

# David Hagen

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**Objective: I would like to obtain a research position within a team that develops new materials and is involved in transferring those technologies to pilot and production scales.**

## Education

Texas A&M University **May 2015**  
Ph.D. Candidate, Mechanical Engineering  
GPA 3.70/4.0

Baylor University **May 2011**  
B.S. Mechanical Engineering  
GPA 3.96/4.0

## Experience

**Polymer NanoComposites Laboratory—Research Assistant** **August 2011 – Present**

- Design and construct lab scale continuous 50 foot loop coating machine
- Develop new Labview code used for batch processing of small samples
- Characterize thin films using TEM, Ellipsometry, Profilometry, QCM, UV-Vis, and TGA
- Train and manage undergraduate researchers

**Natural Composites Inc.—Intern** **May 2010- August 2011**

- Produced and tested specimens of polymers reinforced with natural fillers
- Designed and implemented molds and conveying machinery

**Bird Creek Technologies—Intern** **June 2008**

- Constructed and tested prototype for solar reflectors and solar A/C unit

**Baylor University—Resident Assistant** **January 2009- May 2011**

- Fostered community, encouraged academic growth, and enforced policies in residence hall

**Camp Peniel— Counselor and Assistant Director** **Summers 2007-2009**

- Oversaw 20 counselors and the summer program as the Assistant Director (2009)

## Service

- Hydro generation project with Baylor University in rural Honduran villages
- Project with Living Water International to drill a water well in El Salvador
- Annual medical service trip to Mexico with Texas A&M Medical School- 6 trips

## Society Memberships

- American Society of Mechanical Engineers [ASME] (2007 – present)
- American Chemical Society [ACS] (2012 – present)
- Society of Plastics Engineers [SPE] (2012 – present)

## Awards and Achievements

- Raymond Ideas Challenge Winner (2014)
- SPE/Henry Kahn Memorial Scholarship (2012)
- Baylor Outstanding Mechanical Engineering Graduate (2011)
- Baylor President's Scholarship (2007-2011)
- Team leader of ME Lab and Junior Design groups (2010, 2011)
- Chaplain of Engineers with a Mission; Treasurer of Pi Tau Sigma (2010-2011)
- National Merit Scholar, AP Scholar with Distinction (2007)
- Salutatorian, Eagle Scout, Varsity Tennis Captain, FCA President (2005-2007)

## Publications

1. D. A. Hagen, B. Foster, B. Stevens, J. C. Grunlan, "Shift-Time Polyelectrolyte Multilayer Assembly: Fast Film Growth and High Gas Barrier with Fewer Layers by Adjusting Deposition Time," *ACS Macro Letters*, **2014**, *3*, 663.
2. D. A. Hagen, C. Box, S. Greenlee, F. Xiang, O. Regev, J. C. Grunlan, "High Gas Barrier Imparted by Similarly Charged Multilayers in Nanobrick Wall Thin Films," *RSC Advances*, **2014**, *4*, 18354.
3. B. Stevens, E. Dessiatova, D. A. Hagen, A. Todd, C. Bielawski, J. C. Grunlan, "Low-Temperature Thermal Reduction of Graphene Oxide Nanobrick Walls: Unique Combination of High Gas Barrier and Low Resistivity in Fully Organic Polyelectrolyte Multilayer Thin Films" *ACS AMI*, **2014**, *6* (13), 9942.
4. T. Guin, M. Kreckler, D. A. Hagen, J. C. Grunlan, "Thick Growing Multilayer Nanobrick Wall Thin Films: Super Gas Barrier with Very Few Layers," *Langmuir*, **2014**, *30* (24), 7057.

## Presentations

1. "High oxygen barrier multilayer thin films from trilayer deposition sequence," 247th American Chemical Society National Meeting in Dallas, TX on March 20, 2014.
2. "Maximizing polymer multilayer film growth and gas barrier performance by adjusting exposure time while depositing layers," 247th American Chemical Society National Meeting in Dallas, TX on March 20, 2014.
3. "Layer-by-layer assembly of intumescent nanocoatings for flame retardant fabric," 244th American Chemical Society National Meeting in Philadelphia, PA on August 16, 2012.
4. "Polymer-clay nanobrick wall thin films as foil replacement for food packaging," 244th American Chemical Society National Meeting in Philadelphia, PA on August 16, 2012.
5. "The Effects of Coconut Shell Powder as a Reinforcing Agent in Plastic," Baylor University School of Engineering and Computer Science's Scholars Day in Waco, TX on February 18, 2011.