

February 11, 2016

# Kevin M. Holder

4475 Carter Creek Pkwy, Apt 634 ▪ Bryan, TX 77802 ▪ (361) 935-8939 ▪ [kevin.m.holder@gmail.com](mailto:kevin.m.holder@gmail.com)

## **EDUCATION:**

January 2013 to present	TEXAS A&M UNIVERSITY Materials Science and Engineering PhD Student Expected completion: August 2016	College Station, TX
December 2012	TEXAS A&M UNIVERSITY B.S. in Chemistry	College Station, TX

## **RESEARCH EXPERIENCE:**

January 2013 to present	TEXAS A&M UNIVERSITY <i>Graduate Research Assistant [Advisor: J. C. Grunlan]</i> <ul style="list-style-type: none"><li>▪ Studying the gas barrier and flame retardant behavior of polymer-nanoparticle and polymer-polymer nanocomposite thin films created via layer-by-layer assembly</li><li>▪ Tailoring assemblies to suit a variety of substrates</li><li>▪ Trained to use materials characterization techniques including: ellipsometry, reflectometry, UV-Vis spectroscopy, quartz crystal microbalance, scanning and transmission electron microscopy, microtomy, thermal gravimetric analysis, infrared spectroscopy, thermal mechanical analysis, atomic force microscopy</li><li>▪ Supervising, training, and mentoring several undergraduate assistants</li><li>▪ Working with multiple industrial partners on research projects</li><li>▪ Managing instrumentation, equipment and material supply to maintain functional lab space</li><li>▪ Disseminating research in both oral and poster presentations</li><li>▪ Attending conferences to continually learn and adapt new technologies to current research platforms</li></ul>	College Station, TX
February 2010 to December 2012	TEXAS A&M UNIVERSITY <i>Undergraduate Research Assistant [Advisors: J. C. Grunlan and M. A. Priolo]</i> <ul style="list-style-type: none"><li>▪ Studied gas barrier behavior of polymer-clay thin films via layer-by-layer assembly</li><li>▪ Created super gas barrier thin films for a variety of packaging solutions</li></ul>	College Station, TX

## **CONFERENCES ATTENDED:**

December 2015	Frontiers in Green Materials	London, England, UK
August 2015	Texas Soft Matter Meeting	Houston, TX
August 2015	BASF-TAMU Graduate Student Symposium	College Station, TX
April 2015	Rubber Division, ACS 187 <sup>th</sup> Technical Meeting	Greenville, SC
March 2015	249 <sup>th</sup> ACS National Meeting & Exposition	Denver, CO
June 2014	Layer-by-Layer Assemblies: Science and Technology Conference	Hoboken, NJ
August 2013	Texas Soft Matter Meeting	College Station, TX
May 2013	BCC Research 24 <sup>th</sup> Annual Flame Retardancy Intensive Short Course	Stamford, CT
November 2011	MRS Fall Meeting & Exhibit	Boston, MA

**ORAL PRESENTATIONS:**

1. “Environmentally-benign flame retardant nanocoating for foam using renewable ingredients,” by **K. M. Holder**, M. Huff, M. Cosio, J. C. Grunlan, presented at 2015 Frontiers in Green Materials in London, England on December 7, 2015.
2. “Polymer-based multilayer thin films for improved stretchable gas barrier,” by **K. M. Holder**, F. Xiang, J. C. Grunlan, presented at the 2015 Texas Soft Matter Meeting in Houston, TX on August 24, 2015.
3. “Water-based elastomeric gas barrier nanocoatings,” by **K. M. Holder**, F. Xiang, B. Spears, J. C. Grunlan, *et al*, presented at 2015 ACS Rubber Division in Greenville, SC on April 28, 2015.
4. “Stretchable gas barrier achieved with partially hydrogen-bonded multilayer nanocoating,” by **K. M. Holder**, F. Xiang, B. Spears, J. C. Grunlan, *et al*, presented at 2015 ACS Spring Meeting in Denver, CO on March 23, 2015.
5. “Clay-Chitosan Nanobrick Walls: A Renewable Flame Retardant System for Polyurethane Foam,” by **K. M. Holder**, G. Laufer, J. C. Grunlan, *et al*, presented at the 2013 Texas Soft Matter Meeting in College Station, TX on August 12, 2013.
6. “Gas Barrier of Clay Polymer Nanobrick Wall Assemblies,” by **K. M. Holder**, M. A. Priolo, D. Gamboa and J. C. Grunlan, presented at the 2011 MRS Fall Meeting & Exhibit in Boston, MA on November 28, 2011.

**PUBLICATIONS:**

1. **Holder, K. M.**; Cain, A. A.; Plummer, M. G.; Stevens, B. E.; Odenborg, P. K.; Morgan, A. B.; Grunlan, J. C.; Carbon Nanotube Multilayer Nanocoatings Prevent Flame Spread on Flexible Polyurethane Foam. *Macromolecular Materials and Engineering*, **2015**, DOI: 10.1002/mame.201500327.
2. Priolo, M. A.; **Holder, K. M.**; Guin, T. C.; Grunlan, J. C.; Recent advances in gas barrier thin films via layer-by-layer assembly of polymers and platelets. *Macromolecular Rapid Communications* **2015**, *36* (10), 866.
3. **Holder, K. M.**; Huff, M. E.; Cosio, M. N.; Grunlan, J. C.; Intumescent multilayer thin film deposited on clay-based nanobrick wall to produce self-extinguishing flame retardant polyurethane. *Journal of Materials Science*, **2015**, *50* (6), 2451.
4. **Holder, K. M.**; Spears, B. R.; Huff, M. E.; Priolo, M. A.; Harth, E. M.; Grunlan, J. C.; Stretchable Gas Barrier Achieved with Partially Hydrogen-Bonded Multilayer Nanocoating. *Macromolecular Rapid Communications*, **2014**, *35* (10), 960. ([front cover article](#))
5. Cain, A. A.; Murray, S.; **Holder, K. M.**; Nolen, C. R.; Grunlan, J. C., Intumescent Nanocoating Extinguishes Flame on Fabric Using Aqueous Polyelectrolyte Complex Deposited in Single Step. *Macromolecular Materials and Engineering*, **2014**, *299* (10), 1180.
6. Priolo, M. A.; **Holder, K. M.**; Greenlee, S. M.; Stevens, B. E.; Grunlan, J. C.; Precisely tuning the clay spacing in nanobrick wall gas barrier thin films. *Chemistry of Materials*, **2013**, *25*, 1649.
7. **Holder, K. M.**; Priolo, M. A.; Secrist, K. E.; Greenlee, S. M.; Nolte, A. J.; Grunlan, J. C.; Humidity-responsive gas barrier of hydrogen-bonded polymer-clay multilayer thin films. *Journal of Physical Chemistry C*, **2012**, *116*, 19851.
8. Priolo, M. A.; **Holder, K. M.**; Greenlee, S. M.; Grunlan, J. C.; Transparency, gas barrier and moisture resistance of large aspect ratio vermiculite nanobrick wall thin films. *ACS Applied Materials and Interfaces*, **2012**, *4*, 5529.
9. Priolo, M. A.; **Holder, K. M.**; Gamboa, D.; Grunlan, J. C.; Influence of clay concentration on gas barrier of clay-polymer nanobrick wall thin film assemblies. *Langmuir*, **2011**, *27* (19), 12106.
10. Priolo, M. A.; Gamboa, D.; **Holder, K. M.**; Grunlan, J. C., Super gas barrier of transparent polymer-clay multilayer ultrathin films. *Nano Letters* **2010**, *10* (12), 4970.