Jaime C. Grunlan

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EDUCATION:

June 2001 — UNIVERSITY OF MINNESOTA — Minneapolis, MN
Ph.D. in Materials Science and Engineering w/ Chemistry minor.

May 1997 — NORTH DAKOTA STATE UNIVERSITY — Fargo, ND
B.S. in Chemistry w/ Polymers & Coatings Option.

RESEARCH EXPERIENCE:

September 2010 to present — TEXAS A&M UNIVERSITY, College Station, TX
Associate Professor and Gulf Oil/Thomas Dietz Development Professor I
Studying layer-by-layer assembly of nanocomposite thin films for electronic, biomedical, optical and flame retardant applications. Also studying bulk polymer nanocomposites with unique transport and optical behavior.

- Appointments in Mechanical Engineering and Chemical Engineering and serve on Executive Committee of MSEN Program.

July 2004 to August 2010 — TEXAS A&M UNIVERSITY, College Station, TX
Assistant Professor
Studying layer-by-layer assembly of nanocomposite thin films for electronic, biomedical, optical and flame retardant applications. Also studying bulk polymer nanocomposites with unique transport and optical behavior.

- Guest edited special issue of *Review of Scientific Instruments*.
- Invited speaker for ACS, MRS and GRC meetings.
- Research highlighted in *Nature Materials* and *C&EN* and featured on the cover of *Macromolecular Materials and Engineering*.
- Won NSF CAREER, 3M Untenured Faculty and Dow Young Faculty awards.
- Organized symposium for 2008 MRS Fall Meeting entitled *Transport Properties in Polymer Nanocomposites*.
- Jointly appointed in Chemical Engineering and serve on Executive Committee of Materials Science and Eng. Program.

June 2001 to July 2004 — AVERY RESEARCH CENTER, Pasadena, CA
Senior Research Engineer (*Research Engineer* until late 2002)
Research and development of polymer-based electronic and biological materials for new business development.

- Created novel antimicrobial coating for wound care.
- Created novel electrochromic films for display devices.
- First-authored book chapter on combinatorial materials science.
- Inventor on two issued patents.

September 1997 to May 2001 — DEPT. OF CHEM. ENG. & MATER. SCI., Minneapolis, MN
Research Assistant [*Advisors: W. W. Gerberich and L. F. Francis]*
Studied electrical and mechanical properties of polymer composites.

- First-authored six journal papers on graduate research.
- Directed work of three undergraduate students.

June 1997 to August 1997	DEPT. OF CHEM. ENG. & MATER. SCI., Minneapolis, MN *Research Assistant [Advisor: L. E. Scriven]* Studied powder-coating defects using IR-microscope and examined curing rate using rheological techniques.
January 1995 to May 1997	POLYMERS & COATINGS DEPARTMENT, Fargo, ND *Research Assistant [Advisor: M. W. Urban]* Responsible for study of epoxy powder coatings adhesion.

TEACHING EXPERIENCE:

September 2010 to present	TEXAS A&M UNIVERSITY, College Station, TX *Associate Professor* Teaching undergraduate and graduate courses in general materials science and polymers.
July 2004 to August 2010	TEXAS A&M UNIVERSITY, College Station, TX *Assistant Professor* Teaching undergraduate and graduate courses in general materials science and polymers.
August 2002 to December 2003	AZUSA PACIFIC UNIVERSITY, Azusa, CA *Adjunct Professor* Taught Physical Science for non-science majors and Introduction to Materials Science for pre-engineering majors.
January 2002 to May 2002	BIOLA UNIVERSITY, La Mirada, CA *Adjunct Professor* Taught Introduction to Materials Science for pre-engineering students. Created new curriculum that will continue to be taught every other year.

CURRENT STUDENTS:

Bart Stevens (PhD 2015) – *Thermoelectric Polymer Nanocomposites*

Amanda Cain (PhD 2014) – *Antiflammable Behavior of Nanostructured Thin Films Using Layer-by-Layer Assembly*

Gregory Moriarty (PhD 2013) – *Thermoelectric Polymer Nanocomposites*

Galina Sukhonosova (PhD 2012) – *Layer-by-Layer Assembly of Antimicrobial and Therapeutic Thin Films*

You-Hao Yang (PhD 2012) – *Layer-by-Layer Assembly of Multifunctional Thin Films*

Morgan Priolo (PhD 2012) – *Gas Permeability of Nanostructured Thin Films Using Layer-by-Layer Assembly*

FORMER STUDENTS:

Yu-Chin Li (PhD 2011) – *Layer-by-Layer Assembly of Flame Retardant Coatings for Foam and Fabric*

Yong Tae Park (PhD 2011) – *Layer-by-Layer Assembly of Electrochromic Thin Films*

Zachary Levin (MS 2011) –*Polymer Nanocomposite Strain Sensors*

Krishna Chaitanya Etika (PhD 2010) – *Stimuli-Tailored Dispersion State of Aqueous Carbon Nanotube Suspensions and Solid Polymer Nanocomposites* (at Intel)

Andrea Adamczak (PhD 2010) – *High Temperature Materials for Aerospace Applications* (at Raytheon)

Lei Liu (PhD 2009) – *Structure Property Relationships in Carbon Nanotube-Polymer Systems: Influence of Non-Covalent Stabilization Techniques* (postdoc at Case Western)

Charlene Dvoracek (MS 2009) – *Antimicrobial Activity of Cationic Antiseptics in Layer-by-Layer Thin Film Assemblies*
(pursuing PhD in Materials Science at Johns Hopkins)

Woo-Sik Jang (PhD 2008) – *Layer-by-Layer Assembly of Clay-Filled Polymer Nanocomposite Thin Films* (postdoc at Yale University)

Thomas Dawidczyk (MS 2008) – *Layer-by-Layer Assembly Poly(3,4-ethylenedioxythiophene) Thin Films: Tailoring Growth and UV Protection* (pursuing PhD in Materials Science at Johns Hopkins)

Sethu Madhukar (MS 2007) – *Electrical and Mechanical Behavior of Segregated Networks of Carbon Black and Clay*
(at Deep Sea Engineering)

Yeon Seok Kim (PhD 2007) – *Electrically Conductive Polymer Nanocomposites with Segregated Network Microstructures*
(postdoc at NIST)

C. Jason Jan (MS 2006) – *Thin Film Carbon Black Composites with Tunable Transparency and Electrical Conductivity*
(at Air Liquide USA LLP)

AWARDS & ACTIVITIES:

2010 Carl Dahlquist Award (2010)
Dow 2009 Young Faculty Award (2009)
NSF CAREER (2007 – 2012)
3M Untenured Faculty Grant (2007 – 2010)
Texas Engineering Experiment Station Select Young Faculty (2007)
Promoted to Senior Research Engineer (2003)
Charles & Dorothy Byrd Award for Outstanding Thesis Research (2001)
Doctoral Dissertation Fellowship (2000 – 01)
Kodak Fellow (1997 – 2000)
Polymer & Coatings Club, President/Founder (1995)
NDSU Varsity Football – Full Scholarship (1992 – 94)

SOCIETY MEMBERSHIPS:

American Chemical Society [ACS] (1996 – present)
Materials Research Society [MRS] (1998 – present)
Society of Plastics Engineers [SPE] (2004 – present)
American Society of Mechanical Engineers [ASME] (2006 – present)
American Physical Society [APS] (2009 – present)

RESEARCH FUNDING:

1. *Transparent Nanocoatings for Gas and Moisture Barrier on Polymer Film*. Kuraray America, Inc., **J. C. Grunlan** (PI). Dates: 3/1/2011 – 2/28/2012. Dollar Value: $99,804.

2. *Performance Evaluation of Flame Resistant Coating for Foam*. Huntsman International LLC. **J. C. Grunlan** (PI). Dates: 12/15/2010 – 12/14/2011. Dollar Value: $89,754.

3. *Pursuing Moisture Barrier in Self-Assembled Thin Films*. Kuraray America, Inc., **J. C. Grunlan** (PI). Dates: 6/21/2010. Dollar Value: $15,000. This is an unrestricted gift from Kuraray.

4. *REU Site: Multifunctional Materials Systems*. National Science Foundation, **J. C. Grunlan** (co-PI). Dates: 06/04/10 – 06/03/12. Dollar Value: $345,000.

5. *Evaluation of Flame Retardant Nanotechnology in Bedding*. Bedding Manufacturer (Confidential), **J. C. Grunlan** (PI). Dates: 6/1/2010 – 5/31/2011. Dollar Value: $98,753.

6. *Performance Evaluation of Flame Resistant Coating for Foam*. Huntsman International LLC. **J. C. Grunlan** (PI). Dates: 12/1/2009 – 5/31/2010. Dollar Value: $37,804.

7. *Energy Harvesting: Thermoelectric Waste Heat Recovery Using Polymer Nanocomposites.* U.S. Air Force Office of Scientific Research, **J. C. Grunlan** (co-PI). Dates: 09/01/2009 – 08/31/2013. Dollar Value: $662,897.

8. *Nanocomposite Coatings*. Bayer Corporation. **J. C. Grunlan** (PI). Dates: 1/1/2009 – 12/31/2010. Dollar Value: $176,690.

9. *Protective Coatings*. Baker Hughes. **J. C. Grunlan** (PI). Dates: 1/1/2009 – 12/31/2010. Dollar Value: $180,772.

10. *Improvement of Sporting Goods*. Sporting Goods Maker (Confidential), **J. C. Grunlan** (PI). Dates: 1/1/2009 – 6/30/2011. Dollar Value: $235,417.

11. *Improvement of Thin Film Oxygen Barrier from Layer-by-Layer Assembly*. Appleton, **J. C. Grunlan** (PI). Dates: 9/1/2008 – 8/31/2009. Dollar Value: $115,589. This is a sub-contract from a multi-million dollar Army Natick project focused on MRE packaging.

12. *Layer-by-Layer Assembly of Flame Retardant Coatings for Foam and Fabric*. USDOC – National Institute of Standards & Technology, **J. C. Grunlan** (PI). Dates: 7/1/2008 – 6/30/2011. Dollar Value: $253,165.

13. *Layer-by-Layer Assembly of Fast Switching, High Contrast Electrochromics*. The Dow Chemical Company. **J. C. Grunlan** (PI). Dates: 6/1/2008 – 5/31/2010. Dollar Value: $162,897.

14. *Evaluation of Epoxy Nanocomposites Containing Carbon Nanosphere Chains*. Clean Technologies International Corp. **J. C. Grunlan** (PI). Dates: 9/1/2007 – 2/29/2008. Dollar Value: $38,572.

15. *New Accelerated Aging Test and Methodology for Ballistic Fibers and Fabrics*. Army Research Office, **J. C. Grunlan** (co-PI). Dates: 7/09/2007 – 08/30/2008. Dollar Value: $500,000.

16. *Transparent, Electrically Conductive Nanocomposite Thin Films*. 3M Corporation, **J. C. Grunlan** (PI). Dates: 6/13/2007 – 06/12/2010. Dollar Value: $45,000. This is award money in conjunction with the 3M Untenured Faculty Grant.

17. *Performance Characterization of Polyimide-Carbon Fiber Composites for Future Hypersonic Vehicles.* U.S. Air Force Office of Scientific Research, **J. C. Grunlan** (co-PI). Dates: 04/01/2007 – 03/31/2010. Dollar Value: $443,504.

18. *CAREER: Tailoring Nanoparticle Microstructure Using Simuli-Responsive Polymers*. National Science Foundation, **J. C. Grunlan** (PI). Dates: 03/01/07 – 02/28/12. Dollar Value: $400,000.

19. *Surface Modification Using Multifunctional Composite Thin Films*. Army Research Laboratory, **J. C. Grunlan** (PI). Dates: 9/1/2006 – 8/31/2007. Dollar Value: $73,283.

20. *Functionalized Polyolefin Films Using Layer-by-Layer Assembly*. The Dow Chemical Company. **J. C. Grunlan** (PI). Dates: 2/1/2006 – 1/30/2008. Dollar Value: $149,254.

PUBLICATIONS:

REFEREED JOURNAL PUBLICATIONS

1. Y. T. Park, A. Ham, Y. H. Yang, J. C. Grunlan,[a] "Fully organic ITO replacement through acid doping of double-walled carbon nanotube thin film assemblies," *ACS Applied Materials & Interfaces*, to be submitted.

2. M. A. Priolo,[b] K. M. Holder,[c] D. Gamboa,[c] **J. C. Grunlan,[a]** "Influence of clay concentration on gas barrier of clay-polymer nano brick wall thin film assemblies," *Langmuir*, submitted.

3. Y. S. Kim, R. Davis, A. A. Cain,[b] **J. C. Grunlan**, "Development of layer-by-layer assembled carbon nanofiber-filled coatings to reduce polyurethane foam flammability," *Polymer* **2011**, in press.

4. J. Lu, J. F. Feller, B. Kumar, M. Castro, Y. S. Kim,[d] Y. T. Park,[c] **J. C. Grunlan**, "Chemo-sensitivity of latex-based films containing segregated networks of carbon nanotubes," *Sensors & Actuators: B. Chemical* **2011**, in press.

5. F. Carosio,[b] G. Laufer,[b] J. Alongi, G. Camino, **J. C. Grunlan,[a]** "Layer-by-layer assembly of silica-based flame retardant thin film on PET fabric," *Polymer Degradation and Stability* **2011**, *96*, 745.

6. Y. H. Yang,[b] M. Haile,[c] Y. T. Park,[b] F. Malek,[c] **J. C. Grunlan,[a]** "Super oxygen barrier of all-polymer multilayer thin films," *Macromolecules* **2011**, *44*, 1450.

7. Y. C. Li,[b] S. Mannen,[c] J. Schulz,[c] **J. C. Grunlan,**[a] "Growth and fire protection behavior of POSS-based multilayer thin films," *Journal of Materials Chemistry* **2011**, *21*, 3060.

8. G. Laufer,[b] F. Carosio,[b] R. Martinez,[c] **J. C. Grunlan,**[a] "Flame retardant properties of colloidal silica multilayer thin films on cotton fibers," *Journal of Colloid and Interface Science* **2011**, *356*, 69.

9. A. D. Adamczak,[b] A. A. Spriggs,[c] D. M. Fitch,[c] C. Burke, E. E. Shin, **J. C. Grunlan,**[a] "Blistering in carbon fiber-filled fluorinated polyimide," *Polymer Composites* **2011**, *32*, 185.

10. Y. T. Park,[b] A. Y. Ham,[c] **J. C. Grunlan,**[a] "Heating and acid doping thin film carbon nanotube assemblies for high transparency and low sheet resistance," *Journal of Materials Chemistry* **2011**, *21*, 363.

11. J. N. Coleman, M. Lotya, A. O'Neill, S. D. Bergin, P. J. King, U. Khan, K. Young, A. Gaucher, S. De, R. J. Smith, I. V. Shvets, S. K. Arora, G. Stanton, H. Y. Kim, K. Lee, G. T. Kim, G. S. Duesberg, T. Hallam, J. J. Boland, J. J. Wang, J. F. Donegan, **J. C. Grunlan**, G. Moriarty,[b] A. Shmeliov, R. J. Nicholls, J. M. Perkins, E. M. Grieveson, K. Theuwissen, D. W. McComb, P. D. Nellist, V. Nicolosi, "Two-dimensional nanosheets produced by liquid exfoliation of layered materials," Science **2011**, *331*, 568.

12. M. A. Priolo,[b] D. Gamboa,[c] K. M. Holder,[c] **J. C. Grunlan,**[a] "Super gas barrier transparent polymer-clay multilayer ultrathin films," *Nano Letters* **2010**, *10*, 4970.

13. K. C. Etika,[b] F. D. Jochum, M. A. Cox,[c] P. Schattling, P. Theato, **J. C. Grunlan,**[a] "Tailoring properties of nanotube dispersions and nanocomposites using temperature-responsive copolymers of pyrene modified poly(N-cyclopropylacrylamide)," *Macromolecules* **2010**, *43*, 9447.

14. Y. H. Yang,[b] F. Malek,[c] **J. C. Grunlan,**[a] "Influence of deposition time on layer-by-layer growth of clay-based thin films," *Industrial & Engineering Chemistry Research* **2010**, *49*, 8501.

15. A. D. Adamczak,[b] A. A. Spriggs,[c] D. M. Fitch,[c] M. Radovic, **J. C. Grunlan,**[a] "Low temperature formation of ultra high temperature transition metal carbides from salt-polymer precursors," *Journal of the American Ceramic Society* **2010**, *93*, 2222.

16. K. C. Etika,[b] M. A. Cox,[c] F. D. Jochum, P. Theato, **J. C. Grunlan,**[a] "Nanotube friendly poly(N-isopropylacrylamide)," *Macromolecular Rapid Communications* **2010**, *31*, 1368.

17. Y. C. Li,[b] J. Schulz,[c] S. Mannen,[c] C. Delhom, B. Condon, S. C. Chang, M. Zammarano, **J. C. Grunlan,**[a] "Flame retardant behavior of polyelectrolyte-clay thin film assemblies on cotton fabric," *ACS Nano* **2010**, *4*, 3325. This paper was featured in the Science and Technology Concentrates of *C&EN* (7 June 2010).

18. Y. S. Kim,[d] D. Kim, K. J. Martin,[c] C. Yu, **J. C. Grunlan,**[a] "Influence of stabilizer concentration on transport behavior and thermopower of carbon nanotube filled latex-based composites," *Macromolecular Materials and Engineering* **2010**, *295*, 431.

19. Y. T. Park,[b] A. Ham,[c] **J. C. Grunlan,**[a] "Influence of carbon nanotube type on transparency and electrical conductivity of thin film assemblies," *Journal of Physical Chemistry C* **2010**, *114*, 6325.

20. K. C. Etika,[b] M. A. Cox,[c] **J. C. Grunlan,[a]** "Tailored dispersion of carbon nanotubes in water using pH-responsive polymers," *Polymer* **2010**, *51*, 1761.

21. D. Gamboa,[c] M. A. Priolo,[b] A. Ham,[c] **J. C. Grunlan,[a]** "Influence of rinsing and drying routines on growth of multilayer thin films using automated deposition system," *Review of Scientific Instruments* **2010**, *81*, 036103.

22. Y. T. Park,[b] **J. C. Grunlan,[a]** "Fast switching electrochromism from colloidal ITO in tungstate-based thin film assemblies," *Electrochimica Acta* **2010**, *55*, 3257.

23. Y. S. Kim,[d] D. Kim, K. Choi, **J. C. Grunlan,[a]** C. Yu, "Improved thermoelectric behavior of nanotube-filled polymer composites with poly(3,4-ethylenedioxythiophene) poly(styrene sulfonate)," *ACS Nano* **2010**, *4*, 513.

24. M. A. Priolo,[b] D. Gamboa,[c] **J. C. Grunlan,[a]** "Transparent clay-polymer nano brick wall assemblies with tailorable oxygen barrier," *ACS Applied Materials and Interfaces* **2010**, *2*, 312. This paper was featured in the Science and Technology Concentrates of *C&EN* (11 January 2010).

25. A. D. Adamczak,[b] A. A. Spriggs,[c] D. M. Fitch,[c] W. Awad, C. A. Wilkie, **J. C. Grunlan,[a]** "Thermal degradation of high temperature fluorinated polyimide and its carbon fiber composite," *Journal of Applied Polymer Science* **2010**, *115*, 2254.

26. Y. C. Li,[b] J. Schulz,[c] **J. C. Grunlan,[a]** "Polyelectrolyte-nanosilicate thin film assemblies: Influence of pH on growth, mechanical behavior and flammability," *ACS Applied Materials and Interfaces* **2009**, *1*, 2338.

27. K. C. Etika,[b] F. D. Jochum, P. Theato, **J. C. Grunlan,[a]** "Temperature controlled dispersion of carbon nanotubes in water with pyrene-functionalized poly(N-cyclopropylacrylamide)," *Journal of the American Chemical Society* **2009**, *131*, 13598.

28. M. D. Gawryla, L. Liu,[b] **J. C. Grunlan,[a]** D. A. Schiraldi, "pH tailoring electrical and mechanical behavior of polymer-clay-nanotube aerogels," *Macromolecular Rapid Communications* **2009**, *30*, 1669.

29. C. M. Dvoracek,[b] G. Sukhonosova,[c] M. J. Benedik, **J. C. Grunlan,[a]** "Antimicrobial behavior of polyelectrolyte-surfactant thin film assemblies," *Langmuir* **2009**, *25*, 10322.

30. K. C. Etika,[b] L. Liu,[b] L. A. Hess,[c] **J. C. Grunlan,[a]** "The influence of synergistic stabilization of carbon black and clay on the electrical and mechanical properties of epoxy composites," *Carbon* **2009**, *47*, 3128.

31. L. Liu,[b] K. C. Etika,[b] K. S. Liao, L. A. Hess,[c] D. E. Bergbreiter, **J. C. Grunlan,[a]** "Comparison of covalently and noncovalently functionalized carbon nanotubes in epoxy," *Macromolecular Rapid Communications* **2009**, *30*, 627.

32. C. Yu, Y. S. Kim,[d] D. Kim, **J. C. Grunlan,[a]** "Thermoelectric behavior of segregated-network polymer nanocomposites," *Nano Letters* **2008**, *8*, 4428.

33. S. M. Miriyala,[b] Y. S. Kim,[b] L. Liu,[b] **J. C. Grunlan,[a]** "Segregated networks of carbon black in poly(vinyl acetate) latex: Influence of clay on electrical and mechanical behavior," *Macromolecular Chemistry and Physics* **2008**, *209*, 2399.

34. T. J. Dawidczyk,[b] M. D. Walton,[c] W. S. Jang,[b] **J. C. Grunlan,[a]** "Layer-by-layer assembly of UV-resistant poly(3,4-ethylenedioxythiophene) thin films," *Langmuir* **2008**, *24*, 8314.

35. W. S. Jang,[b] I. Rawson,[c] **J. C. Grunlan,[a]** "Layer-by-layer assembly of thin film oxygen barrier," *Thin Solid Films* **2008**, *516*, 4819.

36. A. Almasri, Z. Ounaies, Y. S. Kim,[b] **J. C. Grunlan,** "Characterization of solution-processed double walled carbon nanotubes / polyvinylidene fluoride nanocomposites," *Macromolecular Materials and Engineering* **2008**, *293*, 123 (cover article).

37. Y. S. Kim,[b] J. B. Wright,[c] **J. C. Grunlan,[a]** "Influence of polymer modulus on the percolation threshold of latex-based composites," *Polymer* **2008**, *49*, 570.

38. **J. C. Grunlan,[a]** L. Liu,[b] O. Regev, "Weak polyelectrolyte control of carbon nanotube dispersion in water," *Journal of Colloid and Interface Science* **2008**, *317*, 346.

39. L. F. Francis, **J. C. Grunlan**, J. Sun, W. W. Gerberich, "Conductive coatings and composites from latex-based dispersions," *Colloids and Surfaces A* **2007**, *311*, 48.

40. M. D. Walton,[c] Y. S. Kim,[b] C. J. Jan,[b] E. P. McConnell,[c] W. N. Everett,[b] **J. C. Grunlan,[a]** "Deposition and patterning of carbon black thin films," *Synthetic Metals* **2007**, *157*, 632.

41. L. Liu,[b] **J. C. Grunlan**,[a] "Clay-assisted dispersion of carbon nanotubes in conductive epoxy nanocomposites," *Advanced Functional Materials* **2007**, *17*, 2343.

42. C. M. Stafford, **J. C. Grunlan**,[a] "Preface to Special Topic: Instruments and methods for combinatorial science and high-throughput screening," *Rev. Sci. Instr.* **2007**, *78*, Art. No. 072101. This is the guest editors' introduction to a special issue focused on instruments and methods for combinatorial science and high-throughput screening.

43. W. N. Everett,[b] C. J. Jan,[b] H. J. Sue, **J. C. Grunlan**,[a] "Micropatterning and impedance characterization of an electrically percolating layer-by-layer assembly," *Electroanalysis* **2007**, *19*, 964.

44. K. Tao, S. Yang, **J. C. Grunlan**, Y. S. Kim,[b] B. Dang, Y. Deng, R. L. Thomas, B. L. Wilson, X. Wei, "Effects of carbon nanotube fillers on the curing processes of epoxy resin-based composites," *J. Appl. Polym. Sci.* **2006**, *102*, 5248.

45. **J. C. Grunlan**,[a] Y. S. Kim,[b] S. Ziaee, X. Wei, B. Abdel-Magid, K. Tao, "Thermal and mechanical behavior of single-walled carbon nanotube-filled latex films," *Macromolecular Materials and Engineering* **2006**, *291*, 1035 (cover article).

46. Y. S. Kim,[b] K. S. Liao, C. J. Jan,[b] D. E. Bergbreiter, **J. C. Grunlan**,[a] "Conductive thin films on functionalized polyethylene particles," *Chemistry of Materials* **2006**, *18*, 2997.

47. **J. C. Grunlan**,[a] L. Liu,[b] Y. S. Kim,[b] "Reversible control of single-walled carbon nanotube microstructure using poly(acrylic acid)," *Nano Letters* **2006**, *6*, 911 (featured as news item in *Nature Materials*).

48. C. J. Jan,[b] M. D. Walton,[c] E. P. McConnell,[c] W. S. Jang,[b] Y. S. Kim,[b] **J. C. Grunlan**,[a] "Carbon black thin films with tunable resistance and optical transparency," *Carbon* **2006**, *44*, 1974.

49. W.-S. Jang,[b] **J. C. Grunlan**,[a] "Robotic dipping system for layer-by-layer assembly of multi-functional thin films," *Rev. Sci. Instr.* **2005**, *76*, Art. No. 103904.

50. **J. C. Grunlan**,[a] A. R. Mehrabi, R. A. Potyrailo, "Introduction: Combinatorial instruments and techniques," *Rev. Sci. Instr.* **2005**, *76*, Art. No. 062101. This is the guest editors' introduction to a special issue focused on combinatorial materials science.

51. **J. C. Grunlan**,[a] J. Choi,[c] A. Lin, "Antimicrobial behavior of polyelectrolyte multilayers containing cetrimide and silver," *Biomacromolecules* **2005**, *6*, 1149.

52. **J. C. Grunlan**,[a] A. R. Mehrabi, T. Ly, "High-throughput measurement of polymer film thickness using optical dyes," *Meas. Sci. Technol.* **2005**, *16*, 153.

53. **J. C. Grunlan**,[a] A. Grigorian,[c] C. B. Hamilton, A. R. Mehrabi, "Effect of clay concentration on oxygen permeability and optical properties of a modified poly(vinyl alcohol)," *J. Appl. Polym. Sci*. **2004**, *93*, 1102.

54. **J. C. Grunlan**,[a] A. R. Mehrabi, M. V. Bannon,[c] J. L. Bahr, "Water-based single-walled nanotube – filled polymer composite with exceptionally low percolation threshold," *Advanced Materials* **2004**, *16*, 150.

55. **J. C. Grunlan**, D. Holguin, A. Chavira, R. P. Quilatan, J. Akhave, A. R. Mehrabi, "Combinatorial Development of Pressure-Sensitive Adhesives," *Macromol. Rapid Comm.* **2004**, *25*, 286.

56. **J. C. Grunlan**,[a] A. R. Mehrabi, A. Chavira, A. B. Nugent,[c] D. L. Saunders, "Method for combinatorial screening of moisture vapor transmission rate," *J. Combi. Chem.* **2003**, *5*, 362.

57. W. W. Gerberich, N. I. Tymiak, **J. C. Grunlan**, M. F. Horstemeyer, M. I. Baskes, "Interpretations of indentation size effects," *J. Appl. Mech. – Trans. ASME* **2002** *69*, 433.

58. **J. C. Grunlan**, F. Bloom,[c] W. W. Gerberich, L. F. Francis, "Effect of dispersing aid on electrical and mechanical behavior of carbon black-filled latex," *J. Mater. Sci. Lett.* **2001**, *20*, 1523.

59. **J. C. Grunlan**, W. W. Gerberich, L. F. Francis, "Electrical and mechanical behavior of carbon black-filled poly(vinyl acetate) latex-based composites," *Polym. Eng. Sci.* **2001**, *41*, 1947.

60. **J. C. Grunlan**, X. Xia, D. Rowenhorst,[c] W. W. Gerberich, "Preparation of tungsten tips for nanoindenation and comparison with diamond on soft materials," *Rev. Sci. Instr.* **2001**, *72*, 2804.

61. **J. C. Grunlan**, Y. Ma, M. A. Grunlan, L.F. Francis, "Synthesis and characterization of monodisperse latex with variable T_g and particle size for use as matrix starting material for conductive polymer composites," *Polymer* **2001**, *42*, 6913.

62. **J. C. Grunlan**, W. W. Gerberich, L. F. Francis, "Lowering the percolation threshold of conductive composites using particulate polymer microstructure," *J. Appl. Polym. Sci.* **2001**, *80*, 692.

63. **J. C. Grunlan**, W. W. Gerberich, L. F. Francis, "Electrical and mechanical property transitions in carbon-filled poly(vinylpyrrolidone)," *J. Mater. Res.* **1999**, *14*, 4132.

64. B. D. Pennington, **J. C. Grunlan**, M. W. Urban, "Curing of epoxy phenol novolac powder coatings: effect of particle size on adhesion," *J. Coat. Technol.* **1999**, *71*, 135.

[a] Corresponding author. [b] Graduate student advised. [c] Undergraduate mentored. [d] Postdoc advised.

BOOK CHAPTER

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[a] Corresponding author. [b] Graduate student advised. [c] Undergraduate student mentored.
* Beginning in 2007 this list became selective rather than exhaustive.

PATENTS:

J. C. Grunlan "Flame retardant fabrics and foams," U.S. Provisional Filing [TAMUS-2719] (filed March 4, 2009).

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J. P. Coleman, I. J. Forster, S. W. Ferguson, **J. C. Grunlan**, A. W. Holman, P. Liu, "Transistor device and method of making," U. S. Patent 20040200061 A1 (filed April 11, 2003).

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SIGNIFICANT PRESENTATIONS:

2011

"Layer-by-layer assembly of polymer and clay: Gas barrier and flame retardant thin films," by **J. C. Grunlan**, presented at the 241st American Chemical Society National Meeting in Anaheim, CA on March 30, 2011 (*Invited Presentation*).

"Novel anti-flammable nanocoatings for textiles," by **J. C. Grunlan**, presented at the American Association of Textile Colorists and Chemists (AATCC) International Conference 2011 in Charleston, SC on March 23, 2011 (*Invited Presentation*).

"Gas barrier and anti-flammability of polymer-clay nano brick walls," by **J. C. Grunlan**, presented at the International LbL Symposium 2011 in Strasbourg, France on March 12, 2011 (*Invited Presentation*).

"High electrical conductivity and thermoelectric performance in segregated network polymer nanocomposites," by **J. C. Grunlan**, presented at SPE Polymer Nanocomposites 2011, Lehigh University, in Bethlehem, PA on March 9, 2011 (*Invited Keynote Lecture*).

"Layer-by-layer assembly of transparent thin films on polymeric substrates for gas barrier, fire resistance and electrical conductivity," by **J. C. Grunlan**, presented at the 3M Corporation's Tech Forum in St. Paul, MN on March 3, 2011 (*Invited Presentation*).

"Thick and thin film polymer-CNT nanocomposites for thermoelectric energy conversion and transparent electrodes," by **J. C. Grunlan**, presented to the Department of Mechanical Engineering, University of Houston, Houston, TX on January 27, 2011 (*Invited Presentation*).

2010

"Tailoring nanocomposite properties using stimuli-responsive polymers," by **J. C. Grunlan** and K. C. Etika, presented at the Materials Research Society Fall Meeting 2010 in Boston, MA on November 29, 2010 (*Invited Presentation*).

"Transparent nanocomposite oxygen barrier coating for polymer films," by **J. C. Grunlan**, presented at the European Coatings Conference on Packaging Coatings, in Berlin, Germany on October 13, 2010 (*Invited Presentation*).

"Layer-by-layer assembly of multifunctional thin films for gas barrier, fire resistance and other types of environmental protection," by **J. C. Grunlan**, presented to the Department of Chemistry, University of Texas – Pan American, Edinburg, TX on October 7, 2010 (*Invited Presentation*).

"Thick and thin film polymer-CNT nanocomposites for thermoelectric energy conversion and transparent electrodes," by **J. C. Grunlan**, presented to the Department of Mechanical Engineering and Nanotechnology Graduate Program, Stevens Institute of Technology, Hoboken, NJ on September 29, 2010 (*Invited Presentation*).

"Anti-flammable thin film assemblies on cotton fabric," by **J. C. Grunlan**, presented at the Southern Textile Research Conference 2010 in Myrtle Beach, SC on September 20, 2010 (*Invited Presentation*).

"Thermoelectric polymer nanocomposites," by **J. C. Grunlan**, presented at the 240th American Chemical Society National Meeting in Boston, MA on August 22, 2010 (*Invited Presentation*).

"Layer-by-layer assembly of multifunctional nanocomposites," by **J. C. Grunlan**, presented to Politecnico di Torino, Alessandria, Italy on July 6, 2010 (*Invited Presentation*).

"Layer-by-Layer Assembly of Nanocomposite Thin Films," by **J. C. Grunlan**, presented to the Max Planck Institute for Polymer Research, Mainz, Germany on June 7, 2010 (*Invited Presentation*).

"Clay-polymer thin films for imparting flame retardant behavior to foam and textiles," by **J. C. Grunlan**, presented at the European Coatings Conference on Fire Retardant Coatings IV, in Berlin, Germany on June 3, 2010 (*Invited Presentation*).

"Nanocomposite gas barrier thin films on PET," by **J. C. Grunlan**, presented at the Pressure Sensitive Tape Council Week of Learning, in Las Vegas, NV on May 13, 2010 (*Invited Presentation*).

"Layer-by-layer assembly of multifunctional thin films for flame suppression, gas barrier, and other types of environmental protection," by **J. C. Grunlan**, presented to the Department of Fiber Science & Apparel Design, Cornell University, Ithaca, NY on March 12, 2010 (*Invited Presentation*).

"Stimuli-responsive dispersion of carbon nanotubes in water and highly conductive segregated network composites for energy harvesting," by **J. C. Grunlan**, presented at the Gordon Research Conference on Composites in Ventura, CA on January 19, 2010 (*Invited Presentation*).

2009

"Layer-by-layer assembly of multifunctional thin films," by **J. C. Grunlan**, presented at Kimberly-Clark Corporation in Roswell, GA on November 6, 2009 (*Invited Presentation*).

"Layer-by-layer assembly of multifunctional thin films," by **J. C. Grunlan**, presented to the Department of Chemistry and Biochemistry, Texas State University, San Marcos, TX on November 2, 2009 (*Invited Presentation*).

"Flame resistance via 3-D composite coatings," by **J. C. Grunlan**, presented at International Nonwovens Technical Conference 2009, Denver, CO on September 23, 2009 (*Invited Presentation*).

"Multifunctional polymer nanocomposites for energy conversion, gas barrier and anti-flammability," by **J. C. Grunlan**, presented at The Dow Chemical Company (formerly Rohm and Haas) in Spring House, PA on July 23, 2009 (*Acceptance of Dow 2009 Young Faculty Award*).

"Anti-flammable and foil replacement technologies based upon clay-containing thin films: Efforts to obtain sponsorship and/or partnerships for commercial development," presented at the 46th Annual Meeting of The Clay Minerals Society, in Billings, MT on June 8, 2009 (*Invited Presentation*).

"Layer-by-layer assembly of multifunctional thin films," by **J. C. Grunlan**, presented at NSTI Nanotech 2009 in Houston, TX on May 6, 2009 (*Keynote Presentation*).

"Tailoring carbon nanotube microstructure through noncovalent interactions," by **J. C. Grunlan**, presented at the 237th American Chemical Society National Meeting in Salt Lake City, UT on March 23, 2009 (*Invited Presentation*).

"Layer-by-layer assembly of flame retardant coating for foam and fabric," by **J. C. Grunlan**, presented at the NIST Barrier Fabric Workshop in Gaithersburg, MD on March 19, 2009 (*Invited Presentation*).

2008

"Layer-by-layer assembly of multifunctional thin films," by **J. C. Grunlan**, presented to the Department of Chemistry, Marquette University, in Milwaukee, WI on September 26, 2008 (*Invited Presentation*).

"Layer-by-layer assembly of multifunctional thin films," by **J. C. Grunlan**, presented to the Department of Chemistry, University of Texas at Dallas, in Richardson, TX on September 19, 2008 (*Invited Presentation*).

"Multifunctionality of clay-based thin films prepared via layer-by-layer assembly," by **J. C. Grunlan**, presented at the 235th American Chemical Society National Meeting in New Orleans, LA on April 8, 2008 (*Invited Presentation*).

"Layer-by-layer assembly of nano brick walls: Tailoring film growth and oxygen barrier," by **J. C. Grunlan**, presented at SPE Polymer Nanocomposites 2008, Lehigh University, in Bethlehem, PA on March 4, 2008 (*Invited Keynote Lecture*).

"Layer-by-layer assembly of multifunctional nanocomposite coatings," by **J. C. Grunlan**, presented at Smart Coatings 2008, in Orlando, FL on February 27, 2008 (*Invited Seminar*).

2007

"Multifunctional polymer nanocomposites," by **J. C. Grunlan**, presented to the Department of Polymer Science and Engineering, Univ. Mass. Amherst, in Amherst, MA on September 14, 2007 (*Invited Presentation*).

"Layer-by-layer assembly of thin multifunctional coatings," by **J. C. Grunlan**, presented at the 234th American Chemical Society National Meeting in Boston, MA on August 20, 2007 (*Invited Presentation*). This was the Tess Award Symposium in honor of L. E. "Skip" Scriven.

Grunlan, J. C., "Carbon-filled polymer nanocomposites," Centro de Investigacion en Quimica Aplicada (CIQA), in Saltillo, Mexico on August 10, 2007 (*Invited Presentation*).

"Electrical and mechanical behavior of epoxy containing carbon nanotubes and clay," by **J. C. Grunlan**, presented at the ASME Applied Mechanics and Materials Conference in Austin, TX on June 7, 2007.

"Layer-by-layer assembly of thin nanocomposite oxygen barrier," by **J. C. Grunlan** and W. S. Jang, presented at the Materials Research Society Spring Meeting 2007 in San Francisco, CA on April 11, 2007.

"Layer-by-layer assembly of multifunctional thin films," by **J. C. Grunlan**, presented at SPE Polymer Nanocomposites 2007, Lehigh University, in Bethlehem, PA on March 7, 2007 (*Invited Presentation*).

2006

"Deposition and patterning of conductive carbon black thin films," by **J. C. Grunlan**, M. Walton, Y. Kim, W. N. Everett, C. J. Jan, and W. S. Jang, presented at the Materials Research Society Spring Meeting 2006 in San Francisco, CA on April 10, 2007.

"Tailoring dispersion and microstructure of carbon nanotubes using weak polyelectrolytes," by **J. C. Grunlan**, presented at the Materials Research Society Fall Meeting 2006 in Boston, MA on November 27, 2006.

"Tailoring the behavior of conductive polymer nanocomposites using non-covalent interactions," by **J. C. Grunlan**, presented as the Grain Processing Corporation Distinguished Lecturer for the Department of Chemical Engineering, Michigan Tech. Univ., in Houghton, MI on October 27, 2006 (*Invited Presentation*).

"Layer-by-layer assembly of nanocomposite oxygen barrier," by **J. C. Grunlan**, presented at the 232nd American Chemical Society National Meeting in San Francisco, CA on September 13, 2006.

"Thin film assemblies of carbon black with tunable transparency and electrical conductivity," by **J. C. Grunlan**, J. Jan, M. Walton, E. McConnell, and W. S. Jang, presented at the Materials Research Society Spring Meeting 2006 in San Francisco, CA on April 20, 2006.

"Reversible control of carbon nanotube microstructure using poly(acrylic acid)," by **J. C. Grunlan**, L. Liu, and Y. S. Kim, presented at the Materials Research Society Spring Meeting 2006 in San Francisco, CA on April 19, 2006.

"Multifunctional nanocomposite thin films," by **J. C. Grunlan**, presented to the School of Polymers & High Performance Materials, University of Southern Mississippi, in Hattiesburg, MS on February 8, 2006 (*Invited Presentation*).

2005

"High-throughput preparation and screening of polymeric coatings," by **J. C. Grunlan**, presented at the 2005 Materials Research Society Fall Meeting in Boston, MA on November 29, 2005 (*Invited Presentation*).

"Functional multilayer thin films prepared using layer-by-layer assembly," by **J. C. Grunlan**, presented at the 229th American Chemical Society National Meeting, in San Diego, CA on March 17, 2005 (*Invited Presentation*).