SAMPLE CHEMICAL ENGINEERING RESUME – PH.D.

POLLY MER

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OBJECTIVE

To utilize a strong background in biochemical engineering and colloidal science for product research and process development.

EDUCATION

Carnegie Mellon University **Pittsburgh, PA**
Ph.D. Chemical Engineering, May 2010

- Thesis title: "Surfactant Microstructures as DNA Sequence Tags"
- Advisor: Prof. James W. Schneider
- GPA: 3.70/4.00

Illinois Institute of Technology **Chicago, IL**
B.S. Chemical Engineering, High Honors, May 2005

- Specialization: Energy/Environment/Economics
- GPA: 3.97/4.00

RESEARCH EXPERIENCE

Carnegie Mellon University (2005-present)

- Produced bioactive liposomes by co-extrusion of peptide nucleic acid amphiphiles (PNAA) and helper phospholipids, aiming to create useful oligonucleotide sequence tags for highly sensitive bioanalytical devices
- Designed and synthesized di-alkyl PNAA that were sufficiently hydrophilic for studies in aqueous solutions but adequately lipophilic for incorporation and retention into liposomal bilayers
- Measured sequence-specific binding of DNA onto PNA-functionalized liposomal surfaces by capillary zone electrophoresis, with emphasis on enhancing the extent of binding by reducing electrostatic repulsion in the system
- Employed di-alkyl PNAA to improve PNA-DNA duplex retention in mixed micelles for micellar electrokinetic chromatography applications

Illinois Institute of Technology (2002-2003)

- Performed thermodynamic analysis of fuel cell systems to prevent carbon deposition

WORK EXPERIENCE

American Air Liquide **Countryside, IL**
Research Assistant, February 2003-August 2005

- Investigated the effects of air derivatives in the preservation and decontamination of various food products
- Designed, constructed, and operated biochemical laboratory wash tanks and gas chambers
- Implemented automatic data collection scheme for multiple instruments with LabView software

Pritzker Institute of Medical Engineering **Chicago, IL**
Research Assistant, December 2001-February 2003

- Participated in team studying the diagnosis and treatment of cardiac rhythm problems
- Installed and updated software in Linux server

TEACHING AND SUPERVISING

Undergraduate Research Mentor

- "Monolayer Phase Behavior of Peptide Amphiphiles" Nicole Gartner (2008-2010)
- "pH-Controlled Rupture of Liposomes for Oral Delivery of Vaccines" Elizabeth Newton (2007-2008)
- "DNA Adsorption to Liposome-Like Surfaces on Gold" Diana Yoon (2007)

Teaching Assistant

- Physical Chemistry of Colloids and Surfaces (2008), Heat and Mass Transfer (2007), Unit Operations of Chemical Engineering (2006), Chemical Reaction Engineering (2005)