

# Jaime C. Grunlan

J. Mike Walker '66 Department of Mechanical Engineering, Texas A&M University, College Station, TX 77843-3123; (979) 845-3027 phone; (979) 845-3081 fax; [jgrunlan@tamu.edu](mailto:jgrunlan@tamu.edu)

## EDUCATION:

- June 2001 UNIVERSITY OF MINNESOTA Minneapolis, MN  
PhD in Materials Science and Engineering w/ Chemistry minor
- May 1997 NORTH DAKOTA STATE UNIVERSITY Fargo, ND  
B.S. in Chemistry w/ Polymers & Coatings Option

## PROFESSIONAL POSITIONS:

- September 2020 to present TEXAS A&M UNIVERSITY, College Station, TX  
*Leland T. Jordan '29 Chair Professor*  
Studying polymer nanocomposites and nanocoatings for energy, dielectric breakdown strength, packaging, anti-corrosion, optical and flame retardant applications. Teaching undergraduate and graduate courses in materials science and polymers.
  - Joint appointment in Chemistry and Materials Science & Engineering.
- July 2015 to August 2020 TEXAS A&M UNIVERSITY, College Station, TX  
*Linda & Ralph Schmidt '68 Professor*  
Studying polymer nanocomposites for energy, electronic, packaging, purification, optical and flame retardant applications. Teaching undergraduate and graduate courses in materials science and polymers.
  - Joint appointment in Chemistry and Materials Science & Engineering.
- September 2014 to June 2015 TEXAS A&M UNIVERSITY, College Station, TX  
*Professor*  
Studying polymer nanocomposites for energy, electronic, packaging, purification, optical and flame retardant applications. Teaching undergraduate and graduate courses in materials science and polymers.
  - Joint appointment in Materials Science & Engineering.
- September 2010 to August 2014 TEXAS A&M UNIVERSITY, College Station, TX  
*Associate Professor and Gulf Oil/Thomas Dietz Development Professor I*
  - Appointments in Mechanical Engineering, Chemical Engineering and Materials Science & Engineering.
  - Tenure received in September 2010.
- September 2012 to November 2015 UNIVERSITY OF EXETER, Exeter, UK  
*Honorary Visiting Professor*
- July 2004 to August 2010 TEXAS A&M UNIVERSITY, College Station, TX  
*Assistant Professor*
  - Guest edited special issues of *Review of Scientific Instruments*.
  - Won NSF CAREER, 3M and Dow Young Faculty awards.
- 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.

August 2002 to  
December 2003

AZUSA PACIFIC UNIVERSITY, Azusa, CA  
*Adjunct Professor*  
Taught Physical Science and Introduction to Materials Science.

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 GRADUATE STUDENTS:**

1. Maya Montemayor (PhD **2026**) – *Polyelectrolyte-Based Adhesives*
2. Sarah Fisher (PhD **2026**) – *High Performance Insulation Films*
3. Dallin Smith (PhD **2025**) – *Flame Retardant Nanocoatings*
4. Danixa Rodriguez Melendez (PhD **2025**) – *Flame Retardant Nanocoatings*
5. Ethan Iverson (PhD **2025**) – *Dielectric Protection and Gas Barrier Nanocoatings*
6. Natalie Vest (PhD **2024**) – *Flame Retardant Nanocoatings*
7. Bethany Palen (PhD **2023**) – *Flame Retardant Nanocoatings*

#### **GRADUATED STUDENTS:**

##### ***PhD (Major Subject Graduation Year)***

1. Hsu-Cheng Chiang (Chemistry **2022**) – *High Gas Barrier Polyelectrolyte Complex Thin Films* [Senior Application Engineer at ASML]
2. Carolyn Long (Mechanical Engineering **2021**) – *Corrosion and Thermal Protection of Metals with Thin Films* [Postdoc at Los Alamos National Laboratory]
3. Thomas Kolibaba (Chemistry **2021**) – *Polyelectrolyte Complexes for Fire Protection of Materials* [NRC Postdoctoral Fellow at NIST]
4. Daniel Stevens (Chemistry **2020**) – *Improving the Thermoelectric Performance of Polymer Nanocomposite Thin Films* [Technical Manager at Element Materials Technology]
5. Simone Lazar (Chemistry **2020**) – *Flame Retardant / Thermal Protection Nanocoatings: Meeting Industrial Challenges of Layer-by-Layer Assembly* [Senior Chemist at The Dow Chemical Company]
6. Shuang Qin (Materials Science and Engineering **2019**) – *Polymer Nanocomposite Protective Coatings Deposited Using Layer-by-Layer Assembly* [Consultant at Boston Consulting Group]
7. Ryan Smith (Chemistry **2018**) – *Development of Polyelectrolyte Complex Thin Films for Polymer Surface Functionalization* [Process Engineer at Intel Corporation]

8. Yixuan Song (Materials Science and Engineering **2018**) – *Processing and Functionality Improvements of Layer-by-Layer Assembled Multilayer Super Gas Barrier Nanocoatings* [Associate TS&D Scientist at The Dow Chemical Company]
9. Merid Haile (Materials Science and Engineering **2016**) – *Functional Nanocoatings Fabricated from Aqueous Polymer Complexes* [Materials Scientist at MORSE Corp.]
10. Kevin Holder (Materials Science and Engineering **2016**) – *Flame Retardant Nanocoatings for the Protection of Polyurethane Foam* [Chief of Staff – EssentiumX and Sr. Director of Technical Programs at Essentium]
11. Tyler Guin (Chemical Engineering **2015**) – *Improving Layer-by-Layer Assembly for Superior Flame Retardant and Gas Barrier Thin Films* [Senior Research Engineer at Savannah River National Laboratory]
12. Bart Stevens (Mechanical Engineering **2015**) – *Layer-by-Layer Assembly of Thin Platelet-Polymer Conductive Barrier Films* [Materials and Process Engineer/Scientist at Boeing]
13. Fangming Xiang (Mechanical Engineering **2015**) – *Improvements in Processing and Stretchability of Super Gas Barrier Multilayer Thin Films* [Materials Engineering Researcher at the National Energy Technology Laboratory (NETL)]
14. Ping Tzeng (Chemical Engineering **2015**) – *Gas Barrier and Separation Behavior of Layer-by-Layer Assemblies* [Staff Associate Investigator at DuPont]
15. David Hagen (Mechanical Engineering **2015**) – *Process Improvements for Gas Barrier Thin Films Deposited via Layer-by-Layer Assembly* [TS&D Engineer at Kuraray]
16. Amanda Cain (Materials Science and Engineering **2014**) – *Environmentally-Benign Flame Retardant Nanocoatings for Foam and Fabric* [Research Engineer at Huntsman]
17. Gregory Moriarty (Materials Science and Engineering **2013**) – *Tailoring the Thermoelectric Behavior of Electrically Conductive Polymer Composites* [Senior Manufacturing Technical Specialist at Amazon Lab126]
18. Galina Laufer (Mechanical Engineering **2012**) – *Layer-by-Layer Nanocoatings with Flame Retardant and Oxygen Barrier Properties: Moving Toward Renewable Systems* [Senior Manager at Bristol-Myers Squibb]
19. You-Hao Yang (Chemical Engineering **2012**) – *Processing and Gas Barrier Behavior of Multilayer Thin Nanocomposite Films* [Senior Product Development Engineer at Celanese]
20. Morgan Priolo (Materials Science and Engineering **2012**) – *Gas Permeability of Nanostructured Thin Films Using Layer-by-Layer Assembly* [Senior Research Engineer at 3M]
21. Yu-Chin Li (Materials Science and Engineering **2011**) – *Environmentally Benign Flame Retardant Nanocoatings for Fabric* [Technical Services Manager at Clariant]
22. Yong Tae Park (Mechanical Engineering **2011**) – *Transparent and Conductive Carbon Nanotube Multilayer Thin Films Suitable as an Indium Tin Oxide Replacement* [Assistant Professor of Mechanical Engineering at Myongji University, Seoul, South Korea]

23. Krishna Chaitanya Etika (Materials Science and Engineering **2010**) – *Stimuli-Tailored Dispersion State of Aqueous Carbon Nanotube Suspensions and Solid Polymer Nanocomposites* [Assistant Professor in the Chemical Department at the Birla Institute of Technology & Science (BITS), Pilani, India]
24. Andrea Adamczak (Materials Science and Engineering **2010**) – *High Temperature Materials for Aerospace Applications* [Principal Multi-Disciplined Engineer at Raytheon]
25. Lei Liu (Materials Science and Engineering **2009**) – *Structure Property Relationships in Carbon Nanotube-Polymer Systems: Influence of Non-Covalent Stabilization Techniques* [Senior Manager at E Ink Corporation]
26. Woo-Sik Jang (Mechanical Engineering **2008**) – *Layer-by-Layer Assembly of Clay-Filled Polymer Nanocomposite Thin Films* [Polymer Scientist at Zeon Chemicals]
27. Yeon Seok Kim (Mechanical Engineering **2007**) – *Electrically Conductive Polymer Nanocomposites with Segregated Network Microstructures* [General Engineer at U.S. Consumer Product Safety Commission]

**M.S. (Major Subject Graduation Year)**

1. Zachary Levin (Mechanical Engineering **2011**) – *Polymer Nanocomposite Strain Sensors* [pursuing PhD in Mechanical Engineering at Texas A&M]
2. Charlene Dvoracek (Mechanical Engineering **2009**) – *Antimicrobial Activity of Cationic Antiseptics in Layer-by-Layer Thin Film Assemblies* [Director of Strategy & Business Development at Bioventus]
3. Thomas Dawidczyk (Mechanical Engineering **2008**) – *Layer-by-Layer Assembly of Poly(3,4-ethylenedioxy-thiophene) Thin Films: Tailoring Growth and UV-Protection* [Product Manager at Johnson & Johnson]
4. Sethu Madhukar (Mechanical Engineering **2007**) – *Electrical and Mechanical Behavior of Segregated Networks of Carbon Black and Clay* [Deep Sea Engineering]
5. C. Jason Jan (Mechanical Engineering **2006**) – *Thin Film Carbon Black Composites with Tunable Transparency and Electrical Conductivity* [Director, Business Value Services at Oracle]

**POSTDOCTORAL ASSOCIATES:**

1. Dr. Abbas Fahami (**2017 – 2018**) – Scientist at Eurofine Scientific
2. Dr. Chaowei Feng (**2015 - 2016**) – Scientist at Formosa Plastics Group
3. Dr. Chaoqun Zhang (**2015 - 2016**) – Assistant Professor in College of Materials and Energy, South China Agricultural University, Guangzhou, China
4. Dr. Chungyeon Cho (**2013 - 2017**) – Assistant Professor at Wonkwang University, Korea
5. Dr. Marcus Leistner (**2013 - 2015**) – Product Development Specialist at ALBIS Plastic GmbH

6. Dr. Debabrata Patra (2013 - 2014) – Associate Professor at Institute of Nano Science and Technology, Mohali, India
7. Dr. Yeon Seok Kim (2008 - 2009) – Engineer at U.S. Consumer Product Safety Commission

**AWARDS:**

- Fellow, International Association of Advanced Materials (2021)
- Leland T. Jordan '29 Chair (2020 – Present)
- Senior Member, National Academy of Inventors (2019)
- Australia Research Giant (2019)
- Doctor honoris causa, University of South Brittany, France (2018)
- ASME Fellow (2018)
- Texas A&M Engineering Experiment Station Senior Faculty Fellow (2016)
- Linda & Ralph Schmidt '68 Professorship (2015 – 2020)
- Dean of Engineering Excellence Award (2015)
- Evonik Industries' ECRP (2014), 1<sup>st</sup> Place Prize
- Texas A&M Engineering Experiment Station Faculty Fellow (2014)
- E. D. Brockett Professorship (2013)
- 2012 L.E. Scriven Young Investigator Award (sponsored by ISCST)
- Gulf Oil/Thomas A. Dietz Development Professor I (2011 – 2014)
- 2010 Carl Dahlquist Award (sponsored by PSTC)
- Dow 2009 Young Faculty Award (2009)
- NSF CAREER (2007 – 2012)
- 3M Untenured Faculty Grant (2007 – 2010)
- Texas Engineering Experiment Station Select Young Faculty (2007)
- Charles & Dorothy Byrd Award for Outstanding Thesis Research (2001)
- Doctoral Dissertation Fellowship (2000 – 2001)
- Kodak Fellow (1997 – 2000)
- NDSU Varsity Football – Full Scholarship (1992 – 1994)

**SOCIETY MEMBERSHIPS:**

- American Chemical Society [ACS] (1996 – present)
- American Society for Engineering Education [ASEE] (2005 – present)
- American Society of Mechanical Engineers [ASME] (2006 – present)
- National Academy of Inventors [NAI] (2019 – present)

**EXTERNAL PROFESSIONAL ACTIVITIES:**

*4<sup>th</sup> Asia-Oceania Symposium for Fire Safety Materials Science and Engineering (AOFSM'3):*  
International Scientific Committee (2020-23)

*3<sup>rd</sup> Asia-Oceania Symposium for Fire Safety Materials Science and Engineering (AOFSM'3):*  
International Scientific Committee (2018-19)

*International Symposium on Flame-Retardant Materials & Technologies (ISFRMT):* 5<sup>th</sup>  
Symposium International Scientific Committee (2017-18) [ISFRMT 2018]; 6<sup>th</sup> Symposium  
International Scientific Committee (2019-20) [ISFRMT 2020]; 7<sup>th</sup> Symposium International  
Scientific Committee (2021-22) [ISFRMT 2022]

*European Meeting on Fire Retardant Polymers and Materials (FRPM):* 16<sup>th</sup> Meeting  
International Scientific Committee (2016-17) [FRPM 2017]; 17<sup>th</sup> Meeting International Scientific  
Committee (2018-19) [FRPM 2019]; 18<sup>th</sup> Meeting International Scientific Committee (2020-21)  
[FRPM 2021]; 19<sup>th</sup> Meeting International Scientific Committee (2022-23) [FRPM 2023]

*Polymer Chemistry (POLY) Division of the American Chemical Society (ACS):* Lead Organizer for Electrical, Thermal and Mass Transport in Polymer Nanocomposites and Alloys symposium (March 2015); Organizer for Layered Polymeric Materials workshop held in Asilomar, CA (February 2017); Organizer for Polymers and Nanotechnology workshop held in San Diego, CA (December 2017); Lead Organizer for Layered Polymeric Materials workshop held in Windsor, CA (February 2020); Lead Organizer for Fire and Polymers workshop held in Napa, CA (June 2022); Organizer for Polymers and Nanotechnology workshop held in Napa, CA (October 2022).

*Polymeric Materials: Science and Engineering (PMSE) Division of the American Chemical Society (ACS):* PMSE Fellows Program Administrator (2008 – 2012); Lead Organizer for Frontiers in Polymer Science and Engineering: A Symposium Celebrating the PMSE Fellows Program (March 2012); Member-at-large (2015 – present); Lead Organizer for Fire & Polymers VII symposium to be held in San Francisco, CA (scheduled for August 2020, but canceled for COVID).

*Materials Research Society (MRS):* Lead Organizer for MRS Symposium R – Transport Behavior in Heterogeneous Polymeric Materials and Composites (Spring 2007); Lead Organizer for MRS Symposium KK – Transport Properties in Polymer Nanocomposites (Fall 2008); Lead Organizer for MRS Symposium DD – Transport Properties in Polymer Nanocomposites II (Fall 2011)

*National Science Foundation (NSF):* CMMI NanoManufacturing Panels (2006; 2008); Site Visitor for Center for Hierarchical Manufacturing (CHM) at UMass – Amherst (2012); External Advisory Board Member for University of Texas – El Paso’s Partnership for Research in Engineering and Materials (PREM) (2016 – present)

#### **JOURNAL EDITORIAL ACTIVITIES:**

Associate Editor, *npj Materials Degradation* (Springer Nature) **2021 – present**

Editorial Board, *Textiles* (MDPI) **2021 - present**

Editorial Board, *Polymers* [Polymer Composites and Nanocomposites Section] (MDPI) **2020 - present**

Editorial Advisory Board, *Polymer Composites* (Wiley) **2020 – present**

Editorial Advisory Board, *Polymer Engineering and Science* (SPE) **2020 – present**

Editorial Board, *Composites Communications* (Elsevier) **2019 – present**

Editorial Board, *npj Materials Degradation* (Springer Nature) **2018 – 2021**

International Advisory Board, *Macromolecular Rapid Communications* (Wiley) **2015 – present**

International Advisory Board, *Macromolecular Materials and Eng.* (Wiley) **2015 – present**

Editor, *Journal of Materials Science* (Springer Nature) **2014 – present**

Editorial Board, *Nanocomposites* (Maney) **2014 – present**

Associate Editor, *Green Materials* (ICE Science) **2011 – present**

Editorial Board, *Journal of Nanotechnology* **2009 – 2011**

**RESEARCH FUNDING (> \$10,000,000 individual expenditure):**

1. *Durable Flame Retardant and Thermal Shielding Coatings for Textiles*. Textile Company (Confidential), **J. C. Grunlan** (PI). Dates: 3/1/2022 – 2/28/2023. Dollar Value: \$111,821.
2. *Wash Durable, Environmentally-Benign, Flame Retardant Cotton Fabric with Soft Hand*. Cotton, Inc., **J. C. Grunlan** (PI). Dates: 1/1/2022 – 12/31/2022. Dollar Value: \$36,020.
3. *Nanocoatings For Multi-Protective Textiles Used For Military Clothing*. North Atlantic Treaty Organization (NATO), **J. C. Grunlan** (PI). Dates: 11/1/2021 – 10/31/2024. Dollar Value: €355,000. Prof. Grunlan's part of this project, with Prof. Igor Jordanov (co-PI from North Macedonia) and Prof. Maja Radetic (co-PI from Serbia), is €115,000.
4. *Phase I SBIR: Flame Retardant Textile Treatments for Crew Clothing*. GINER, Inc., **J. C. Grunlan** (co-PI). Dates: 5/19/2021 – 11/19/2021. Dollar Value: \$30,000. This is a sub-contract that is Prof. Grunlan's part of a larger effort sponsored by NASA.
5. *Effects of New Jet Fuel Exposure & Post-Crash Fire Forensic Analysis on Aerospace Composites*. Mississippi State University (sub-contract from Federal Aviation Administration [FAA] project), **J. C. Grunlan** (co-PI). Dates: 10/23/2020 – 10/22/2021. Dollar Value: \$152,999. Prof. Grunlan's part of this project, with Prof. Thomas Lacy (PI), is \$74,999.
6. *F-500 Fire Suppressant/fixative Evaluation*. Consolidated Nuclear Security, LLC (DoE contractor), **J. C. Grunlan** (PI). Dates: 4/1/2021 – 9/30/2022. Dollar Value: \$300,000. Prof. Grunlan's part of this project, with Prof. Maria King (co-PI), is \$197,436.
7. *Multi-Physical Co-Design of Next Generation Axial Motors for Aerospace Applications*. DoE – ARPA-E ASCEND (Cooperative Agreement M2002133), **J. C. Grunlan** (co-PI). Dates: 2/8/2021 – 8/7/2024. Dollar Value: ~\$3,500,000. Prof. Grunlan's part of this project, with Prof. Hamid Toliyat (PI) and seven other co-PIs, is ~\$270,000.
8. *High Voltage and Thermal Protection from Nanobrick Wall Thin Films*. DoD – Army – Army Research Office (Cooperative Agreement M2002133), **J. C. Grunlan** (PI). Dates: 5/8/2020 – 5/7/2021. Dollar Value: \$100,000.
9. *Recyclable Gas Barrier Coating*. Packaging Company (Confidential), **J. C. Grunlan** (PI). Dates: 3/24/2020 – 3/23/2022. Dollar Value: \$225,027.
10. *Development of High Performance Thermoelectric Thin Films*. Device Company (Confidential), **J. C. Grunlan** (PI). Dates: 8/1/2019 – 1/31/2020. Dollar Value: \$51,732.
11. *REU Site: Sustainable Chemistry at Texas A&M University*. National Science Foundation, **J. C. Grunlan** (co-I). Dates: 4/1/2019 – 3/31/2023. Dollar Value: \$322,957. This REU site is led by Dr. Holly Gaede (PI) and Prof. Sarbajit Banerjee (co-PI), along with five co-investigators (co-I) and two collaborators.
12. *Development of Thermally Resistant and Flame Retardant Packaging*. Packaging Company (Confidential), **J. C. Grunlan** (co-PI). Dates: 4/1/2019 – 3/31/2023. Dollar Value: \$450,140.

13. *Development of Graphene Oxide/Polymer Nanocoating for Desalination*. Membrane Company (Confidential), **J. C. Grunlan** (co-PI). Dates: 12/12/2018 – 12/11/2019. Dollar Value: \$101,126. [Prof. Grunlan's part of this project with Prof. Micah Green \(PI\) is approximately 60% of the amount shown.](#)
14. *Planning Grant: Engineering Research Center for Soft Energy and Power*. National Science Foundation, **J. C. Grunlan** (co-PI). Dates: 9/15/2018 – 8/31/2019. Dollar Value: \$100,000. [Prof. Jodie Lutkenhaus \(PI\) is leading a team of five faculty seeking to create a proposal for an NSF Engineering Research Center \(ERC\). Prof. Grunlan's contribution to this award is valued at 10%.](#)
15. *Development of Gas Barrier Coating System for Flexible Packaging*. Chemical Company (Confidential), **J. C. Grunlan** (PI). Dates: 9/1/2018 – 8/31/2021. Dollar Value: \$275,141.
16. *Development of Gas/Moisture Barrier and Flame Retardant Nanocoatings....* Building Materials Company (Confidential), **J. C. Grunlan** (PI). Dates: 8/1/2018 – 7/31/2019. Dollar Value: \$113,621.
17. *Layer-by-Layer Functional Thin Film Coatings for Enhanced Light Gas Separations*. DoE-NETL University Coalition for Fossil Energy Research (UCFER) Program, **J. C. Grunlan** (co-PI). Dates: 11/1/2017 – 1/31/2019. Dollar Value: \$238,869. [Prof. Grunlan's part of this project with Prof. Benjamin Wilhite \(PI\) is approximately half of the amount shown.](#)
18. *Anticorrosion Coatings*. NTESS, LLC - National Technology & Engineering Solutions of Sandia (contractor for Sandia National Laboratories), **J. C. Grunlan** (PI). Dates: 10/9/2017 – 9/30/2019. Dollar Value: \$191,568.
19. *Thermal Ablative Shielding of Rocket Motor Components*. Engineering Research and Consulting, Inc. (contractor for AFRL), **J. C. Grunlan** (PI). Dates: 9/30/2017 – 9/30/2018. Dollar Value: \$64,996.
20. *Development of Thermally Protective Nanocoating*. Chemical Company (Confidential), **J. C. Grunlan** (PI). Dates: 5/18/2017 – 5/17/2018. Dollar Value: \$205,769.
21. *Development of Diffusion Barrier Nanocoating*. Sporting Goods Producer (Confidential), **J. C. Grunlan** (PI). Dates: 8/16/2016 – 3/13/2018. Dollar Value: \$180,271.
22. *Development of Stretchable Gas/Moisture Barrier Nanocoating*. Israel Ministry of Defense, **J. C. Grunlan** (co-PI). Dates: 8/5/2016 – 6/30/2018. Dollar Value: \$100,000. [This is Prof. Grunlan's part of a larger project with Prof. Oren Regev \(PI\) at Ben Gurion University.](#)
23. *Phase II SBIR: iThermal Barrier Enhancement of Fire Suppression Agents through Intumescent Nanocomposite Additions*. Lynntech, Inc., **J. C. Grunlan** (co-PI). Dates: 7/11/2016 – 4/11/2018. Dollar Value: \$90,000. [This is a sub-contract that is Prof. Grunlan's part of a larger effort sponsored by the U.S. Air Force Office of Scientific Research.](#)
24. *Functional NanoComposite Coatings for Flexible Packaging*. Converter (Confidential), **J. C. Grunlan** (PI). Dates: 1/1/2016 – 12/31/2016. Dollar Value: \$125,000.
25. *Gas Separation Membrane Evaluation*. Global Company (Confidential), **J. C. Grunlan** (co-PI). Dates: 6/1/2016 – 10/31/2016. Dollar Value: \$25,000. [These funds were split equally with Prof. Benjamin Wilhite \(PI\).](#)



26. *SBIR: iThermal Barrier Enhancement of Fire Suppression Agents through Intumescent Nanocomposite Additions*. Lynntech, Inc., **J. C. Grunlan** (co-PI). Dates: 6/1/2015 – 11/30/2015. Dollar Value: \$35,000. [This is a sub-contract that is part of a larger effort sponsored by the U.S. Air Force Office of Scientific Research.](#)
27. *Development of Conductive Nanocoatings to Promote RF Shielding*. Sporting Goods Producer (Confidential), **J. C. Grunlan** (PI). Dates: 6/1/2015 – 8/15/2016. Dollar Value: \$138,032. [Grunlan portion of award with J. Batteas \(co-PI\) is \\$119,198.](#)
28. *Thermal Protection of Composite Components*. Composite Raw Materials Producer (Confidential), **J. C. Grunlan** (PI). Dates: 5/16/2015 – 5/15/2017. Dollar Value: \$214,754.
29. *Development of Flame Retardant Treatment for Cellulosic Fibers/Fabric*. Flame Retardant Producer (Confidential), **J. C. Grunlan** (PI). Dates: 4/1/2015 – 9/30/2015. Dollar Value: \$65,000.
30. *Flame Retardant Nanocoatings for Aircraft Substrates*. Aircraft Manufacturer (Confidential), **J. C. Grunlan** (PI). Dates: 3/3/2015 – 8/1/2015. Dollar Value: \$42,480.
31. *Develop nanocomposite thin film barrier coatings to improve photovoltaic (PV) stability and reliability*. Sandia National Laboratory, **J. C. Grunlan** (PI). Dates: 12/11/2014 – 9/30/2017. Dollar Value: \$120,000.
32. *Development of Stretchable Gas Barrier Nanocoating*. Global Innovation Company (Confidential), **J. C. Grunlan** (PI). Dates: 12/1/2014 – 11/30/2015. Dollar Value: \$105,000.
33. *Layer-by-Layer Polymer Assemblies as Size-Selective Gas Separation Membranes*. National Science Foundation (CBET 1403686), **J. C. Grunlan** (co-PI). Dates: 9/15/2014 – 8/31/2017. Dollar Value: \$300,000. [Grunlan portion of award with B. Wilhite \(PI\) is \\$132,880.](#)
34. *Development of Stretchable Gas Barrier Nanocoating*. Inflatables Manufacturer (Confidential), **J. C. Grunlan** (PI). Dates: 7/1/2014 – 6/30/2015. Dollar Value: \$107,861.
35. *Development of Gas/Moisture Barrier Nanocoating for Flexible Packaging*. Consumer Products Company (Confidential), **J. C. Grunlan** (PI). Dates: 7/1/2014 – 12/31/2014. Dollar Value: \$67,000.
36. *Multifunctional Nanocoatings for Nylon-Based Carpet*. Carpet Maker (Confidential), **J. C. Grunlan** (PI). Dates: 4/1/2014 – 3/31/2016. Dollar Value: \$181,941.
37. *Controlled Structural Colour/Polarisation Using Cellulose Nanofibre Thin Films*. The Royal Society International Exchanges Scheme, **J. C. Grunlan** (co-PI). Dates: 3/1/2014 – 12/31/2014. Dollar Value: £5,900.
38. *Layer-by-Layer Coatings on Nylon/Cotton Fabrics*. University of Dayton Research Institute, **J. C. Grunlan** (PI). Dates: 3/1/2014 – 2/28/2015. Dollar Value: \$59,000. [This is Prof. Grunlan's portion of a sub-contract from a larger Army Natick project.](#)
39. *Gas Barrier Nanocoatings for Inflatable Aircraft*. Aircraft Manufacturer (Confidential), **J. C. Grunlan** (PI). Dates: 3/1/2014 – 8/31/2014. Dollar Value: \$52,547.
40. *Flame Retardant Nanocoatings for Aircraft Substrates*. Aircraft Manufacturer (Confidential), **J. C. Grunlan** (PI). Dates: 2/1/2014 – 11/20/2014. Dollar Value: \$115,993.

41. *Multifunctional Nanocoatings for Sporting Goods*. Sporting Goods Maker (Confidential), **J. C. Grunlan** (PI). Dates: 1/1/2014 – 6/30/2015. Dollar Value: \$244,769.
42. *Flame Retardant Nanocoatings for Nylon-Based Fabric*. Fiber Maker (Confidential), **J. C. Grunlan** (PI). Dates: 11/15/2013 – 11/14/2015. Dollar Value: \$259,899.
43. *Flame Retardant Nanocoatings for High Performance Fibers and Fabric*. Fabric Maker (Confidential), **J. C. Grunlan** (PI). Dates: 11/1/2013 – 10/31/2014. Dollar Value: \$98,146.
44. *Development of Gas Barrier Layer for Bottles and Rigid Packaging*. Drink Maker (Confidential), **J. C. Grunlan** (PI). Dates: 9/1/2013 – 8/31/2014. Dollar Value: \$125,080.
45. *Flame Retardant Nanocoatings for Aircraft Interior Substrates*. Interiors Maker (Confidential), **J. C. Grunlan** (PI). Dates: 5/1/2013 – 4/30/2015. Dollar Value: \$226,496.
46. *Development of Low Cost, High Gas Barrier Layer for Window Seal*. Window Maker (Confidential), **J. C. Grunlan** (PI). Dates: 5/1/2013 – 7/31/2013. Dollar Value: \$27,695.
47. *Flame Retardant Nanocoatings for Aircraft Substrates*. Aircraft Manufacturer (Confidential), **J. C. Grunlan** (PI). Dates: 4/1/2013 – 12/21/2013. Dollar Value: \$98,947.
48. *Multilayer Nanocoatings for Flame Retardant Cable*. Cable Maker (Confidential), **J. C. Grunlan** (PI). Dates: 4/1/2013 – 3/31/2014. Dollar Value: \$100,000.
49. *Thermoelectric Cooling and Waste Heat Recovery Using Polymer Nanocomposites*. U.S. Air Force Office of Scientific Research, **J. C. Grunlan** (co-PI). Dates: 03/15/2013 – 03/14/2017. Dollar Value: \$1,132,779. [Grunlan portion of award with C. Yu \(PI\) is \\$426,601.](#)
50. *Structure-Property Relationships in Natural Composites*. Natural Composites, Inc., **J. C. Grunlan** (PI). Dates: 1/1/2013 – 12/31/2013. Dollar Value: \$48,857.
51. *Flame Retardant Nanocoatings for Building Materials*. Building Materials Manufacturer (Confidential), **J. C. Grunlan** (PI). Dates: 1/1/2013 – 12/31/2014. Dollar Value: \$261,256.
52. *Development of Intumescent Multilayer Nanocoatings for Foam and Fabric Using Completely Renewable Molecules*. Chemtura Corporation, **J. C. Grunlan** (PI). Dates: 9/1/2012 – 8/31/2015. Dollar Value: \$318,039. [Grunlan portion of award with A. Morgan \(co-PI\) is \\$221,917.](#)
53. *Protection of Sporting Goods*. Sporting Goods Maker (Confidential), **J. C. Grunlan** (PI). Dates: 8/1/2012 – 1/31/2013. Dollar Value: \$51,068.
54. *Evaluation of Flame Retardant Nanotechnology on Aircraft Substrates*. Aircraft Manufacturer (Confidential), **J. C. Grunlan** (PI). Dates: 8/1/2012 – 12/21/2012. Dollar Value: \$83,129.
55. *Evaluation of Flame Retardant Nanotechnology in Bedding*. Bedding Manufacturer (Confidential), **J. C. Grunlan** (PI). Dates: 3/1/2012 – 2/28/2013. Dollar Value: \$102,039.
56. *High Barrier Polymer Development*. The Dow Chemical Company. **J. C. Grunlan** (PI). Dates: 10/1/2011 – 9/30/2013. Dollar Value: \$364,788.

57. *Flame Retardant and Damage-Resistant Nanocoatings for Fabric, Fibers and Fill from Environmentally Benign Materials*. USDOC – National Institute of Standards & Technology, **J. C. Grunlan** (PI). Dates: 9/1/2011 – 8/31/2014. Dollar Value: \$461,309.
58. *Thermoelectric Polymer Composites*. Company (Confidential), **J. C. Grunlan** (PI). Dates: 9/1/2011 – 8/31/2013. Dollar Value: \$201,935.
59. *Development of Fully Organic Thermoelectric Materials for Converting Waste Heat to Useful Energy*. II-VI Foundation, **J. C. Grunlan** (PI). Dates: 7/1/2011 – 6/30/2013. Dollar Value: \$191,250.
60. *Improvement of Tires*. Tire Maker (Confidential), **J. C. Grunlan** (PI). Dates: 5/1/2011 – 4/30/2015. Dollar Value: \$410,165.
61. *Transparent Nanocoatings for Gas and Moisture Barrier on Polymer Film*. Kuraray America, Inc., **J. C. Grunlan** (PI). Dates: 3/1/2011 – 2/28/2013. Dollar Value: \$203,324.
62. *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.
63. *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.](#)
64. *REU Site: Multifunctional Materials Systems*. National Science Foundation, **J. C. Grunlan** (co-PI). Dates: 06/04/10 – 06/03/12. Dollar Value: \$345,000.
65. *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.
66. *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.
67. *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.
68. *Nanocomposite Coatings*. Bayer Corporation. **J. C. Grunlan** (PI). Dates: 1/1/2009 – 12/31/2010. Dollar Value: \$176,690.
69. *Protective Coatings*. Baker Hughes. **J. C. Grunlan** (PI). Dates: 1/1/2009 – 12/31/2010. Dollar Value: \$180,772.
70. *Improvement of Sporting Goods*. Sporting Goods Maker (Confidential), **J. C. Grunlan** (PI). Dates: 1/1/2009 – 6/30/2011. Dollar Value: \$235,417.
71. *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.](#)
72. *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.

73. *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.
74. *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.
75. *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.
76. *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.](#)
77. *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.
78. *CAREER: Tailoring Nanoparticle Microstructure Using Stimuli-Responsive Polymers*. National Science Foundation, **J. C. Grunlan** (PI). Dates: 03/01/07 – 02/28/12. Dollar Value: \$430,000.
79. *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.
80. *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* (h-index = **64** / total citations > **23,200**)\*

1. E. T. Iverson,<sup>b</sup> H. Legendre,<sup>c</sup> K. Schmeig,<sup>c</sup> B. Palen,<sup>b</sup> T. J. Kolibaba,<sup>b</sup> H.-C. Chiang,<sup>b</sup> **J. C. Grunlan**,<sup>a</sup> “Polyelectrolyte coacervate coatings that dramatically improve oxygen barrier of paper,” *Industrial & Engineering Chemistry Research* **2022**, *in press*.
2. B. A. Palen,<sup>b</sup> E. T. Iverson,<sup>b</sup> M. G. Rabaey,<sup>c</sup> S. M. H. Marjuban, C. T. Long,<sup>b</sup> T. J. Kolibaba,<sup>b</sup> A. Benson,<sup>c</sup> H. Castaneda-Lopez, **J. C. Grunlan**,<sup>a</sup> “High dielectric breakdown strength nanoplatelet-based multilayer thin films,” *Macromolecular Materials and Engineering* **2022**, *in press*.
3. D. L. Smith,<sup>b</sup> N. A. Vest,<sup>b</sup> D. Rodriguez-Melendez,<sup>b</sup> B. Palen,<sup>b</sup> **J. C. Grunlan**,<sup>a</sup> “Bio-sourced intumescent nanocoating,” *Advanced Engineering Materials* **2022**, *in press*.
4. H.-C. Chiang,<sup>b</sup> E. T. Iverson,<sup>b</sup> K. Schmeig,<sup>c</sup> D. L. Stevens,<sup>b</sup> **J. C. Grunlan**,<sup>a</sup> “Highly moisture resistant super gas barrier polyelectrolyte complex thin film,” *Journal of Applied Polymer Science* **2022**, *in press*.
5. D. L. Smith,<sup>b</sup> D. Rodriguez-Melendez,<sup>b</sup> S. M. Cotton,<sup>c</sup> Y. Quan, Q. Wang, **J. C. Grunlan**,<sup>a</sup> “Non-isocyanate polyurethane bio-foam with inherent heat and fire resistance,” *Polymers* **2022**, *in press*.

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7. A. Aryal, A. Bradicich, E. T. Iverson,<sup>b</sup> C. T. Long,<sup>b</sup> H.-C. Chiang,<sup>b</sup> **J. C. Grunlan**, P. J. Shamberger, “Thermal conductivity of multilayer polymer-nanocomposite thin films,” *Journal of Applied Physics* **2022**, *132*, 195104.
8. D. Rodriguez-Melendez,<sup>b</sup> M. Langhansl, A. Helmbrecht, B. Palen,<sup>b</sup> C. Zollfrank, **J. C. Grunlan**,<sup>a</sup> “Biorenewable polyelectrolyte nanocoating for flame-retardant cotton-based paper,” *ACS Omega* **2022**, *7*, 32599.
9. Y.-T. Yang, J.-L. Huang, X. Wang, **J. Grunlan**, L. Song, Y. Hu, “Flame retardant and hydrophobic cotton using a unique phosphorus–nitrogen–silicon-containing coating,” *Cellulose* **2022**, *29*, 8473.
10. T. J. Kolibaba,<sup>b</sup> N. A. Vest,<sup>b</sup> **J. C. Grunlan**,<sup>a</sup> “Polyelectrolyte photopolymer complexes for flame retardant wood,” *Materials Chemistry Frontiers* **2022**, *6*, 1630. [This work was featured in a press release at the ACS Spring National Meeting 2022 \(22 MAR 2022\) and on the Fox 4 Morning News in Dallas \(30 MAR 2022\).](#)
11. B. A. Palen,<sup>b</sup> M. G. Rabaey,<sup>c</sup> D. Rodriguez-Melendez,<sup>b</sup> E. T. Iverson,<sup>b</sup> T. J. Kolibaba,<sup>b</sup> **J. C. Grunlan**,<sup>a</sup> “Polymeric coacervate coating for flame retardant paper,” *Cellulose* **2022**, *29*, 4589.
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14. N. A. Vest,<sup>b</sup> T. J. Kolibaba,<sup>b</sup> A. O. Afonso,<sup>c</sup> S. A. Kulatilaka, E. T. Iverson,<sup>b</sup> **J. C. Grunlan**,<sup>a</sup> “Acid-doped biopolymer nanocoatings for flame retardant polyurethane foam,” *ACS Applied Polymer Materials* **2022**, *4*, 1983.
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18. C. T. Long,<sup>b</sup> L. Chen, E. T. Iverson,<sup>b</sup> H. Castaneda, **J. C. Grunlan**,<sup>a</sup> “Crosslinking and silanization of clay-based multilayer films for improved corrosion protection of steel,” *Journal of Materials Science* **2022**, *57*, 2988.

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20. R. J. Smith,<sup>b</sup> M. G. Moule, P. A. Leon,<sup>c</sup> E. T. Iverson,<sup>b</sup> T. J. Kolibaba,<sup>b</sup> J. D. Cirillo, **J. C. Grunlan**,<sup>a</sup> “Polyelectrolyte complex that minimizes bacterial adhesion to polyester,” *Macromolecular Materials and Engineering* **2021**, 306, 2100579.
21. E. Magovac,<sup>d</sup> Bojana Vončina, A. Budimir, I. Jordanov, **J. C. Grunlan**, S. Bischof, “Environmentally-benign phytic acid-based nanocoating for multifunctional flame retardant/antibacterial cotton,” *Fibers* **2021**, 9, 69.
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25. C. T. Long,<sup>b</sup> R. Wang, C. Shoalmire, D. S. Antao, P. J. Shamberger, **J. C. Grunlan**,<sup>a</sup> “Efficient heat shielding of steel with multilayer nanocomposite thin film,” *ACS Applied Materials and Interfaces* **2021**, 13, 19369.
26. D. L. Stevens,<sup>b</sup> Adrian Ortiz,<sup>c</sup> C. Cho,<sup>d</sup> G. A. Gamaged, Z. Ren, **J. C. Grunlan**,<sup>a</sup> “Influence of cation size on the thermoelectric behavior of salt-doped organic nanocomposite thin films,” *Applied Physics Letters* **2021**, 118, 151904 ([Editor's Pick](#)).
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31. C. Cho,<sup>d</sup> Y. Song,<sup>b</sup> J.-H. Hsu, C. Yu, D. L. Stevens,<sup>b</sup> **J. C. Grunlan**,<sup>a</sup> “Organic thermoelectric thin films with large p-type and n-type power factor,” *Journal of Materials Science* **2021**, 56, 4291.
32. M.-J. Chen,<sup>d</sup> S. Lazar,<sup>b</sup> T. J. Kolibaba,<sup>b</sup> R. Shen, Y. Quan, Q. Wang, H.-C. Chiang, **J. C. Grunlan**,<sup>a</sup> “Environmentally benign and self-extinguishing multilayer nanocoating for protection of flammable foam,” *ACS Applied Materials and Interfaces* **2020**, 12, 49130.

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36. T. J. Kolibaba,<sup>b</sup> D. L. Stevens,<sup>b</sup> S. T. Pangburn,<sup>c</sup> O. Condassamy, M. Camus, E. Grau, **J. C. Grunlan**,<sup>a</sup> “UV-protection from chitosan and derivatized lignin multilayer thin film,” *RSC Advances* **2020**, *10*, 32959.
37. A. Patel, K. Wilcox, Z. Li, I. George, R. Juneja, C. T. Lollar, S. Lazar,<sup>b</sup> **J. C. Grunlan**, W. E. Tenhaeff, J. L. Lutkenhaus, “High modulus, thermally stable, and self-extinguishing aramid nanofiber separators,” *ACS Applied Materials and Interfaces* **2020**, *12*, 25766.
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<sup>a</sup> Corresponding author. <sup>b</sup> Graduate student. <sup>c</sup> Undergraduate student. <sup>d</sup> Postdoc or visiting scholar.

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15. **J. C. Grunlan**, M. A. Priolo, P. Winston, J. J. McHugh “Thin film diffusion barrier,” U.S. Patent 20150328927 A1 (filed June 28, 2015).
16. **J. C. Grunlan**, B. A. Wilhite “Polyelectrolyte multilayer films for gas separation and purification,” U.S. Patent 201601114294 A1 (filed June 4, 2014).
17. **J. C. Grunlan**, K. H. Haider, S. L. Hager, Y. T. Park “Electrically conductive and dissipative polyurethane foams,” U.S. Patent 20140272375 A1 (filed July 8, 2013).
18. 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 7,477,194 (issued January 13, 2009).
19. Z. Huang, **J. Grunlan**, P. Chang “Method of fabricating transistor device,” U.S. Patent 6,764,885 (issued July 20, 2004).

## **SIGNIFICANT PRESENTATIONS:**

**2022**

“Protective nanocoatings from polyelectrolytes: Flame retardancy, super gas barrier, and heat shielding,” by **J. C. Grunlan**, presented at [The Tenth Triennial International Fire & Cabin Safety Research Conference](#), in Atlantic City, NJ on October 18, 2022 (*Invited Seminar*). [My PhD student \(Ms. Natalie Vest\) gave this talk on my behalf because I was administrating the Polymers and Nanotechnology conference in Napa, CA at the same time.](#)

“Protective nanocoatings from polyelectrolytes: Flame retardancy, super gas barrier, and heat shielding,” by **J. C. Grunlan**, presented at Polymers and Nanotechnology, in Napa, CA on October 16, 2022 (*Invited Seminar*).

“Environmentally-benign flame retardant treatments for textiles,” by **J. C. Grunlan**, presented at the 10<sup>th</sup> International Textile, Clothing & Design Conference (ITC&DC), in Dubrovnik, Croatia on October 3, 2022 (*Invited Seminar*).

“Oxygen and moisture barrier and heat shielding from polyelectrolyte-clay nanocomposites,” by **J. C. Grunlan**, presented at the 1<sup>st</sup> International Symposium on Polymer Nanocomposites (ISPN2022) in Lorient, France on September 29, 2022 (*Keynote Presentation*).

“Environmentally-benign flame retardant treatments based upon polyelectrolyte complexes,” by **J. C. Grunlan**, presented at SKZ Trends in Fire Safety in Wurzburg, Germany on September 27, 2022 (*Invited Presentation*).

“Chitosan-based polyelectrolyte complex nanocoatings for protection of perishable produce and stopping fires,” by **J. C. Grunlan**, presented at the American Chemical Society (ACS) Fall National Meeting 2022 in Chicago, IL on August 21, 2022 (*Invited Presentation*).

“Extreme heat shielding, flame resistance and gas barrier from water-based nanocoatings,” by **J. C. Grunlan**, presented to the Flame Retardants (Flammschutz) Working Group in Darmstadt, Germany on July 5, 2022 (*Invited Seminar*).

“Water-based flame retardant treatments for wood substrates,” by **J. C. Grunlan**, presented at the Forest Products Society International Conference in Madison, WI on June 14, 2022 (*Invited Seminar*). My PhD student (Ms. Danixa Rodriguez-Melendez) gave this talk on my behalf because I was in France at this time.

“Water-based protective nanocoatings for sustainable living,” by **J. C. Grunlan**, presented to the Smart Plastics Group – LIMATB, University of South Brittany, Lorient, France on June 13, 2022 (*Invited Seminar*).

“Water-based, environmentally-benign, polyelectrolyte-based flame retardant treatments,” by **J. C. Grunlan**, presented at the American Chemical Society - Polymer Division Workshop: Fire and Polymers in Napa, CA on June 7, 2022 (*Invited Seminar*).

“Water-based, environmentally-benign, polyelectrolyte-based flame retardant treatments,” by **J. C. Grunlan** at the 3rd International Conference on Eco-Friendly Flame Retardant Additives and Materials (ECOFRAM 2022) in Ales, France on May 17, 2022 (*Plenary Seminar*).

“Water-based and environmentally-benign flame retardant coatings,” by **J. C. Grunlan**, presented at AMI Fire Retardants in Plastics in Houston, TX on April 27, 2022 (*Invited Seminar*).

“Water-based protective nanocoatings for sustainable living,” by **J. C. Grunlan**, presented at the International Conference on Nanotechnology for Sustainable Living and Environment (NSLE-2022) in Pilani, India on April 14, 2022 (*Inaugural Plenary Seminar*).

“Water-based protective nanocoatings from polyelectrolytes: Flame retardancy, super gas barrier, and heat shielding,” by **J. C. Grunlan**, presented to the School of Materials Science and Engineering at the Oklahoma State University on February 16, 2022 (*Invited Seminar*).

**2021**

“Flame retardant and gas barrier thin films prepared via polyelectrolyte complexation,” by **J. C. Grunlan**, presented to the State Key Laboratory of Fire Science at the University of Science and Technology of China(USTC) in Hefei on December 9, 2021 (*Invited Virtual Seminar*).

“Oxygen and moisture barrier and flame retardancy from polyelectrolyte-clay nanocoatings,” by **J. C. Grunlan**, presented at the Silicon-Containing Polymers and Composites workshop in San Diego, CA on December 3, 2021 (*Invited Seminar*).

“Layer-by-layer assembly of flame retardant nanocoatings,” by **J. C. Grunlan**, presented to the State Key Laboratory of Fire Science at the University of Science and Technology of China(USTC) in Hefei on November 25, 2021 (*Invited Virtual Seminar*).

“Water-based multifunctional nanocoatings from polyelectrolyte complexation: Opportunities and challenges,” by **J. C. Grunlan**, presented at the 16° Congresso Brasileiro de Polímeros (16° CBPOL) in Brazil on October 27, 2021 (*Virtual Plenary Lecture*).

“Water-based protective nanocoatings from polyelectrolytes: Flame retardancy, super gas barrier, and heat shielding,” by **J. C. Grunlan**, presented to the Department of Materials Science and Engineering (MSEN 681 Seminar), Texas A&M University – College Station, TX on October 18, 2021 (*Invited Seminar*).

“Water-based and environmentally-benign flame retardant surface treatments for polymeric materials,” by **J. C. Grunlan**, presented at the Fire Retardant Polymeric Materials (FRPM21) in Budapest, Hungary on August 30, 2021 (*Keynote Seminar*).

“Multifunctional polyelectrolyte complex nanocoatings,” by **J. C. Grunlan**, presented at the University of Lille in Lille, France on July 19, 2021 (*Invited Presentation*).

“Water-based and environmentally-benign flame retardant treatments using polyelectrolyte complexation,” by **J. C. Grunlan**, presented at the AATCC Flammability in Polymers and Textiles Digital Lab on June 17, 2021 (*Invited Presentation*).

“Flame retardant textiles and 3D printing filament using polyelectrolyte complexes,” by **J. C. Grunlan**, presented at the SKZ Trends in Fire Safety (Online Event) on May 18, 2021 (*Invited Presentation*).

“Fire protection and gas barrier from clay-polyelectrolyte nanocoatings,” by **J. C. Grunlan**, presented at the American Chemical Society (ACS) Spring National Meeting 2021 in San Antonio, TX on April 7, 2021 (*Invited Presentation*).

“Multifunctional polyelectrolyte complex nanocoatings,” by **J. C. Grunlan**, presented to the Department of Mechanical Engineering’s Intermediate Nanotechnology course (MECE 6327) at the University of Texas Rio Grande Valley in Edinburg, TX on April 5, 2021 (*Invited Seminar*).

## **2020**

“Environmentally-benign flame retardant treatments for polymeric substrates,” by **J. C. Grunlan**, presented at the 6<sup>th</sup> Frontiers in Green Materials Symposium, London, UK on December 7, 2020 (*Invited Seminar*).

“Water-based multifunctional nanocoatings from polyelectrolyte complexation: Opportunities and challenges,” by **J. C. Grunlan**, presented at the 3M Corporation’s Tech Forum in St. Paul, MN on October 14, 2020 (*Invited Presentation*).

“Polyelectrolyte complexes for fire protection of materials,” by **J. C. Grunlan**, presented at the 6<sup>th</sup> International Symposium on Flame-Retardant Materials & Technologies (ISFRMT 2020) in Qingdao, China on September 28, 2020 (*Plenary Lecture*).

“Water-based multifunctional nanocoatings from polyelectrolyte complexation: Opportunities & challenges,” by **J. C. Grunlan**, presented at the 20<sup>th</sup> International Coating Science and Technology (ISCST) Symposium in Minneapolis, MN on September 21, 2020 (*Plenary Talk*).

“Polymer composite nanocoatings for environmentally-benign protection from fire, gas, corrosion and bacteria,” by **J. C. Grunlan**, presented as part of the TAMU-LANL Soft Matter Seminar Series, between Texas A&M University (College Station, TX) and Los Alamos National Laboratories (Los Alamos, NM) via Webex on July 20, 2020 (*Invited Seminar*).

“Extreme heat shielding, flame resistance and anti-corrosion behavior of clay-based multilayer nanocoatings,” by **J. C. Grunlan**, presented at Layered Polymeric Systems in Windsor, CA on February 25, 2020 (*Invited Seminar*).

“Highly effective and environmentally-benign flame retardant coatings,” by **J. C. Grunlan**, presented at the 2<sup>nd</sup> Symposium on Public Safety at Case Western Reserve University in Cleveland, OH on February 18, 2020 (*Invited Seminar*).

## 2019

“Wise polyelectrolyte nanocoatings,” by **J. C. Grunlan**, presented at the Next Generation Smart Materials in Savannah, GA on December 15, 2019 (*Invited Seminar*).

“Nano brick wall thin films,” by **J. C. Grunlan**, presented at the Next Generation Dielectric Materials for Microelectronics/Electrical Applications in Cambridge, MA on December 4, 2019 (*Invited Seminar*).

“Water-based, flame retardant nanocoatings,” by **J. C. Grunlan**, presented at the 3<sup>rd</sup> Asia-Oceania Symposium on Fire Safety Materials Science and Engineering in Shanghai, China on October 25, 2019 (*Plenary Lecture*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented at the 2019 International Forum on the Frontier of Safety Engineering Materials and Technology at the State Key Laboratory of Fire Science at the University of Science and Technology of China in Hefei on October 22, 2019 (*Invited Seminar*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented to the School of Materials Science at the Beijing Institute of Technology in China on October 21, 2019 (*Invited Seminar*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented to the Center for Fire Safety Materials at the Beijing University of Chemical Technology in China on October 20, 2019 (*Invited Seminar*).

“Extreme heat shielding, flame Resistance and anti-corrosion behavior of clay-based nanocoatings,” by **J. C. Grunlan**, presented at Materials Science and Technology (MS&T19) in Portland, OR on October 2, 2019 (*Invited Seminar*).

“Multifunctional water-based nanocoatings for textiles,” by **J. C. Grunlan**, presented to the Faculty of Mechanical Engineering at the University of Maribor in Slovenia on September 2, 2019 (*Invited Seminar*).



“Environmentally-benign, water-based nanocoatings for fire protection of complex substrates,” by **J. C. Grunlan**, presented at the Australian Flame Retardants and Fire Safety Workshop (FRFS-2019) at the University of Southern Queensland, Springfield Campus, Australia on August 5, 2019 (*Research Giant Seminar*).

“Extreme heat shielding and super gas barrier from polymer nanocomposite thin films,” by **J. C. Grunlan**, presented at Polymer Composites and High Performance Materials in Rohnert Park, CA on July 23, 2019 (*Invited Seminar*).

“High power factor, completely organic thermoelectric nanocoatings enabled by carbon nanoparticles,” by **J. C. Grunlan**, presented at the 8<sup>th</sup> International Conference on Carbon NanoParticle based Composites (CNPComp2019) in London, England on July 18, 2019 (*Invited Seminar*).

“Water-based, self-extinguishing nano-coatings for the protection of plastics,” by **J. C. Grunlan**, presented at the Fire Retardant Polymeric Materials (FRPM) 2019 in Turku, Finland on June 27, 2019 (*Plenary Seminar*).

“Low temperature thermoelectric power factor from nanostructured carbon-based nanocoatings,” by **J. C. Grunlan**, presented at the 235<sup>th</sup> Electrochemical Society Meeting in Dallas, TX on May 29, 2019 (*Invited Seminar*).

“Clay-enabled flame retardant nanocoatings,” by **J. C. Grunlan**, presented at the 30<sup>th</sup> Annual Conference on Recent Advances in Flame Retardancy of Polymeric Materials (FLAME 30) in San Antonio, TX on May 20, 2019 (*Invited Seminar*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented to the Department of Chemical Engineering at the University of Arkansas in Fayetteville, AR on April 18, 2019 (*Invited Seminar*).

“Super oxygen barrier for food packaging and flame retardancy for textiles from polyelectrolyte-based nanocoatings,” by **J. C. Grunlan**, presented at the American Chemical Society Spring National Meeting 2019 in Orlando, FL on April 1, 2019 (*Invited Seminar*).

“Water-based environmentally benign flame retardant nanocoatings for textiles,” by **J. C. Grunlan**, presented at American Chemical Society Spring National Meeting 2019 in Orlando, FL on March 31, 2019 (*Invited Seminar*).

“Super gas barrier and flame retardancy of clay-polymer nanocoatings,” by **J. C. Grunlan**, presented at Universite Lille, in Lille, France on March 11, 2019 (*Invited Presentation*).

“Self-healing oxygen and moisture barrier from polyelectrolyte-based nanocoatings on commodity polymer film,” by **J. C. Grunlan**, presented at Smart Coatings 2019, in Orlando, FL on February 22, 2019 (*Invited Seminar*).

## 2018

“Multifunctional thin films from naturally occurring polymers and nanoparticles,” by **J. C. Grunlan**, presented at the 4<sup>th</sup> Frontiers in Green Materials Symposium, London, UK on December 17, 2018 (*Invited Seminar*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented to the Materials Science Community at Sandia National Laboratories, Albuquerque, NM on December 4, 2018 (*Invited Seminar*).

“Large low temperature thermoelectric power factor from completely organic nanocoatings on textiles,” by **J. C. Grunlan**, presented at the 2018 Materials Research Society Fall Meeting in Boston, MA on November 28, 2018 (*Invited Seminar*).

“Polymer-based nanocoatings for flame retardancy, gas Barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented to the NSF-funded UTEP-UC Partnerships for Research and Education in Materials (PREM) at the University of Texas – El Paso, TX on November 16, 2018 (*Invited Seminar*).

“Thermal gradient-induced voltage generation from completely organic polymer nanocomposites,” by **J. C. Grunlan**, presented at the International Symposium on Stimuli-Responsive Materials, in Windsor, CA on October 23, 2018 (*Invited Seminar*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented at Ss. Cyril and Methodius University in Skopje, Macedonia on October 10, 2018 (*Invited Seminar*).

“Water-based, environmentally-benign flame retardant treatments for textiles,” by **J. C. Grunlan**, presented at the 9<sup>th</sup> International Textile, Clothing & Design Conference (ITC&DC), in Dubrovnik, Croatia on October 8, 2018 (*Invited Expert Focus Lecture*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented at Virginia Polytechnic Institute and State University in Blacksburg, VA on September 26, 2018 (*Invited Seminar*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented at The Dow Chemical Company Technical Community Organization’s (TCO) External Seminar Series in Collegeville, PA on September 20, 2018 (*Invited Seminar*).

“Nanobrick wall nanocomposites with super gas barrier properties,” by **J. C. Grunlan**, presented at the 256<sup>th</sup> American Chemical Society National Meeting in Boston, MA on August 20, 2018 (*Invited Seminar*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented at University of Bordeaux in Bordeaux, France on June 28, 2018 (*Invited Seminar*).

“Water-based flame retardant nanocoatings from environmentally-benign ingredients,” by **J. C. Grunlan**, presented at the 5<sup>th</sup> International Symposium on Flame-Retardant Materials & Technologies (ISFRMT 2018) in Hangzhou, China on June 15, 2018 (*Plenary Lecture*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented at Sichuan University in Chengdu, China on June 13, 2018 (*Invited Seminar*).

“High conductivity and power factor in completely organic thermoelectric nanocoatings for flexible films and textiles,” by **J. C. Grunlan**, presented at the Pacific Rim Conference on Rheology (PRCR 2018) in Jeju, Korea on June 11, 2018 (*Keynote Lecture*).

“Multifunctional nanocoatings,” by **J. C. Grunlan**, presented at Myongji University in Seoul, Korea on June 9, 2018 (*Invited Seminar*).

“Water-based flame retardant nanocoatings from environmentally-benign ingredients,” by **J. C. Grunlan**, presented at the Recent Advances in Flame Retardancy of Polymeric Materials (FLAME 2018) in Stamford, CT on May 22, 2018 (*Invited Seminar*).

“Low temperature thermoelectric power factor from completely organic thin films enabled by carbon nanostructures,” by **J. C. Grunlan**, presented at the 233<sup>rd</sup> Electrochemical Society Meeting in Seattle, WA on May 14, 2018 (*Invited Seminar*).

“High power factor, completely organic thermoelectric nanocoatings for flexible films and textiles,” by **J. C. Grunlan**, presented at the 2018 Materials Research Society Spring Meeting in Phoenix, AZ on April 4, 2018 (*Invited Seminar*).

“Oxygen and moisture barrier from polyelectrolyte-clay nanocoatings,” by **J. C. Grunlan**, presented at the 255<sup>th</sup> American Chemical Society National Meeting in New Orleans, LA on March 19, 2018 (*Invited Seminar*).

“Clay-enabled, environmentally-benign flame retardant nanocoatings,” by **J. C. Grunlan**, presented at the 255<sup>th</sup> American Chemical Society National Meeting in New Orleans, LA on March 18, 2018 (*Invited Seminar*).

“Multilayer polymer thin films that can stop gas and fire and generate voltage from your body heat,” by **J. C. Grunlan**, presented at Milan Polymer Days Conference (MIPOL 2018), in Milan, Italy on February 9, 2018 (*Keynote Lecture*).

“High power factor, completely organic thermoelectric nanocoatings for flexible films and textiles,” by **J. C. Grunlan**, presented at the International Conference on Organic and Hybrid Thermoelectrics (ICOT-2018), in Valencia, Spain on January 30, 2018 (*Plenary Lecture*).

“Water-based gas barrier and flame retardant nanocoatings,” by **J. C. Grunlan**, presented at the Israel Polymer & Plastics Society Annual Meeting (IPPS-2018), in Tel Aviv, Israel on January 9, 2018 (*Plenary Lecture*).

## 2017

“Large low temperature thermoelectric power factor from completely organic thin films enabled by carbon nanostructures,” by **J. C. Grunlan**, presented at Polymers and Nanotechnology, in San Diego, CA on December 19, 2017 (*Invited Seminar*).

“Chitosan-based multilayer thin films for stopping gas and fire,” by **J. C. Grunlan**, presented at Frontiers in Green Materials, in London, England on December 11, 2017 (*Invited Seminar*).

“Stopping fire and reducing gas permeability using aqueous polyelectrolyte complex-based nanocoatings,” by **J. C. Grunlan**, presented at 4<sup>th</sup> US-Mexico Binational Symposium on Advances in Polymer Science (MACROMEX 2017), in Los Cabos, Mexico on December 6, 2017 (*Invited Seminar*).

“Smart and friendly flame retardant nanocoatings for natural and synthetic fibers,” by **J. C. Grunlan**, presented at the Fiber Society’s Fall 2017 Technical Meeting and Conference in Athens, GA on November 10, 2017 (*Invited Seminar*).

“Oxygen and moisture barrier from polyelectrolyte-clay nanocoatings,” by **J. C. Grunlan**, presented at the Don Paul 50 Year Symposium & Celebration in Austin, TX on October 13, 2017 (*Invited Seminar*).

“Low temperature thermoelectric power factor from completely organic thin films,” by **J. C. Grunlan**, presented at the 254<sup>th</sup> American Chemical Society National Meeting in Washington DC on August 23, 2017 (*Invited Seminar*).

“Oxygen and moisture barrier from polyelectrolyte-based nanocoatings on polymeric packaging film,” by **J. C. Grunlan**, presented at the 254<sup>th</sup> American Chemical Society National Meeting in Washington DC on August 21, 2017 (*Invited Seminar*).

“Polyelectrolyte multilayer nanocoating exhibiting super oxygen barrier and fast healing in humid environment,” by **J. C. Grunlan**, presented at the 3<sup>rd</sup> Functional Polymer Materials Conference in Rome, Italy on July 8, 2017 (*Invited Seminar*).

“Water-based flame retardant nanocoatings from environmentally-benign ingredients,” by **J. C. Grunlan**, presented at the Fire Retardant Polymeric Materials (FRPM) 2017 in Manchester, UK on July 4, 2017 (*Invited Seminar*).

“Large thermoelectric power factor at low temperature from completely organic multilayer nanocoatings,” by **J. C. Grunlan**, presented at the New Horizons in Layer-by-Layer Assemblies: Principles and Applications (LBL 2017) in Seoul, South Korea on June 19, 2017 (*Invited Seminar*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented at the GAF R&D Technology Summit in Parsippany, NJ on June 14, 2017 (*Invited Seminar*).

“Water-based flame retardant nanocoatings from environmentally-benign ingredients,” by **J. C. Grunlan**, presented at the Recent Advances in Flame Retardancy of Polymeric Materials (FLAME 2017) in Boston, MA on June 13, 2017 (*Invited Seminar*).

“Low temperature thermoelectric power factor from completely organic thin films enabled by carbon nanostructures,” by **J. C. Grunlan**, presented at the 231<sup>st</sup> Electrochemical Society Meeting in New Orleans, LA on May 31, 2017 (*Invited Seminar*).

“Multifunctional chitosan-based nanocoatings: Stopping oxygen and fire with renewable materials,” by **J. C. Grunlan**, presented at the 253<sup>rd</sup> American Chemical Society National Meeting in San Francisco, CA on April 5, 2017 (*Invited Seminar*).

“Biopolymer-based multilayer nanocoatings that exhibit high gas barrier and flame retardant behavior,” by **J. C. Grunlan**, presented at the 253<sup>rd</sup> American Chemical Society National Meeting in San Francisco, CA on April 4, 2017 (*Invited Seminar*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented at the Adolphe Merkle Institute (part of the Universite de Fribourg), in Fribourg, Switzerland on March 16, 2017 (*Invited Seminar*).

“Polymer-based nanocoatings for flame retardancy, gas barrier and thermoelectric energy generation,” by **J. C. Grunlan**, presented at the Swiss Federal Laboratories for Materials Science and Technology (EMPA), in St. Gallen, Switzerland on March 14, 2017 (*Invited Seminar*).

“Water-based flame retardant nanocoatings from environmentally-benign ingredients,” by **J. C. Grunlan**, presented at The 8<sup>th</sup> Eastern Mediterranean Chemical Engineering Conference (EMCC8), in Haifa, Israel on February 27, 2017 (*Invited Seminar*).

“Exceptional flame resistance and gas barrier with thick-growing clay-chitosan multilayer coatings,” by **J. C. Grunlan**, presented at Layered Polymeric Systems, in Asilomar, CA on February 23, 2017 (*Invited Seminar*).

“Super gas barrier nanocoatings for packaging film from water-based polyelectrolyte solutions,” by **J. C. Grunlan**, presented at Milan Polymer Days (MIPOL 2017), in Milan, Italy on February 15, 2017 (*Invited Seminar*).

## 2016

“Layer-by-layer and fire retardancy,” by **J. C. Grunlan**, presented at the International Workshop on Nanostructured Materials and Their Use in Fire Retardancy Applications, in Stockholm, Sweden on November 24, 2016 (*Invited Seminar*).

“Polyelectrolyte multilayer nanocoatings for super gas barrier and highly selective light gas separation,” by **J. C. Grunlan**, presented at Advanced Polymer Materials 2016, in Houston, TX on November 7, 2016 (*Invited Seminar*).

“Polymer-based nanocoatings applied to fabric substrates for flame retardancy and thermoelectric energy generation,” by **J. C. Grunlan**, presented to the Materials and Nanotechnology Program at North Dakota State University in Fargo, ND on November 4, 2016 (*Invited Seminar*).

“Polymer-based nanocoatings applied to fabric substrates for flame retardancy and thermoelectric energy generation,” by **J. C. Grunlan**, presented to the School of Polymers and High Performance Materials at the University of Southern Mississippi in Hattisburg, MS on November 2, 2016 (*Eastman Chemical Seminar Series*).

“Multifunctional polyelectrolyte multilayer thin films,” by **J. C. Grunlan**, presented at Nike’s Materials Innovation Speaker Series (MIS2) in Beaverton, OR on October 18, 2016 (*Invited Seminar*).

“Wash-durable polyelectrolyte complex coating that extinguishes flame on polyester-cotton fabric,” by **J. C. Grunlan**, presented at the 8<sup>th</sup> International Textile, Clothing & Design Conference (ITC&DC), in Dubrovnik, Croatia on October 4, 2016 (*Invited Seminar*).

“Polymer-based nanocoatings applied to fabric substrates for flame retardancy and thermoelectric energy generation,” by **J. C. Grunlan**, presented to the Faculty of Textile Technology at the University of Zagreb, Croatia on September 30, 2016 (*Invited Seminar*).

“Water-based flame retardant nanocoatings from environmentally-benign ingredients,” by **J. C. Grunlan**, presented at the AATCC Symposium: Shining a Light on Flammability in Textile Applications, in Cary, NC on September 21, 2016 (*Invited Seminar*).

“Polymer-based nanocoatings applied to fabric substrates for flame retardancy and thermoelectric energy generation,” by **J. C. Grunlan**, presented to the NSF-funded UTEP-UC Partnerships for Research and Education in Materials (PREM) at the University of Texas – El Paso, TX on September 16, 2016 (*Invited Seminar*).

“Clay-based nanobrick wall thin films that slow gas and stop fire,” by **J. C. Grunlan**, presented to the Department of Soil and Crop Sciences (SCSC 681 Seminar), Texas A&M University – College Station, TX on September 7, 2016 (*Invited Seminar*).

“Flame retardant polyelectrolyte multilayer nanocoatings: A brief history and some recent breakthroughs,” by **J. C. Grunlan**, presented at the 252<sup>nd</sup> American Chemical Society National Meeting in Philadelphia, PA on August 22, 2016 (*Invited Seminar*).

“Super gas barrier and fire suppression from hybrid materials prepared using naturally occurring polyelectrolytes and clay,” by **J. C. Grunlan**, presented at the 252<sup>nd</sup> American Chemical Society National Meeting in Philadelphia, PA on August 22, 2016 (*Invited Seminar*).

“Biopolymer-based multilayer nanocoatings that exhibit high gas barrier and flame retardant behavior,” by **J. C. Grunlan**, presented at the 252<sup>nd</sup> American Chemical Society National Meeting in Philadelphia, PA on August 21, 2016 (*Invited Seminar*).

“Flame retardant and iridescent multilayer nanocoatings prepared from carbon-based nanofibers,” by **J. C. Grunlan**, presented at the XXV International Materials Research Congress in Cancun, Mexico on August 17, 2016 (*Invited Seminar*).

“Combining ionic and hydrogen bonding to create stretchable polymer multilayer thin films with high gas barrier,” by **J. C. Grunlan**, presented at 5<sup>th</sup> Zing Polymer Chemistry Conference, in Dublin, Ireland on August 8, 2016 (*Invited Presentation*).

“Generating voltage from body heat...,” by **J. C. Grunlan**, presented at the Polymer Composites and High Performance Materials in Santa Rosa, CA on July 25, 2016 (*Invited Seminar*).

“Biopolymer-based multilayer nanocoatings that exhibit high gas barrier and flame retardant behavior,” by **J. C. Grunlan**, presented at the 1<sup>st</sup> International Symposium on Materials from Renewables (ISMR) in Fargo, ND on July 19, 2016 (*Invited Seminar*).

“Safe flame retardant nanocoatings for fabric from water-soluble polyelectrolyte complexes,” by **J. C. Grunlan**, presented at the 4<sup>th</sup> International Symposium on Flame-Retardant Materials & Technologies (ISFRMT 2016) in Changchun, China on June 17, 2016 (*Plenary Lecture*).

“Water-soluble polyelectrolyte complexes as flame retardant nanocoatings,” by **J. C. Grunlan**, presented at the International Symposium on Polymer Analysis and Characterization (ISPAC) in Singapore on June 13, 2016 (*Invited Seminar*).

“Clay-based nanobrick wall multilayer thin films,” by **J. C. Grunlan**, presented at Nuggets of Emerging Technology at Asilomar Conference Grounds, CA on June 3, 2016 (*Invited Seminar*).

“Completely organic carbon nanostructured thermoelectric thin films with power factors exceeding bismuth telluride,” by **J. C. Grunlan**, presented at the 229<sup>th</sup> Electrochemical Society Meeting in San Diego, CA on May 30, 2016 (*Invited Seminar*).

“Polymer nanocomposites for converting waste heat to voltage and polyelectrolyte complexes for stopping fire,” by **J. C. Grunlan**, presented to the Institute for Materials and Processes, School of Engineering, at University of Edinburgh in Scotland on May 24, 2016 (*Invited Keynote Lecture*).

“Self-assembly and applications of polyelectrolyte multilayer thin films,” by **J. C. Grunlan**, presented to the School of Chemistry, at University of Edinburgh in Scotland on May 23, 2016 (*Invited Seminar*).

“Multilayer nanocoatings capable of separating gases, stopping fire and generating voltage from body heat,” by **J. C. Grunlan**, presented to the Vanderbilt Institute of Nanoscale Science and Engineering (VINSE), at Vanderbilt University in Nashville, TN on May 18, 2016 (*Invited Seminar*).

“Multifunctional polyelectrolyte multilayer thin films,” by **J. C. Grunlan**, presented at Advanced Coatings 2016 in Houston, TX on May 9, 2016 (*Invited Seminar*).

“Water-based flame retardant nanocoatings from environmentally-benign polyelectrolytes,” by **J. C. Grunlan**, presented at the COST MP1105: FLARETEX – Final Conference in Poznan, Poland on April 28, 2016 (*Invited Seminar*).

“Ionically-crosslinked polymer and nanoplatelet multilayer films for gas separation,” by **J. C. Grunlan**, presented at the 251<sup>st</sup> American Chemical Society National Meeting in San Diego, CA on March 15, 2016 (*Invited Seminar*).

“Chitosan-based multilayer nanocoatings that exhibit high gas barrier and flame retardant behavior,” by **J. C. Grunlan**, presented at the 251<sup>st</sup> American Chemical Society National Meeting in San Diego, CA on March 15, 2016 (*Invited Seminar*).

“Large low temperature thermoelectric power factor, that rivals inorganic semiconductors, from completely organic nanocomposite multilayer thin films,” by **J. C. Grunlan**, presented at the 251<sup>st</sup> American Chemical Society National Meeting in San Diego, CA on March 13, 2016 (*Invited Seminar*).

“Clay nanobrick wall multilayer thin films: Processing and gas permeability and separation,” by **J. C. Grunlan**, presented at the 251<sup>st</sup> American Chemical Society National Meeting in San Diego, CA on March 13, 2016 (*Invited Seminar*).

“Multifunctional polyelectrolyte multilayer thin films,” by **J. C. Grunlan**, presented to the Materials Science Community at Sandia National Laboratories, Albuquerque, NM on February 4, 2016 (*Invited – Sandia Materials Science Seminar Series*).

“Multifunctional polyelectrolyte multilayer thin films,” by **J. C. Grunlan**, presented to the Department of Chemistry, Texas A&M University – Kingsville, TX on January 28, 2016 (*Invited Seminar*).

## **2015**

“Fully organic, high power factor thermoelectrics,” by **J. C. Grunlan**, presented at the 14<sup>th</sup> Pacific Polymer Conference in Kauai, Hawaii on December 12, 2015 (*Invited Seminar*).

“Polyelectrolytes as basis for benign flame retardant nanocoatings,” by **J. C. Grunlan**, presented at Composites at Lake Louise 2015 in Alberta, Canada on November 11, 2015 (*Invited Seminar*).

“Water-soluble polyelectrolyte complex nanocoatings for environmentally-benign flame retardant woven fabric,” by **J. C. Grunlan**, presented at the 2015 AATCC Fall Committee Meetings, in Raleigh, NC on November 4, 2015 (*Invited Seminar*).

“Water-based flame retardant nanocoatings for textile blends from environmentally-benign ingredients,” by **J. C. Grunlan**, presented at the Synthetic Yarn and Fiber Association (SYFA) 2015 Fall Conference, in Charlotte, NC on October 30, 2015 (*Invited Seminar*).

“Generating voltage from body heat: Fully organic thermoelectric materials with power factors exceeding bismuth telluride,” by **J. C. Grunlan**, presented at the 12<sup>th</sup> International Symposium on Stimuli-Responsive Materials, in Santa Rosa, CA on October 27, 2015 (*Invited Seminar*).

“Multilayer nanocoatings capable of separating gases, killing bacteria and stopping fire,” by **J. C. Grunlan**, presented to the Department of Chemical Engineering at University of Puerto Rico - Mayaguez, in Puerto Rico on October 15, 2015 (*Invited Seminar*).

“Multilayer nanocoatings capable of separating gases, killing bacteria and stopping fire,” by **J. C. Grunlan**, presented at Keio University, in Yokohama, Japan on September 25, 2015 (*Invited Seminar*).

“Polyelectrolyte multilayers: Processing and properties,” by **J. C. Grunlan**, presented at the International Research Center for Materials NanoArchitectonics (MANA), National Institute for Materials Science (NIMS), in Tsukuba, Japan on September 16, 2015 (*Invited Seminar*).

“Size-selective ionically crosslinked polymer multilayer films for light gas separation,” by **J. C. Grunlan**, presented at the 250<sup>th</sup> American Chemical Society National Meeting in Boston, MA on August 17, 2015 (*voted “Best Presentation” of the session entitled “Nanostructured Membranes for Gas Separation”*).

“Clay nanobrick wall multilayer thin films that slow gas and stop fire,” by **J. C. Grunlan**, presented at the International Conference on Applied Mineralogy & Advanced Materials (AMAM 2015) in Castellaneta Marina, Italy on June 8, 2015 (*Invited Seminar*).

“High power factor, completely organic, nanotube-filled thermoelectric polymer nanocomposites,” by **J. C. Grunlan**, presented to the Smart Plastics Group – LIMATB, University of South Brittany, Lorient, France on June 1, 2015 (*Invited Seminar*).

“Multifunctional multilayer nanocoatings capable of separating gases, killing bacteria and stopping fire,” by **J. C. Grunlan**, presented at PPG Coatings Innovation Center in Allison Park, PA on May 12, 2015 (*Invited Presentation*).

“Multifunctional multilayer nanocoatings capable of separating gases, killing bacteria and stopping fire,” by **J. C. Grunlan**, presented to the Department of Materials Science and Engineering at the Technion – Israel Institute of Technology, in Haifa, Israel on April 30, 2015 (*Invited Presentation*).

“Multifunctional multilayer nanocoatings capable of separating gases, killing bacteria and stopping fire,” by **J. C. Grunlan**, presented to the Ilse Katz Institute for Nanoscale Science & Technology at Ben Gurion University of the Negev, in Be’er Sheva, Israel on April 29, 2015 (*Invited Presentation*).

“Fully organic water-based coatings, with high thermoelectric power factor, that convert waste heat into useful voltage,” by **J. C. Grunlan**, presented to the Department of Chemical Engineering at Ben Gurion University of the Negev, in Be’er Sheva, Israel on April 28, 2015 (*Invited Presentation*).

“High power factor, completely organic, nanotube-filled thermoelectric polymer nanocomposites,” by **J. C. Grunlan**, presented at the 2015 TMS Annual Meeting & Exhibition in Orlando, FL on March 16, 2015 (*Invited Keynote*).

“Nanobrick wall multilayer coatings for gas barrier and fire suppression,” by **J. C. Grunlan**, presented at Smart Coatings 2015, in Orlando, FL on February 27, 2015 (*Invited Seminar*).



“Multifunctional multilayer nanocoatings capable of separating gases, killing bacteria and stopping fire,” by **J. C. Grunlan**, presented at Procter and Gamble in Cincinnati, OH on February 25, 2015 (*Invited Presentation*). This was the external plenary seminar for P&G’s Polymers and Colloids Community of Practice (COP) symposium.

“Multilayer nanocomposite thin films capable of separating gases, killing bacteria and stopping fire,” by **J. C. Grunlan**, presented to the School of Mechanical and Materials Engineering, Washington State University, Pullman, WA on February 20, 2015 (*Invited Departmental Seminar*).

“Antiflammable nanocoatings for foam and fabric using renewable and/or environmentally-benign materials,” by **J. C. Grunlan**, presented at the European COST MP1105 Workshop of Advances in Flame Retardancy of Polymeric Materials, in Madrid, Spain on February 4, 2015 (*Invited Presentation*).

“Multifunctional multilayer nanocoatings capable of separating gases, killing bacteria and stopping fire,” by **J. C. Grunlan**, presented to the Department of Mechanical Engineering, Texas A&M University, College Station, TX on January 28, 2015 (*Invited Departmental Seminar*).

“Multifunctional multilayer nanocoatings capable of separating gases, killing bacteria and stopping fire,” by **J. C. Grunlan**, presented at Universite Lille, in Lille, France on January 19, 2015 (*Invited Presentation*).

#### **2014**

“Silicate-based nanobrick wall multilayer thin films for stopping gas and fighting fires,” by **J. C. Grunlan**, presented at Silicon-Containing Polymers and Composites 2014, in San Diego, CA on December 14, 2014 (*Invited Presentation*).

“Multilayer polymer nanocomposite thin films capable of separating gases and stopping fire,” by **J. C. Grunlan**, presented at 4<sup>th</sup> Zing Polymer Chemistry Conference, in Cancun, Mexico on December 10, 2014 (*Invited Presentation*).

“Multifunctional multilayer nanocoatings capable of separating gases, killing bacteria and stopping fire,” by **J. C. Grunlan**, presented at United Technologies Research Center in Hartford, CT on October 20, 2014 (*Invited Presentation*).

“Multilayer polymer nanocomposite thin films capable of separating gases and stopping fire,” by **J. C. Grunlan**, presented to the Department of Polymer Engineering, University of Akron, Akron, OH on September 26, 2014 (*Invited Departmental Seminar*).

“Antiflammable nanocoatings for foam and fabric using renewable and/or environmentally-benign materials,” by **J. C. Grunlan**, presented at the 42<sup>nd</sup> North American Thermal Analysis Society (NATAS) Conference in Santa Fe, NM on September 15, 2014 (*Invited Presentation*).

“Fully organic water-based coatings, with high thermoelectric power factor, that convert waste heat into useful voltage,” by **J. C. Grunlan**, presented at the 17<sup>th</sup> International Coating Science and Technology (ISCST) Symposium in Carlsbad, CA on September 8, 2014 (*Invited Presentation*).

“Nanobrick walls of graphene oxide or clay: Separating gases and stopping fire using water-based nanocomposite thin films,” by **J. C. Grunlan**, presented to the Centre for Research on Adaptive

Nanostructures and Nanodevices (CRANN), Trinity College Dublin, Ireland on August 18, 2014 (*Invited Seminar*).

“Multilayer polymer nanocomposite thin films capable of separating gases and stopping fire,” by **J. C. Grunlan**, presented at the 248<sup>th</sup> American Chemical Society National Meeting in San Francisco, CA on August 11, 2014 (*Invited Presentation*).

“Multilayer polymer nanocomposite thin films capable of separating gases and stopping fire,” by **J. C. Grunlan**, presented at Eastman Chemical Company in Kingsport, TN on August 7, 2014 (*Invited Presentation*).

“The evolution of environmentally-benign flame retardant nanocoatings deposited using layer-by-layer assembly,” by **J. C. Grunlan**, presented at Layer-by-Layer (LbL) Assemblies: Science and Technology Conference, Hoboken, NJ on June 25, 2014 (*Invited Presentation*).

“Low temperature thermal reduction of graphene oxide nanobrick walls: Unique combination of high gas barrier/separation and low resistivity in fully organic polyelectrolyte multilayer thin films,” by **J. C. Grunlan**, presented to the Smart Plastics Group – LIMATB, University of South Brittany, Lorient, France on June 17, 2014 (*Invited Seminar*).

“Multilayer polymer nanocomposite thin films capable of separating gases and stopping fire,” by **J. C. Grunlan**, presented to the School of Materials, The University of Manchester, Manchester, UK on June 13, 2014 (*Invited Seminar*).

“Water-based, flame retardant nanocoatings for foam, textiles and other polymeric substrates: New environmentally-benign opportunities,” by **J. C. Grunlan**, presented at the 25<sup>th</sup> Annual Conference on Recent Advances in Flame Retardancy of Polymeric Materials in Stamford, CT on May 19, 2014 (*Invited Presentation*).

“Antiflammable nanocoatings using renewable and/or environmentally-benign materials,” by **J. C. Grunlan**, presented at Fire Retardants in Plastics 2014 in Denver, CO on May 14, 2014 (*Invited Presentation*).

“Antiflammable nanocoatings for textiles using renewable and/or environmentally-benign materials,” by **J. C. Grunlan**, presented at Techtex North America 2014 in Atlanta, GA on May 13, 2014 (*Invited Presentation*).

“Anti-flammable nanocoatings for textiles using renewable and/or environmentally-benign materials,” by **J. C. Grunlan**, presented at Converting and Bonding Conference (CAB 2014), in Greenville, SC on May 8, 2014 (*Invited Presentation*).

“Multilayer polymer nanocomposite thin films capable of separating gases and stopping fire,” by **J. C. Grunlan**, presented at DuPont in Willmington, DE on May 1, 2014 (*Invited Presentation*). This seminar was part of DuPont’s “Frontiers of Materials Science” series.

“Polyelectrolyte multilayer nanocomposites for flame suppression, gas separation and so much more...,” by **J. C. Grunlan**, presented at the 247<sup>th</sup> American Chemical Society National Meeting in Dallas, TX on March 18, 2014 (*Invited Presentation*).

“The promise of fully organic polymer nanocomposite thermoelectrics: Turning wasted heat into useful electricity,” by **J. C. Grunlan**, presented at the Joint Workshop on “Energy Polymers” in Potsdam, Germany on January 23, 2014 (*Invited Presentation*).

**2013**

“Nanobrick wall multilayer thin films with exceptional gas barrier and flame suppression,” by **J. C. Grunlan**, presented at the Materials Research Society (MRS) Fall Meeting 2013 in Boston, MA on December 3, 2013 (*Invited Presentation*).

“Stopping fire and reducing gas permeability with nanobrick wall multilayer thin film coatings,” by **J. C. Grunlan**, presented to the Department of Materials Science and Engineering, Purdue University, West Lafayette, IN on November 22, 2013 (*Invited Departmental Seminar*).

“Multilayer thin films from renewable and/or environmentally-benign polyelectrolytes for flame retardant protection of polymeric substrates,” by **J. C. Grunlan**, presented at the Southeast Regional Meeting of the American Chemical Society (SERMACS) 2013 in Atlanta, GA on November 13, 2013 (*Invited Presentation*).

“Stopping fire and controlling gas flow with nanobrick wall composite thin films,” by **J. C. Grunlan**, presented at Composites at Lake Louise 2013 in Alberta, Canada on November 7, 2013 (*Plenary Talk*).

“Environmentally benign nanocoatings that create a flame-retardant gas blanket for aircraft, interior foams, fabrics, etc.,” by **J. C. Grunlan**, presented at the High Performance Composites for Aircraft Interiors, part of Composites World (CW) 2013, in Seattle, WA on October 2, 2013 (*Invited Presentation*).

“Nanobrick walls for gas barrier and flame suppression and polymer nanocomposites for thermoelectric energy conversion,” by **J. C. Grunlan**, presented to the Department of Mechanical Engineering, University of Arkansas, Fayetteville, AR on September 27, 2013 (*Invited Departmental Seminar*).

“Polymer-platelet nanobrick wall thin films for gas barrier and separation,” by **J. C. Grunlan**, presented at KTH Royal Institute of Technology in Stockholm, Sweden on August 21, 2013 (*Invited Presentation*).

“Water-based flame retardant nanocoatings comprised of renewable and/or environmentally-benign materials,” by **J. C. Grunlan**, presented at KTH Royal Institute of Technology in Stockholm, Sweden on August 20, 2013 (*Invited Departmental Seminar*).

“Nanobrick wall thin films: Gas barrier and flame retardancy of polyelectrolyte nanoplatelet multilayer coatings,” by **J. C. Grunlan**, presented at Particles 2013: Particles in Composites and Related Advanced Materials in Dayton, OH on August 6, 2013 (*Invited Presentation*).

“Nanobrick walls for gas barrier and flame suppression: Clay-polymer nanocomposite thin films,” by **J. C. Grunlan**, presented at Polymer Composites and High Performance Materials in Santa Rosa, CA on July 23, 2013 (*Invited Presentation*).

“Antiflammable nanocoatings for textiles made with renewable and/or environmentally-benign materials,” by **J. C. Grunlan**, presented at the 14<sup>th</sup> European meeting on Fire Retardancy and Protection of Materials in Lille, France on July 2, 2013 (*Invited Keynote Lecture*).

“Water-based, flame retardant nanocoatings comprised of renewable and/or environmentally-benign materials,” by **J. C. Grunlan**, presented at the 24<sup>th</sup> Annual Conference on Recent Advances in Flame Retardancy of Polymeric Materials in Stamford, CT on May 20, 2013 (*Invited Presentation*).

“Polyelectrolyte-clay nanobrick walls thin films for flame suppression, gas barrier and so much more...,” by **J. C. Grunlan**, presented to the Department of Chemical and Biomolecular Engineering, University of Houston, Houston, TX on April 26, 2013 (*Invited Departmental Seminar*).

“Influence of processing parameters on the gas barrier and antflammable behavior of polymer-clay nanobrick walls,” by **J. C. Grunlan**, presented at ANTEC 2013 in Cincinnati, OH on April 22, 2013 (*Invited Presentation*).

“Polymer-clay brick wall thin films as transparent foil replacement for food packaging,” by **J. C. Grunlan**, presented at the 245<sup>th</sup> American Chemical Society National Meeting in New Orleans, LA on April 9, 2013 (*Invited Presentation*).

“Layer-by-layer assembly of clay-based nanobrick walls for gas barrier/separation and flame suppression,” by **J. C. Grunlan**, presented at the 245<sup>th</sup> American Chemical Society National Meeting in New Orleans, LA on April 7, 2013 (*Invited Presentation*).

“Polyelectrolyte-silicate nanobrick wall thin films for flame suppression, gas barrier and so much more...,” by **J. C. Grunlan**, presented at the International Research Center for Materials NanoArchitectonics (MANA), National Institute for Materials Science (NIMS), in Tsukuba, Japan on March 13, 2013 (*Invited Seminar*).

“The promise of fully organic nanocomposite thermoelectric materials: Turning wasted heat into useful voltage,” by **J. C. Grunlan**, presented at the 2<sup>nd</sup> International Workshop on Green Innovation, Tokyo University of Science Yamaguchi, in Yamaguchi, Japan on March 11, 2013 (*Invited Seminar*).

“Nanobrick wall multilayer coatings for gas barrier and fire suppression,” by **J. C. Grunlan**, presented at Smart Coatings 2013, in Orlando, FL on February 20, 2013 (*Invited Seminar*).

“Polyelectrolyte-silicate nanobrick walls thin films for flame suppression, gas barrier and so much more...,” by **J. C. Grunlan**, presented to the Department of Chemistry and Biochemistry, Angelo State University, San Angelo, TX on February 11, 2013 (*Invited Presentation*).

## 2012

“Layer-by-layer assembly of aluminosilicate-polyelectrolyte nanobrick walls for gas barrier and flame suppression,” by **J. C. Grunlan**, presented at Silicon-Containing Polymers and Composites, in San Diego, CA on December 10, 2012 (*Invited Presentation*).

“Nanobrick walls that stop fire and polymer nanocomposites capable of using body heat to power your mobile phone,” by **J. C. Grunlan**, presented at Zing Polymer Chemistry Conference 2012, in Cancun, Mexico on November 13, 2012 (*Invited Presentation*).

“Antiflamable nanocoatings for foam and fabric using renewable and/or environmentally-benign materials,” by **J. C. Grunlan**, presented at Research, Innovation & Science for Engineered Fabrics (RISE 2012), in Baltimore, MD on October 24, 2012 (*Invited Presentation*).

“Fire-resistant nanocoatings for foam and fabric using renewable and/or environmentally-benign materials,” by **J. C. Grunlan**, presented at the High Performance Composites for Aircraft Interiors, part of Composites World (CW) 2012, in Seattle, WA on September 26, 2012 (*Invited Presentation*).

“Nanobrick walls for gas barrier and flame suppression and polymer nanocomposites for thermoelectric energy conversion,” by **J. C. Grunlan**, presented to the Department of Mechanical Engineering, Southern Methodist University, Dallas, TX on September 14, 2012 (*Invited Departmental Seminar*).

“Thermoelectric polymer nanocomposites,” by **J. C. Grunlan**, presented at the 244<sup>th</sup> American Chemical Society National Meeting in Philadelphia, PA on August 20, 2012 (*Invited Presentation*).

“Nanobrick walls for gas barrier and flame suppression and polymer nanocomposites for thermoelectric energy conversion,” by **J. C. Grunlan**, presented to the Smart Plastics Group, University of South Brittany, in Lorient, France on July 10, 2012 (*Invited Presentation*).

“Nanobrick walls for gas barrier and flame suppression and polymer nanocomposites for thermoelectric energy conversion,” by **J. C. Grunlan**, Tech Talk presented at the NASA Johnson Space Center, in Houston, TX on July 2, 2012 (*Invited Presentation*).

“Thermoelectric polymer nanocomposites,” by **J. C. Grunlan**, presented at the IUPAC World Polymer Congress 2012 in Blacksburg, VA on June 26, 2012 (*Invited Presentation*).

“Water-based, flame retardant nanocoatings for foam and fabric,” by **J. C. Grunlan**, presented at the Fire Retardants in Plastics 2012 in Denver, CO on June 14, 2012 (*Invited Presentation*).

“Layer-by-layer assembly of antflammable nanocoatings for foam and fabric using renewable and/or environmentally-benign materials,” by **J. C. Grunlan**, presented at the 23<sup>rd</sup> Annual Conference on Recent Advances in Flame Retardancy of Polymeric Materials in Stamford, CT on May 21, 2012 (*Invited Presentation*).

“Nanobrick walls that stop fire and nanocomposites that could use your body heat to power your mobile phone,” by **J. C. Grunlan**, presented to the College of Engineering, Mathematics and Physical Sciences, University of Exeter, England on May 16, 2012 (*Invited Presentation – part of Exeter’s “Inspiring Science” series of presentations designed to get the general public excited about science and engineering*).

“Nanobrick walls for protecting clothing from fire and polymer nanocomposites that can use body heat to power a cell phone,” by **J. C. Grunlan**, presented to the School of Engineering and Materials Science, Queen Mary University of London, England on May 14, 2012 (*Invited Departmental Seminar*).

“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, Texas Tech University, Lubbock, TX on May 7, 2012 (*Invited Departmental Seminar*).

“Layer-by-layer assembly of multifunctional nanocoatings,” by **J. C. Grunlan**, presented to the Industrial Technology Research Institute (ITRI), in Hsinchu, Taiwan on April 27, 2012 (*Invited Presentation*).

“Nanobrick walls that stop fire and nanocomposites that could power cell phones using body heat,” by **J. C. Grunlan**, presented to the Department of Mechanical Engineering, National University of Singapore on April 20, 2012 (*Invited Departmental Seminar*).

“Tailoring Gas Permeability and Imparting Flame Retardant Behavior Using Nano Brick Wall Thin Film Assemblies,” by **J. C. Grunlan**, presented at the Materials Research Society Spring Meeting 2012 in San Francisco, CA on April 11, 2012 (*Invited Presentation*).

“Layer-by-layer assembly of water-based, environmentally-friendly flame retardant nanocoatings for fabric and foam,” by **J. C. Grunlan**, presented at the 243<sup>rd</sup> American Chemical Society National Meeting in San Diego, CA on March 26, 2012 (*Invited Presentation*).

“Layer-by-layer assembly of transparent thin films on polymeric substrates for gas barrier, fire resistance and transparent electrodes,” by **J. C. Grunlan**, presented at BASF in Wyandotte, MI on March 20, 2012 (*Invited Presentation*). This seminar was sponsored by BASF’s Committee for Scientific Innovation and Interaction (CSI<sup>2</sup>).

“Thick and thin film polymer – carbon nanotube composites for thermoelectric energy conversion and transparent electrodes,” by **J. C. Grunlan**, presented at the TMS 2012 141<sup>st</sup> Annual Meeting & Exhibition in Orlando, FL on March 14, 2012 (*Invited Presentation*).

“Layer-by-layer assembly of transparent thin films on polymeric substrates for gas barrier, fire resistance and transparent electrodes,” by **J. C. Grunlan**, presented at LeTourneau University in Longview, TX on February 9, 2012 (*Invited Departmental Seminar*).

“Layer-by-layer assembly of transparent thin films on polymeric substrates for gas barrier, fire resistance and transparent electrodes,” by **J. C. Grunlan**, presented at the Southwest Research Institute in San Antonio, TX on January 24, 2012 (*Invited Departmental Seminar*).

## **2011**

“Layer-by-layer assembly of transparent thin films on polymeric substrates for gas barrier, fire resistance and transparent electrodes,” by **J. C. Grunlan**, presented to the Department of Chemical and Biomolecular Engineering, University of Notre Dame, South Bend, IN on December 6, 2011 (*Invited Presentation*).

“Thermoelectric behavior of electrically conductive polymer composites,” by **J. C. Grunlan**, presented at the 67<sup>th</sup> Southwest Regional Meeting of the American Chemical Society in Austin, TX on November 10, 2011 (*Invited Presentation*).

“Layer-by-layer assembly of polymer and nanoplatelets to create gas barrier and flame retardant thin films,” by **J. C. Grunlan**, presented at the 67<sup>th</sup> Southwest Regional Meeting of the American Chemical Society in Austin, TX on November 9, 2011 (*Invited Presentation*).

“Polymer-clay nano brick walls for gas barrier and flame suppression,” by **J. C. Grunlan**, presented at Composites at Lake Louise 2011 in Alberta, Canada on November 1, 2011 (*Invited Presentation*).

“Thick and thin film water-based coatings containing carbon nanotubes: Thermoelectric energy conversion and transparent electrodes from fully organic materials,” by **J. C. Grunlan**, presented at the 242<sup>nd</sup> American Chemical Society National Meeting in Denver, CO on August 28, 2011 (*Invited Presentation*).

“Layer-by-layer assembly of multifunctional nanocoatings,” by **J. C. Grunlan**, presented to the Department of Chemical Engineering, University of South Carolina, Columbia, SC on July 29, 2011 (*Invited Presentation*).

“Thermoelectric behavior of electrically conductive polymer nanocomposites,” by **J. C. Grunlan**, presented at International Conference on Materials for Advanced Technologies (ICMAT) 2011, in Singapore on June 27, 2011 (*Invited Presentation*).

“High electrical conductivity and thermoelectric performance in segregated network polymer nanocomposites,” by **J. C. Grunlan**, presented at Summer Forum on Materials and Nanotechnology, North Dakota State University, in Fargo, ND on June 9, 2011 (*Invited Plenary Lecture*).

“Polymer-clay nano brick walls for transparent gas barrier on plastic film,” by J. C. Grunlan, presented at the Pressure Sensitive Tape Council (PSTC) Week of Learning, Orlando, FL on May 12, 2011 (*Invited Presentation*). [This is where I received the plaque associated with winning the 2010 Carl A. Dahlquist Award, for best presentation, the previous year.](#)

“Layer-by-layer assembly of polymer and clay: Gas barrier and flame retardant thin films,” by **J. C. Grunlan**, presented at the 241<sup>st</sup> 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 240<sup>th</sup> 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 46<sup>th</sup>



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 237<sup>th</sup> 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*).

“Multifunctional polymer nanocomposites,” by **J. C. Grunlan**, presented to the Smart Plastics Group, University of South Brittany, in Lorient, France on June 9, 2008 (*Invited Presentation*).

“Multifunctionality of clay-based thin films prepared via layer-by-layer assembly,” by **J. C. Grunlan**, presented at the 235<sup>th</sup> 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 234<sup>th</sup> 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*).

“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**

“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*).

“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 229<sup>th</sup> American Chemical Society National Meeting, in San Diego, CA on March 17, 2005 (*Invited Presentation*).