

# Holly Salerno

## Research Engineer - E.I. DuPont de Nemours and Company

Wilmington, DE - Email me on Indeed: [indeed.com/r/Holly-Salerno/16d052048f0724cb](https://www.indeed.com/r/Holly-Salerno/16d052048f0724cb)

### WORK EXPERIENCE

#### Research Engineer

E.I. DuPont de Nemours and Company - Wilmington, DE - May 2013 to Present

Provide technical direction for the lab and personnel development, manage workflow and design new walkup services

Principal Investigator of the Thermal Analysis Lab in the Corporate Center for Analytical Sciences (CCAS)

- Responsible for the professional development of two lab associates and integration of contractors.
- Develop new thermal analysis methods in support of R&D and businesses. Focused on methods using DMA, DSC, isothermal titration calorimetry (ITC), micro calorimetry, SDT, TGA, TGA-MS and thermal conductivity. Study materials ranging from polymers, inorganics, small molecules and bio macromolecules.
- Expand lab capabilities by interfacing with internal customers to determine technology gaps, evaluating new equipment, develop expertise on new equipment, write lab procedures and train lab associates.
- Provide direction for analytical data analysis, report generation and data presentations. Collaborate with customers and other analytical labs to provide comprehensive analytical solutions.
- Directed the implementation of a new walkup TGA for rapid turnaround of routine samples. Developed a semi-walkup model to handle routine high volume DSC requests.
- Serve as a contact for product stewardship and regulatory (PS&R) for the analytical organization by providing PS&R updates and reminders at organization meetings.
- Write safety procedures and participate as a member of the CCAS safety boosters (manage the internal website).

Leader of two internal networks:

- Thermal Analysis Users Network: organizing meetings to share best practice with users of thermal analysis in both CR&D and manufacturing.
- Thermally Evolved Species Network: a group of principal investigators using different methods to analyze evolved species, which collaborate and share expertise to provide analytical support to internal customers.

#### Staff Engineer

E.I. DuPont de Nemours and Company - Wilmington, DE - January 2012 to May 2013

Provide customized methods in depth analysis, design and implement new workflow system and reestablish TGA-MS

- Develop and expand expertise in thermal analysis methods and instrumentation and DuPont material systems.
- Evaluate the functionality of an abandoned TGA-MS instrument and define its role and value to the CCAS organization.
- Develop customized methods to meet project analytical needs and provide in depth analysis in support of R&D, businesses and the development of intellectual property.

- Developed a new workflow system to increase lab productivity by tracking job status, managing the backlog, monitoring turn around time and documenting methods.
- Drive knowledge management initiative in the lab to capture and document best practices to improve knowledge transfer and training of new personnel.
- Established a Thermal Users Network and a Thermally Evolved Gas Network by identifying users, determining goals and holding meetings.

## EDUCATION

### **PhD in Chemical Engineering**

Drexel University - Philadelphia, PA  
2005 to 2011

### **BS in Chemical Engineering**

University of Delaware - Newark, DE  
2001 to 2005

## SKILLS

### GRADUATE RESEARCH ASSISTANT

Drexel University, Advisor: Yossef A. Elabd (2005 – 2011)

Dissertation: Nafion Based Anion Exchange Membranes for the Alkaline Fuel Cell

- Development of new anion exchange membranes based on existing fluoropolymer chemistry (Nafion).
- Polymer characterization using FTIR, DSC, DMA, and TGA.
- Evaluation of transport properties in polymers using EIS (ion conductivity), FTIR permeation and fuel cells.
- Understanding of polymer property-performance relationships.

## EXPERIMENTAL TECHNICAL SKILLS

- Proficient: Infrared Spectroscopy, Fuel Cell and MEA Fabrication, TGA, DSC, DMA, EIS (ion conductivity) Membrane chemistry.
- Working knowledge: SAXS, NMR, ESEM/EDAX, Raman Spectroscopy, Plasma Reactor, Electro-spinning, membrane casting, polymer blending, free radical polymerization.

Undergraduate Research University of Delaware Advisors: S. Ismat Shah, Norman J. Wagner (2003-2005)

Thesis: Studying the Effects of Cobalt Doping of TiO<sub>2</sub> Nanoparticles on the Photodegradation of 2-chlorophenol

- Sol gel synthesis of nanoparticles. Study effects of catalyst crystal structure, Co doping percent, catalyst dosage, and solution pH on photodegradation of organics. Catalyst life time tests.

## PUBLICATIONS

### **Anion Exchange Membranes Derived from Nafion Precursor for the Alkaline Fuel Cell: Effect of Cation Type on Properties**

2013

Salerno, H. L. S., Elabd, Y. A., Anion Exchange Membranes Derived from Nafion Precursor for the Alkaline Fuel Cell: Effect of Cation Type on Properties Journal of Applied Polymer Science, 127, (2013) 298-307

**Anion Exchange Membranes Derived from Nafion Precursor for the Alkaline Fuel Cell**  
2012

Salerno, H. L. S., Beyer, F. L., Elabd, Y. A., Anion Exchange Membranes Derived from Nafion Precursor for the Alkaline Fuel Cell, Journal of Polymer Science Part B: Polymer Physics, 50, (2012) 552-562

**Photocatalytic degradation of 2-Chlorophenol by Co-doped TiO<sub>2</sub> nanoparticle**  
2005

Barakat, M.A., Schaeffer, H., Hayes, G., Ismat-Shah, S., Photocatalytic degradation of 2-Chlorophenol by Co-doped TiO<sub>2</sub> nanoparticles, Applied Catalysis B: Environmental, 57, (2005) 23-30

ADDITIONAL INFORMATION

LEADERSHIP

Mentor: Students Tackling Advanced Research (STAR) Program (2009, 2011)

- Train first year undergraduate students on safe laboratory techniques and equipment.
- Assist students with design and implementation of research plan, data analysis, and design of research poster.

Chemical & Biological Engineering Graduate Student Association: Treasurer [...] Secretary [...] and Member [...]

- Bookkeeping of funds spent per event, quarter, and fiscal year, and applying to university for refunds.
- Manage email list, create flyers for events, and take meeting minutes. Senate member, Graduate Student Association [...]
- Vote on issues related to Graduate Student life at Drexel University. Lab Leader, Summer Engineering Experience at Drexel (SEED) [...]
- Lead ~10 high school students through labs designed to introduce them to chemical engineering principles.

PRESENTATIONS

ASC 2010 (San Francisco, CA) Poster: "Nafion-Based Anion Exchange Membranes for the Alkaline Fuel Cell"  
AIChE 2009 (Nashville, TN) Presentation: "Nafion-Based Anion Exchange Membranes for the Alkaline Fuel Cell"

Grove Fuel Cell Symposium 2009 (London, England) Poster: "Nafion-Based Anion Exchange Membranes for the Alkaline Fuel Cell"

AIChE 2008 (Philadelphia, PA) Poster: "Nafion-Based Anion Exchange Membranes for the Alkaline Fuel Cell"  
AIChE 2007 (Salt Lake City, Utah) Poster: "Transport in Polymer-polymer Nanocomposite Membranes"

PROFESSIONAL ASSOCIATIONS

North American Thermal Analysis Society (NATAS, 2014-Present): Membership Chair 2014

American Association for the Advancement of Science (AAAS, 2008-Present)

American Institute of Chemical Engineers (AIChE, 2003-Present)

Society of Women Engineers (SWE, [...])

SOFTWARE

Proficient: Microsoft Word, Excel, PowerPoint and Outlook, Universal Analysis, KaleidaGraph, Proteus, Kinetic3, Omnic EndNote and Lotus Notes

Working knowledge: SharePoint, Minitab, Maple, Matlab, Simulink, Mathcad, Fluent, Gambit and Aspen.