Fangming Xiang

1601 Holleman Dr Apt 1006 ♦ College Station, TX 77840 ♦ (713) 291-3906 ♦ edwardxfm@tamu.edu

Objective

Final semester PhD student with a strong polymer background looks for a postdoc position.

Education

PhD, Mechanical Engineering, Texas A&M University, College Station, Texas, USA *May 2015*
Dissertation: Improvements in Processing and Stretchability of Super Gas Barrier Multilayer Thin Films*
Adviser: Professor Jaime C. Grunlan GPA: 3.62/4.0

MS, Materials Science and Engineering, Southwest Jiaotong University, Chengdu, China *2011*
Thesis: Modification of Immiscible HDPE/PA6 Blends using Carbon Nanotubes*
Adviser: Professor Yong Wang GPA: 83.9/100.0

BS, Materials Science and Engineering, Southwest Jiaotong University, Chengdu, China *2008*
Thesis: Preparation and Microstructure Characterization of PP/EVA/CNTs Composites*
Adviser: Professor Yong Wang GPA: 81.9/100.0

City University of Hong Kong, Hong Kong, China August - December 2007
Exchange student in the Department of Physics and Materials Science

Research Experience

Department of Mechanical Engineering, Texas A&M University
Graduate Research Assistant 2011 - present

- Polymeric multilayer thin films produced using Layer-by-Layer (LbL) assembly
- Studied the influence of dipping time on deposition & desorption of polyelectrolytes. Reduced dipping time was used to suppress polyelectrolytes desorption, leading to thicker and more impermeable polymer/clay multilayer thin films.
- Studied gas barrier of spray-coated multilayer thin films. The spraying process was optimized based on thickness, roughness, and gas barrier of the assemblies. Spray-coated film could exhibit better gas barrier than its dip-coated counterpart thanks to reduced polyelectrolyte desorption.
- Studied super stretchy gas barrier assembly. Gas barrier was imparted by a hydrogen bonding network, which can be tailored using assembling pH. Elasticity originated from soft component, low crosslinking density, and weak bonding. The unique combination of elasticity and gas barrier allowed this assembly to retain majority of its gas barrier even after 100% strain.

Department of Materials Science and Engineering, Southwest Jiaotong University
Graduate Research Assistant 2008 - 2011

- Bulk polymer/carbon nanotube (CNTs) nanocomposites produced using melt mixing
- Investigated the effect of carbon nanotubes bridging on mechanical property of polymer blends. Localization of carbon nanotubes was controlled using different incorporation sequence. Highest toughness was achieved by interfacial localization of CNTs.
- Investigated the effect of carbon nanotube dispersion on morphology of polymer blends. Dispersion of CNTs within selected phase was tailored using different concentrations. The

* Abstract can be found on my personal website. http://fangmingxiang.weebly.com/publications.html

formation of CNTs network at highest filler concentration led to phase inversion.

- Investigated the effect of compatibilizer on mechanical property of polymer blends. Compatibilizer was found to retard the transportation of CNTs through interface, inducing more interfacially dispersed CNTs. The obtained sample featured super toughness.

Technical Skills

Characterization: AFM, SEM, DSC, TGA, QCM, UV-Vis, FTIR, Tensile Test, Rheometer, Ellipsometer
Computer: Labview, Origin, Photoshop, Microsoft Office
Language: Fluent in English and Chinese

Honors

Bachelor's Degree: *Southwest Jiaotong University Undergraduate Scholarship, First Prize* (fall 2006, spring 2007); *Southwest Jiaotong University Undergraduate Scholarship, Second Prize* (spring 2005, fall 2005, spring 2006); *Southwest Jiaotong University Undergraduate Scholarship, Third Prize* (fall 2004), *Southwest Jiaotong University Excellent Bachelor's Thesis*

Master's Degree: *Southwest Jiaotong University Graduate Scholarship, First Prize* (2008*), Southwest Jiaotong University Graduate Scholarship, Third Prize* (2009), *Southwest Jiaotong University Excellent Master's Thesis*

Select Publications

1. **F. M. Xiang**, S. M. Ward, T. M. Givens, J. C. Grunlan*, "Fast spray deposition of super gas barrier polyelectrolyte multilayer thin films" ***Langmuir*** submitted
2. **F. M. Xiang**, S. M. Ward, T. M. Givens, J. C. Grunlan*, "Structural tailoring of hydrogen-bonded poly(acrylic acid)/poly(ethylene oxide) multilayer thin films for reduced gas permeability" ***Soft Matter*** accepted ***Featured on Soft Matter Blog as hot article for January***
3. **F. M. Xiang**, S. M. Ward, T. M. Givens, J. C. Grunlan*, "Super Stretchy Polymer Multilayer Thin Film with High Gas Barrier" ***ACS Macro Lett.*** 2014, 3, 1055-1058.
4. **F. M. Xiang**, P. Tzeng, J. Sawyer, O. Regev, J. C. Grunlan*, "Improving gas barrier of clay-polymer multilayer thin films using shorter deposition times" ***ACS Appl. Mater. Interfaces*** 2014, 6, 6040-6048.
5. **F. M. Xiang**, Y. H. Wang, Y. Y. Shi, T. Huang, C. Chen, Y. Peng, Y. Wang*, "Morphology and mechanical property changes in compatibilized high density polyethylene/polyamide 6 nanocomposites induced by carbon nanotubes" ***Polym. Int.*** 2012, 61, 1334-1343.
6. **F. M. Xiang**, J. Wu, X. X. Li, T. Huang, Y. Peng, Y. Wang*, "Cocontinuous Morphology of Immiscible High Density Polyethylene/Polyamide 6 Blend Induced by Multiwalled Carbon Nanotubes Network" ***Eur. Polym. J.*** 2012, 48, 350-361.
7. **F. M. Xiang**, J. Wu, L. Liu, T. Huang, Y. Wang*, C. Chen, Y. Peng, C. X. Jiang, Z. W. Zhou, "Largely Enhanced Ductility of Immiscible High Density Polyethylene/Polyamide 6 Blends via Nano-bridge Effect of Functionalized Multiwalled Carbon Nanotubes" ***Polym. Adv. Tech.*** *2011*, 22, 2533-2542.

Presentations

1. **F. M. Xiang**, P. Tzeng, J. S. Sawyer, O. Regev, J. C. Grunlan, "Improving gas barrier of clay-polymer multilayer thin films using shorter deposition times" *248th American Chemical Society National Meeting & Exposition*. Volume 111.
2. **F. M. Xiang**, S. M. Ward, J. C. Grunlan, "Super Stretchy Multilayer Thin Film Gas Barrier" *248th American Chemical Society National Meeting & Exposition*. Volume 111.