

# Sean Owen Clancy, Ph.D.

Newark, DE 19702, (Phone) 302.468.7321, (Email) [me@seanclancy.org](mailto:me@seanclancy.org),  
(Web) [www.seanclancy.org](http://www.seanclancy.org), (LinkedIn) [www.linkedin.com/in/seanclancy](http://www.linkedin.com/in/seanclancy)

## TECHNICAL EXPERTISE AND SKILLS

- **Applications:** Coatings, Corrosion Mitigation, Electronics Manufacturing, Energy Harvesting, Energy Storage, Light-Emission, Nanotechnology, Organic Electronics, Packaging, Pharmaceuticals, Sensors, Surface Modifications, and Thin Films
- **Chemical Methods:** Organic Synthesis, Polymer Synthesis, and All Requisite Setup, Purification, and Characterization Methods, Glove Box and Schlenk Line Operation
- **Failure Analysis:** Cleanliness Testing, Contamination Analysis, Counterfeit Component Screening, Cross-Sectional Analysis, Decapsulation, Delidding, Destructive Physical Testing (DPT), Dye and Pry Testing, Fracture Mechanics, Imaging, Inspections, Microsectioning, Microscopy, Non-Destructive Testing (NDT), Qualifications, Residue Analysis, Solderability Testing, Spectroscopy, and Environmental Stress Screening
- **Instrumental Analysis:** Chromatography / Separations Science (GC/MS, HPLC, IC, GPC-RI/MALLS); Data Analysis; Electrochemistry [CV, EIS, Sequential Electrochemical Reduction Analysis (SERA)]; Imaging / Microscopy (SEM, EDS, AFM / SPM, Conductive AFM, Optical Microscopy, Metallography, Transmission X-Ray Imaging); Spectroscopy (NMR, UV/Vis/NIR, ATR/FT-IR, Fluorescence and Phosphorescence Spectroscopy, FRET, Photophysics, XRF); Structure & Purity Elucidation; Structure-Property Studies; Surface Analysis; Thermal Analysis (DSC, TGA)
- **Materials:** Small Molecule Organics, Monomers, Polymers, Carbon Nanotubes, Lanthanides, Organometallics, Composites, Hybrid Materials, and Organic / Polymer Light-Emitting Diode (OLED / PLED) Materials
- **Polymers:** Acrylates, ADMET, Condensation, Electropolymerizations, Fluorinated, Free Radical, Heterocyclics, Ladder (BBL), Metal-Catalyzed Couplings, ROMP, Silicones, Urethanes, Polyphenylenes, and Polythiophenes

## EDUCATION

- **Postdoctoral Fellowship, Naval Air Warfare Center Weapons Division, 2005 – 2006**
  - Synthetic and electrochemical research in conjugated heterocyclic polymer films for charge storage applications. Adviser: David Irvin, Ph.D.
- **Doctor of Philosophy, Chemistry, University of Southern California, 2005**
  - Dissertation: "Design and syntheses of polymeric materials for visible and near-infrared emitting applications." Adviser: Aaron Harper, Ph.D.
- **Bachelor of Science, Chemistry, University of North Florida, 1997**
  - Undergraduate research in flow injection analysis (FIA) and ion exchange polymer membranes. Adviser: Stuart Chalk, Ph.D.

## CONTINUING EDUCATION

- **Certificate, Digital Analytics Fundamentals, Google Analytics Academy, 2013**
- **Certificate, Atomic Layer Deposition (ALD) Short Course, University of California at Los Angeles, 2012**
  - AVS Southern California Chapter Short Course Program. Instructor: Steven George, Ph.D.
- **Certificate, Project Management, University of Delaware, 2010**
  - Modules in: Project Management Fundamentals; Project Planning Using Microsoft Project; Finance and Resource Management of Projects; Project Teams and Communication; and Project Presentations
- **ACI Technologies, Inc. (B2PCOE, EMPF)**
  - Certified IPC Specialist, IPC-A-600 – Acceptability of Printed Boards, 2013, Serial: 600-S 4509, Expires 2015
  - Benchmarking and Best Practices, 2009
  - Failure Analysis and Reliability Testing in Electronics, 2008
  - Electronics Manufacturing Boot Camp A – Electronics Manufacturing Processes, 2008

# Sean Owen Clancy, Ph.D.

Newark, DE 19702, (Phone) 302.468.7321, (Email) [me@seanclancy.org](mailto:me@seanclancy.org),  
(Web) [www.seanclancy.org](http://www.seanclancy.org), (LinkedIn) [www.linkedin.com/in/seanclancy](http://www.linkedin.com/in/seanclancy)

## WORK EXPERIENCE

### Research Associate/Chemist, ACI Technologies, Inc.

May 2008 to January 2014, Philadelphia, PA

- Generated more than \$550k in commercial sales and delivered over 250 project reports. Assisted on more than 300 other projects with quoting, planning, executing, and peer review of reports.
- Led the analytical services and failure analysis group, which includes building and managing multi-disciplinary teams, coordinating and planning analyses, and developing and selecting test methods.
- Analyzed materials to provide root cause failure analysis and process recommendations for aerospace, defense, medical device, scientific instrument, telecommunications, and consumer products in an ISO 9001:2008 Quality System registered production facility, and according to ASTM, IPC, JEDEC, MIL, and other standards.
- Operated, maintained, and trained users on scanning electron microscopes (SEM), optical and metallographic microscopes, Fourier transform infrared (FTIR), ultraviolet/visible/near-infrared (UV-Vis-NIR), X-ray fluorescence (XRF), ion chromatography (IC), resistivity of solvent extract (ROSE) test systems, X-ray imaging and inspection, and other analytical and process control instrumentation.
- Wrote eleven articles for *EMPFasis*, a publication by the US Navy's National Center of Excellence in Electronics Manufacturing, of which two were republished in *Printed Circuit Design & Fab/Circuits Assembly: the Journal of Surface Mount and Electronics Assembly*, a publication of UP Media Group.
- Wrote *Failure Analysis Techniques for Electronics* instructional and technical marketing book with a case studies companion presentation for commercial services and professional skills training courses.
- Initiated, developed a process, and trained others on eBook production and editing; delivering ePub (.epub for Apple iBooks, Barnes & Noble Nook, and others) and Mobipocket (.mobi for Amazon Kindle) versions of six books published by ACI that existed previously as print and PDF editions.

### Staff Scientist, NanoSelect, Inc.

May 2006 to March 2008, Newark, DE

- Designed, synthesized, and analyzed small molecule organics, self-assembled monolayers (SAMs), and polymers for functional coatings and surface modifications of carbon nanotubes (CNTs) and other electrodes on integrated circuits (ICs) serving as electrochemical sensors for analytes in aqueous solution.
- Evaluated ion-sensitive field effect transistor (ISFET) devices as sensors.
- Determined root cause of 50% failure rate for ISFETs by examining CAD data and found error in silicon design, leading to a corrective action preventative action (CAPA) for the following Metal Oxide Semiconductor Implementation Service (MOSIS) run.
- Assisted materials engineers with thermal-chemical vapor deposition (TCVD) and plasma enhanced-CVD (PE-CVD) growth of CNTs, hot wire-CVD/initiated-CVD (HW-CVD / iCVD) growth of polymer films, as well as supercritical carbon dioxide (scCO<sub>2</sub>) fluid infusion processes.
- Planned projects, created budgets, wrote reports and standard operating procedures.

### Postdoctoral Researcher, Naval Air Warfare Center Weapons Division

February 2005 to May 2006, China Lake, CA

- Designed, synthesized, and characterized electron deficient (*n*-type) heterocyclic monomers and polymers for use in electro-optical applications, such as advanced charge storage devices, namely polymeric supercapacitors.
- Developed and performed experiments to determine the electrochemical properties of the organic polymer films and devices.
- Published a project in the peer-reviewed Journal of the Electrochemical Society **2007**, *154 (4)*, G95-G98.

# Sean Owen Clancy, Ph.D.

Newark, DE 19702, (Phone) 302.468.7321, (Email) [me@seanclancy.org](mailto:me@seanclancy.org),  
(Web) [www.seanclancy.org](http://www.seanclancy.org), (LinkedIn) [www.linkedin.com/in/seanclancy](http://www.linkedin.com/in/seanclancy)

## WORK EXPERIENCE (CONTINUED)

### Graduate Research Assistant, University of Southern California

August 2000 to February 2005, Los Angeles, CA

### Graduate Research Assistant, Texas A & M University

August 1999 to August 2000, College Station, TX

- Designed, synthesized, and characterized conjugated polymers, metal-coordinating ligands, and lanthanide complexes for light-emitting applications, such as organic light-emitting diode (OLED) displays, chemical sensing, and optical signal amplifiers for telecommunications.
- Developed experiments to determine the energy transfer parameters for polymers donating energy to visible and infrared emissive materials.
- Published multiple projects in the MRS, PMSE, and SPIE proceedings. Presented project results to an audience of my peers at MRS and SPIE meetings.

### Research Technologist, Mayo Clinic Jacksonville

July 1997 to August 1999, Jacksonville, FL

- Synthesized and characterized diagnostic tools and therapeutic candidates for muscular and neurodegenerative diseases in the form of carbohydrates, amino acids, peptides, monomers and oligomers of peptide nucleic acids via solution or solid-phase synthesis, which led to multiple publications for the primary investigators.
- Collaborated with multiple molecular biology and neuroscience research groups, contributing to discussions in regular group meetings.

## AWARDS AND HONORS

- **Naval Air Warfare Center Weapons Division:** American Society for Engineering Education (ASEE), Naval Research Laboratory (NRL) Postdoctoral Fellowship, 2005 – 2006
  - Awarded for an ASEE/NRL proposal I wrote on the synthesis and computational chemistry of soluble electron deficient (*n*-type) conjugated polymers.
- **University of Southern California:** Harold E. Moulton Graduate Fellowship, 2004; Benson Endowed Fellowship, 2003 – 2005; Research Assistantship, 2000 – 2005; Beckman Foundation Research Fellowship, 2000 – 2002
  - Awarded for showing successful progress during my graduate studies.
- **Mayo Clinic Jacksonville:** Above and Beyond Employee Recognition, 1997
  - Awarded for successful anti-sense (RNA-binding) and anti-gene (DNA-binding) experiments using the peptide nucleic acid (PNA) sequences that I synthesized.
- **University of North Florida:** Dean's List, 1997; Founding Treasurer, Student Affiliate American Chemical Society (SA-ACS) at UNF, 1997; University Honors Program, 1993 – 1997

## ADDITIONAL EXPERTISE AND SKILLS

- **Computers:** PC & Mac Hardware, Installation, Repair, Troubleshooting, and Networking; Advanced User of Windows, Mac OS X, UNIX, iOS, and Android; Microsoft Office (Word, Excel, PowerPoint, Outlook); Microsoft Project; OpenOffice: Origin; ChemOffice; Imaging: Adobe Creative Suite (Photoshop), GIMP, ImageJ, and Pixelmator; eBook Editing and Production: Calibre, Kindle Previewer, and Sigil; Web Site Design: HTML, CSS, LAMP (Linux, Apache, PHP, MySQL), WordPress, Wiki, and more
- **Communications:** Articles, Books, eBooks, Reports, Proposals, Presentations, Posters, Instructional Materials, Marketing Documents, Safety, Standard Operating Procedures (SOPs), Technical Writing, Training (Laboratory and Lecture), Web Design, and Wiki
- **Management:** Laboratory and Project Management

# Sean Owen Clancy, Ph.D.

Newark, DE 19702, (Phone) 302.468.7321, (Email) [me@seanclancy.org](mailto:me@seanclancy.org),  
(Web) [www.seanclancy.org](http://www.seanclancy.org), (LinkedIn) [www.linkedin.com/in/seanclancy](http://www.linkedin.com/in/seanclancy)

## TEACHING / TRAINING EXPERIENCE

### Research Associate/Chemist, ACI Technologies, Inc.

May 2008 to January 2014, Philadelphia, PA

- Trained teammates on the operation of chromatography, cleanliness testing, microscopy, solderability testing, spectroscopy, sample preparation, and other equipment.
- Updated curriculum and delivered instruction for professional skills training courses: *Failure Analysis and Reliability Testing in Electronics* and *Electronics Manufacturing Boot Camps*.
- Updated failure analysis curriculum for *Communications-Electronics Research, Development and Engineering Center (CERDEC)* electronics manufacturing course sequence for the US Army.
- Served as consultant and resident Subject Matter Expert (SME) on topics regarding: atomic layer deposition (ALD); conductive epoxies; conformal coatings; corrosion mitigation; high voltage encapsulants; sensor networks for energy management; and others.

### Staff Scientist, NanoSelect, Inc.

May 2006 to March 2008, Newark, DE

- Wrote SOPs and helped train users to operate an NMR spectrometer, electrochemistry equipment and perform electropolymerizations, as well as organic chemistry methods for surface passivation.

### Postdoctoral Researcher, Naval Air Warfare Center Weapons Division

February 2005 to May 2006, China Lake, CA

- Wrote SOPs and helped train users to operate the NMR spectrometers.

### Organic Chemistry Tutor, University of Southern California

January 2001 to December 2004, Los Angeles, CA

- Provided personalized instruction for undergraduate organic chemistry lecture courses.

### Graduate Teaching Assistant, University of Southern California

August 2000 to May 2001, Los Angeles, CA

### Graduate Teaching Assistant, Texas A & M University

August 1999 to May 2000, College Station, TX

- Instructed multiple laboratory sections of undergraduate organic chemistry courses with as many as 30 students per class.

## PRESENTATIONS

- Custom one day lecture course on "Failure analysis and reliability testing in electronics manufacturing," New Albany, IN, September 20, 2013.
- Nano for Business 2010 Conference, Lehigh University, Bethlehem, PA, May 26, 2010. Invited panelist for Nanotechnology Health and Safety, focusing on tin whiskers and other unintended consequences of the Restriction of Hazardous Substances (RoHS) Directive.
- The 48th SPIE Annual Meeting, San Diego, CA, August 3 – 8, 2003. Title: "Energy transfer from polyphenylene-type polymers to a series of Coumarins and other acceptors." Oral presentation.
- The 2003 National Materials Research Society Meeting, San Francisco, CA, April 21 – 25, 2003. Title: "Energy transfer from polyphenylene-type polymers to a series of dyes." Poster presentation.

# Sean Owen Clancy, Ph.D.

Newark, DE 19702, (Phone) 302.468.7321, (Email) [me@seanclancy.org](mailto:me@seanclancy.org),  
(Web) [www.seanclancy.org](http://www.seanclancy.org), (LinkedIn) [www.linkedin.com/in/seanclancy](http://www.linkedin.com/in/seanclancy)

## PUBLICATIONS

### Book

- **Clancy, S. O.**, *Failure analysis techniques for electronics*. Philadelphia, PA: ACI Technologies, 2012. Print.

### Refereed Journal Article

- Witker, D. L.; **Clancy, S. O.**; Irvin, D. I.; Stenger-Smith; J. D.; Irvin, J. A., "Electrochemical deposition of a new n-doping polymer based on bis(thienyl)isopyrazole." *Journal of the Electrochemical Society* **2007**, *154* (4), G95-G98.

### Refereed Conference Papers

- Padmaperuma, A. B.; **Clancy, S. O.**; Harper, A. W., "The structure-property relationship of conjugated polymers: the effect of heteroaromatic rings and connectivity on photophysical properties." *Polymeric Materials: Science and Engineering* **2003**, *88*, 514.
- **Clancy, S. O.**; Padmaperuma, A. B.; Harper, A. W., "Energy transfer studies of polyphenylene-type polymers to a series of dyes." *Materials Research Society Symposium Proceedings* **2003**, *771* (*Organic and Polymeric Materials and Devices*), 71.
- **Clancy, S. O.**; Padmaperuma, A. B.; Harper, A. W., "Energy transfer from polyphenylene-type polymers to a series of Coumarins and other acceptors." *Proceedings of SPIE-The International Society for Optical Engineering* **2003**, *5224* (*Nanomaterials and Their Optical Applications*), 113.

### EMPFasis Articles, Company Newsletter and Navy Deliverable

- **Clancy, S. O.**, "Atomic layer deposition (ALD) successfully used as a conformal coating for radar components." *EMPFasis* **2013**, *Volume 3*, Number 4, 4.
- **Clancy, S. O.**, "New conductive epoxy resin leads to cost reduction of RF tuner systems for JSF." *EMPFasis* **2013**, *Volume 3*, Number 2, 5.
- **Clancy, S. O.**, "Technical data package recommendations for open architecture electronics manufacturing." *EMPFasis* **2012**, *Volume 1*, Number 1, 4.
  - The latest EMPF contract required ITAR restriction for EMPFasis content; therefore the above articles are unavailable to the general public.
- **Clancy, S. O.**, "Reworking ALD coatings." *EMPFasis* **2010**, *December*, 2.
- **Clancy, S. O.**, "Attaching fiber optic modules." *EMPFasis* **2010**, *November*, 3.
- **Clancy, S. O.**, "Ball grid array (BGA) voiding affecting functionality." *EMPFasis* **2010**, *August*, 2.
  - Republished as "Avoid the BGA voids." *Printed Circuit Design & Fab/Circuits Assembly* **2010**, *November*, 40.
- **Clancy, S. O.**, "Surface finish issues affecting solderability and reliability." *EMPFasis* **2010**, *March*, 2.
- **Clancy, S. O.**, "Cleanliness/corrosion mitigation." *EMPFasis* **2009**, *December*, 3.
  - Republished as "Cleanliness and corrosion mitigation." *Printed Circuit Design & Fab/Circuits Assembly* **2010**, *April*, 50.
- **Clancy, S. O.**, "Non-destructive test methods." *EMPFasis* **2009**, *October*, 3.
- **Clancy, S. O.**, "Five types of conformal coatings." *EMPFasis* **2009**, *May*, 3.
- **Clancy, S. O.**, "Methods of detecting contamination." *EMPFasis* **2008**, *November*, 3.