Sean Owen Clancy, Ph.D.

Leader, Scientist, Developer

Resume
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Profile

- **Engineering, Laboratory, Personnel, Project, and Program Management:** Experienced leader, people manager, and scientist with a strong background in data and instrumental analysis, materials science and engineering, and product and process creation, while leveraging expertise in interdepartmental communication, data-driven decisions, and problem-solving.
- **Applied Research and Engineering Development:** Developed materials for a wide range of applications. Materials and equipment selection, process development, experimental design, failure analysis, and characterization for reliability enhancement and risk reduction. Fixture and tooling design with rapid prototyping using additive manufacturing (3D printing), laser cutting, and machining.

Employment History and Work Experience

2024 to Present **Senior Director of Materials Science** Remote/Morrisville, NC
HZO, Inc.

- From the Marketing, Sales, and Technology groups, **demonstrate excellent teamwork and collaboration skills** by **managing cross-departmental technology development and multi-national manufacturing projects** with Production, Engineering, Quality, and Technology departments for **driving process enhancements and yield improvements** for barrier and functional coatings for electronic assemblies, wafer-level and packaged components, anti-reflection (AR) coatings for sensor die, and many other products.
- Optimize Chemical Vapor Deposition (CVD) coating processes using **Computer-Aided Design (CAD) of baffles, fixtures, jigs, and tooling**, which improved fluid/vapor flow behavior, thickness uniformity, and coating quality, as well as **Design of Experiments (DoE) and statistical analysis methods**, which resulted in a significant reduction in process time and increased precursor material efficiency.
- **Support manufacturing engineers with subject matter expertise (SME) for new product introduction (NPI), process development, and troubleshooting.**
- **Present technical data to internal management, potential and existing customers, and diverse external audiences**, and **represent the company across multiple platforms** with technical publications, conference presentations, webinars, as an invited podcast guest, and serving on standards development committees for the IPC electronics manufacturing trade organization.
- **Wrote custom Excel VBA macros to reduce the analysis and reporting time from hours to less than five minutes for generating multiple publication-ready, time series process charts,** *Trained others to use these macros for coating systems installed across North America and Asia, which has also led to significant time reductions in troubleshooting equipment and processes.*
- **Lead a team of interns, engineers, scientists, and technicians with tasks divided among supporting customer requests, materials characterization, and new technology development.**

2018 to Present **Adjunct Professor** Remote/Salt Lake City, UT
University of Utah

- **Use knowledge of current industry trends and experience** as an advisor to faculty, students, and the Materials Characterization Lab (MCL) in the Department of Materials Science and Engineering (MSE).

2020 to 2024 **Director of Materials Science** Remote/Morrisville, NC
HZO, Inc.
- **Demonstrated excellent teamwork and collaboration skills** by **managing cross-departmental technology development and multi-national manufacturing projects** for **driving process enhancements and yield improvements** for barrier and functional coatings for a variety of products.

2019 to 2020 **Director of Coating Technology** Morrisville, NC
HZO, Inc.
- **Managed and analyzed coating equipment process and materials properties and performance**, as well as reliability and qualification testing according to industry standards, along with proprietary and customer-specified test and data analysis methods to **drive improvements and recommendations to process and equipment engineers across multiple sites**.

2018 to 2019 **Chemical Engineer** Draper, UT
HZO, Inc.
- **Developed fundamental knowledge and practical expertise for transferring "lessons learned" from R&D to Production across multiple sites** for coating deposition and supplemental processes that **led to over 100M+ parts coated** across consumer electronics and high-reliability product vertical markets.

2014 to 2016 **Chemist and Project Manager** Draper, UT
HZO, Inc.
- **Generated and presented technical data to internal management, potential and existing customers, and diverse external audiences**, in addition to **representing the company across multiple platforms** with technical publications, conference presentations, and serving on standards development committees for the IPC electronics manufacturing trade organization.

2017 to 2018 **Associate Director and Program Manager** Salt Lake City, UT
University of Utah
- **Strong leadership skills and experience** in educating and managing engineering students as the MCL staff for analysis on projects for cross-departmental academic groups and industrial clients.
- **High-level strategic planner with design and marketing skills** as demonstrated by delivering brochures, an updated website, slideshows, outreach programs, and led tours promoting the lab.

Academic Qualifications and Education

2010 **Certificate, Project Management** Wilmington, DE
University of Delaware

2006 **Postdoctoral Fellowship, Polymer Science and Engineering** China Lake, CA
Naval Air Warfare Center Weapons Division

2005 **Ph.D., Chemistry** Los Angeles, CA
University of Southern California
- Dissertation: Design and syntheses of polymeric materials for visible and near-infrared emitting applications

1997 **B.S., Chemistry** Jacksonville, FL
University of North Florida

Selected Publications

Refereed Journal Papers

Perido, J., Denis, K., **Clancy, S.**, Cothard, N. F., Day, P. K., Glenn, J., Leduc, H., Quijada, M., Patel, J., and Wollack, E. (2024, October). Metal-mesh linear variable bandpass filter for far-infrared wavelengths. *Applied Optics*, 63(29), 7674-7681.

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

Patents

Askin, R. and **Clancy, S.** (2025, January). Increased deposition efficiency via dual reactor system. *HZO, Inc.*

Janik, J., **Clancy, S.**, and Lawrence, B. (2024, March). In situ polymerization of para-xylene for production of Parylene F-like coating. *HZO, Inc.*

Clancy, S., Lawrence, B., and Niebroski, A. (2023, December). Plasma ashing for coated devices. *HZO, Inc.*

Stevens, B., Yun, Y., and **Clancy, S.** (2020, October). Incorporation of additives into protective coatings. *HZO, Inc.*

Baker, L., **Clancy, S.**, and Hsueh, C.-L. (2020, February). Hybrid parylene-metal oxide layers for corrosion resistant coatings. *HZO, Inc.*

Stevens, B., Yang Yun, Y., and **Clancy, S.** (2017, October). Combining different types of moisture-resistant materials. *HZO, Inc.*

Book

Clancy, S. (2012, December). Failure analysis techniques for electronics. *ACI Technologies, Inc.*

Awards and Honors

2023	**Top Banana Award: Awarded by the head of Marketing and Sales for successful progress by new product development team.** HZO, Inc.	Morrisville, NC
2016	**Certificate of Appreciation for speaking at an SMTA Intermountain Chapter Meeting.** SMTA Intermountain Chapter	Draper, UT
2005 to 2006	**ASEE/NRL Postdoctoral Research Fellowship: Awarded for an ASEE/NRL proposal on the synthesis and computational chemistry of soluble electron deficient (n-type) conjugated polymers.** American Society for Engineering Education (ASEE) and the Navy Research Laboratory (NRL)	China Lake, CA

Selected Skills

Management	Engineering (20+ years), People (10+ years), Product (15+ years), Project (20+ years), Program (15+ years)
Computer-Aided Design (CAD)	AutoCAD, Autodesk Fusion, FreeCAD, OnShape, SolidWorks, Tinkercad
Data Science Tools, Statistical Analysis, and Visualizations	JMP, Minitab, R, R Markdown, Jamovi, SQL, Python, Shiny, Tableau, Visual Basic (VBA)
Manufacturing, Additive	3D Printing, 3D Scanning, Generative Design, Rapid Prototyping, 3D Printing Slicers, 3D Mesh File Processing and Editing, Photogrammetry
Manufacturing, Electronics	Active and Passive Components, ICs, PCBs, PCBAs, Soldering, Cleaning, Coating, Handling, Enclosures, Design for Manufacturing (DfM), Design for Excellence (DfX), Design for Reliability (DfR)
Manufacturing, Subtractive	Laser Ablation/Cutting/Etching, Plasma Etching, Machining Processes, SVG File Creation Software
Thin Films	ALD, Composites, CVD, Electropolymerization, Hybrid, iCVD, MLD, Multilayer, Nanolaminate, PECVD, PVD, SAMs, Solvent-Based Deposition, Supercritical Carbon Dioxide Infusion, UV-Cured Materials
Technology Development	3D-Printed Functional Components and Designs, Bioactive Molecules, Coatings, Electronics, Energy, Semiconductors, Sensors, Technical Services
Chemistry and Materials Science and Engineering	Analytical, Biochemistry, Ceramic, Computational, Electrochemistry, Inorganic, Metal, Organic, Organometallic, Physical, Polymer, Quantum, Synthesis
Materials and Process Development	Coatings: Anti-Corrosion, Anti-Reflection, Barrier, Biomedical, Charge Storage, Dielectric, Optical, Sensor

Notes

This CV is reproducible. All the source code behind this CV is available on my GitHub repo.