy Ray Odle, Matthew Frank Niemeyer, Mark A. Sanner, Anne E. Bolvari, Neal Pfeiffenberger
Abstract: A uniaxially-stretched, high yield extruded film comprising a polyetherimide comprising units derived from polymerization of an aromatic dianhydride with a diamine selected from a meta-phenylene diamine, a para-phenylene diamine, and a combination thereof, wherein the polyetherimide is endcapped with an a substituted or unsubstituted aromatic primary monoamine; and wherein the high yield extruded film comprises at least 90 weight % of the polyetherimide before extrusion.

Solid Core Photonic Band Gap Fiber with Higher Index Glass and a Background Material of Phase Separable Porous Glass with a Lower Refractive Index. VTIP No.: 10-067. Neal Pfeiffenberger, Gary R. Pickrell
Air Core Photonic Bank Gap Fiber with Ordered Low Index Airholes with an Airhole Defect in the Center and a Background Material of Phase Separable Porous Glass with a Higher Refractive Index. VTIP No.: 10-106. Neal Pfeiffenberger, Gary R. Pickrell
Single Crystal Sapphire Fiber with Six Ordered Cladding Rods with a Background Material of Air. VTIP No.: 10-117. Neal T. Pfeiffenberger, Gary Pickrell, Anbo Wang, Karen Kokal

ACTIVITIES/AWARDS
Young Sabic Professionals (YSP), Chair of the United Way Campaign (2014), Deans List, Kappa Theta Epsilon (Co-op Honors Fraternity), Engineering Leadership and Development Unlimited (ELDU), College of Engineering Graduate Student Committee, and Materials Engineering Professional Societies (MEPS).