

# Dr. Edward C. Ellingsworth

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Senior Process Engineer - Process Analytical Technology, analytical chemist, digitalization consultant, project manager, and people manager.

## Education

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|--|------|---|
| <b>PhD Analytical Chemistry</b>  | 2015 | The University of Alabama, Tuscaloosa, AL   |
| <ul style="list-style-type: none"><li>"Spectroscopic, structural, and electrical characterization of thin films vapor deposited from the spin-crossover complex <math>Fe(phen)_2(NCS)_2</math>". Advisor: Dr. Greg Szulczewski</li></ul> |      |   |
| <b>MS Analytical Chemistry</b>   | 2014 | The University of Alabama, Tuscaloosa, AL   |
| <b>BS Chemistry</b>  | 2006 | Ashland University, Ashland, OH             |
| <b>Associate of Science</b>  | 2002 | Lorain County Community College, Elyria, OH |
| <b>Associate of Arts</b>   | 2001 | Lorain County Community College, Elyria, OH |

## Relevant Experience

|   |                |   |
|---|----------------|---|
| <b>Senior Process Engineer</b>  | 2017 - present | Process Technology & Engineering (PT&E)<br>Evonik Corporation, Theodore, AL |
| <ul style="list-style-type: none"><li>Engineering, study, design, implementation, maintenance, and troubleshooting of Process Analytical Technology (PAT), i.e. online chemical measurement systems. Measurement technologies include NIR, Raman, GC, TDLAS, sound velocity, CEMS, and many others. Responsible for North American region.</li><li>Interim Superintendent for SKW-QUAB plant in Mobile, AL from October 2021 to May 2022. Lead day-to-day plant operations focusing on maximizing production capacity and equipment up-time while ensuring compliance with all site ESSHQ policies. Supervised 14 Evonik production personnel managing retirements, new employee recruiting and onboarding, and performance evaluations. Led QUAB Core Team effort to reorganize Process, Maintenance, and Engineering functions, allowing hire of new Plant Engineer. Led PSM/RMP and ESH audits.</li><li>Lead Analytics Engineer for ca. 500 M\$ investment project. Responsible for all PAT, offline analytics concept and laboratory design, grab sampling systems, CEMS design, flare monitoring, and toxic gas detection systems for a new methyl methacrylate plant in Bay City, TX.</li><li>Lead Analytics Engineer for ca. 150 M\$ investment project. Responsible for all PAT, offline analytics concept, grab sampling systems, and flare monitoring for a new methyl mercaptan plant in Mobile, AL.</li><li>Project Manager of ca. 4 M\$, 3-year digitalization transformation project in Evonik Crosslinkers plant in Mobile, AL. Lead a diverse group of sub-project managers and sub-project responsables covering 15 separate sub-projects. Maintain budget and project schedule. Sub-PM on three sub-projects for an online NIR measurement system, offline turbidity measurement, and configuration of a new Laboratory Information Management System (LIMS) with custom interfaces and instrument connectivity.</li><li>Digitalization consultant within Evonik's Digital Transformation (e-DX) group. Participate in e-DX analysis studies and project road-map development, including benefits case development, in North America and abroad in roles including Project Manager.</li><li>Supervised Intern and Student programs for PT&amp;E North America from 2018 to 2020. Supervised up to 5 students simultaneously ranging from undergraduates to PhD candidates, both domestic and international. Redesigned program strategy and policies to ensure equity and minimize wasted costs.</li><li>Participate in PT&amp;E annual recruiting, including representing the department and company and university recruiting events, interviewing candidates, and providing feedback to hiring managers.</li></ul> |                |   |
| <b>Lab Manager</b>  | 2015 - 2017    | Airgas USA, LLC, Theodore, AL   |
| <ul style="list-style-type: none"><li>Manage lab personnel; regulatory compliance (FDA, DOT, ISO); instrumentation calibration, acquisition, upkeep, method development; production scheduling; head of local QC; radiation control officer.</li></ul>  |                |   |
| <b>Graduate Teaching Assistant</b>  | 2009 - 2014    | The University of Alabama, Tuscaloosa, AL                                   |
| <b>Lab Analyst</b>  | 2007 - 2009    | Airgas, Inc., Theodore, AL  |
| <b>Formulations Specialist</b>  | 2006 - 2007    | WIL Research, Ashland, OH   |

## Professional Associations

American Chemical Society - Member

## Proficiencies and Skills:

### Process Analytical Technology

NIR, Raman, FT-IR, turbidity, sound velocity, TDLAS, GC, NDIR, paramagnetic, electrochemical, refractometry

### Offline Analytics

GC (MS, FID, TCD, ECD, PDHID), FT-IR (esp. ATR), Raman microscopy, UV-Vis, XPS, AFM, XRD (single crystal and powder)

### General

Project management, programming (esp. python), Linux, PC repair, networking, MS Office, MySQL, SharePoint, MS Teams, SAP, Aspen Process Explorer, Six Sigma Yellow Belt

## Publications

S. Ma; Anderson, K.; Guo, L.; Yousuf, A.; Ellingsworth, E. C.; Vajner C.; Wang, H.-T.; Szulczewski, G. Temperature-dependent thermopower and electrical conductivity of Te nanowire/poly(3,4-ethylenedioxythiophene):poly(4-styrene-sulfonate) microribbons. *Appl. Phys. Lett.* **2014**, *105*, 073905.

Ellingsworth, E. C.; Turner, B.; Szulczewski, G. Thermal conversion of  $[\text{Fe}(\text{phen})_3](\text{SCN})_2$  thin films into the spin crossover complex  $\text{Fe}(\text{phen})_2(\text{NCS})_2$ . *RSC Adv.* **2013**, *3*, 3745-3754.

Kreil, J.; Ellingsworth, E.; Szulczewski, G. X-ray photoelectron spectroscopy study of para-substituted benzoic acids chemisorbed to aluminum oxide thin films. *J. Vac. Sci. Technol. A* **2013**, *31*, 06F107.

Szulczewski, G.; Brauer, J.; Ellingsworth, E.; Kreil, J. Electronic and structural characterization of LiF tunnel barriers in organic spin-valve structures, *J. Appl. Phys.* **2011**, *109*, 07C509.

Hanes, Jr., R.E.; Ellingsworth, E.C.; Griffin, S.T.; Rogers, R.D.; Bartch, R.A. Polybenzocrown ethers: synthesis by cesium-assisted cyclization and solid state structures. *ARKIVOC* **2010**, *vii*, 217-237.

## Presentations and Posters

Ellingsworth, E.; Szulczewski, G. Spectroscopic, structural, and electronic characterization of vapor deposited thin films from the spin-crossover complex  $\text{Fe}(\text{phen})_2(\text{NCS})_2$ . MINT Center Annual Fall Research Review and Workshop, Tuscaloosa, AL November 14, 2013.

Ellingsworth, E.C.; Turner, B.; Szulcewski, G. Spectroscopic characterization of vapor deposited thin films from the spin-crossover complex  $\text{Fe}^{\text{II}}(\text{phen})_2(\text{NCS})_2$  (phen = 1,10-phenanthroline). American Chemical Society 245<sup>th</sup> National Meeting and Exhibition, New Orleans, LA April, 11, 2013.

Ellingsworth, E.C.; Szulczewski, G.; Lauter, V. Spectroscopic and magnetic characterization of the spin-crossover transition in thin films of  $\text{Fe}(\text{C}_{12}\text{H}_8\text{N}_2)_2(\text{NCS})_2$ . American Vacuum Society 58<sup>th</sup> International Symposium and Exhibition, Nashville, TN November 2, 2011.

Ellingsworth, E.C.; Turner, B.; Kreil, J.; Brauer, J.; Szulczewski, G. Severe morphological changes in thin films deposited from the spin-crossover complex  $\text{Fe}(\text{phen})_2(\text{SCN})_2$ . 66th Annual South Western Regional Meeting and 62nd Annual South Eastern Regional Meeting of the American Chemical Society, New Orleans, LA December 1-3, 2010.

Ellingsworth, E.C.; Turner, B.; Kreil, J.; Brauer, J.; Szulczewski, G. Severe morphological changes in thin films deposited from the spin-crossover complex  $\text{Fe}(\text{phen})_2(\text{SCN})_2$ . MINT Center Annual Fall Research Review and Workshop, Tuscaloosa, AL November 10, 2010.