William Mike Gramlich, Ph. D.

Associate Professor of Chemistry

Department of Chemistry
University of Maine, 171 Aubert Hall
Office: (207)581-1173
E-mail: william.gramlich@maine.edu

Education

Ph.D. in Chemical Engineering, University of Minnesota **2012**

Thesis Advisor: Marc A. Hillmyer

B.S. in Chemical Engineering, University of Maine **2006**

Thesis Advisors: David J. Neivandt and Douglas J. Gardner

Professional Positions

University of Maine – Department of Chemistry	**2013 – present**
Associate Professor of Chemistry	2019 – present
Associate Faculty, UMaine Institute of Medicine	2020 – present
Associate Faculty, Forest Bioproducts Research Institute	2018 – present
Assistant Professor of Chemistry	2013 – 2019
Cooperating Faculty, Advanced Structures and Composites Center	2013 – present
Graduate Faculty, Graduate School of Biomedical Sciences and Engineering	2013 – present

University of Pennsylvania – Department of Bioengineering **2012 – 2013**

Postdoctoral Research Fellow, Research advisor: Jason A. Burdick

Professional Activities

Special Recognition and Awards

University of Maine Pretenure Research and Creative Activity Fellowship	2014 – 2015
Gramlich *et al. Biomaterials* **2013** was featured as an Editor's Choice Article in Science	2013

University of Maine

EMPOWER Faculty Mentor for Tomas Marangoni in Department of Chemistry	2022 – present
EMPOWER Faculty Mentor for Bashir Khoda in Department of Mechanical Engineering	2021 – 2022
Department of Chemistry Graduate Coordinator	2019 – 2022
ACS Student Chapter Faculty Advisor	2014 – present
Graduate admissions committee – Department of Chemistry	2014 – present
Member of University of Maine Paper Surface Science Program	2013 – present
Chair of Graduate Admissions for Graduate School of Biomedical Sciences and Engineering	2018 – 2020
University of Maine Center for Undergraduate Research Fellow	2014 – 2016
Graduate admissions committee – Graduate School of Biomedical Sciences and Engineering	2013 – 2017
Grad board representative – Graduate School of Biomedical Sciences and Engineering	Fall 2013

Professional Organizations

Member American Chemical Society, Member Society for Biomaterials

William Mike Gramlich, Ph. D.

Associate Professor of Chemistry

Department of Chemistry
University of Maine, 171 Aubert Hall
Office: (207)581-1173
E-mail: william.gramlich@maine.edu

Peer Reviewed Publications (* denotes W. M. Gramlich as corresponding author)

53) Ahmad, A. A. L.; Shams Es-haghi, S.; Gramlich, W. M.* "Enhancing Poly(lactic acid) Composites with Polymer-Modified Bleached Softwood Kraft Pulp Before and After Fibrillation." *ACS Appl. Polym. Mater*. **2024**, 6, 20, 12575–12584.

52) Copenhaver, K.; Bista, B.; Wang, L.; Bhagia, S.; Lamm, M.; Zhai, X.; Tajvidi, M.; Gramlich, W. M.; Hubbard, A. M.; Clarkson, C.; Gardner, D. J. "Improving the Recyclability of Polymer Composites With Cellulose Nanofibrils." *J Polym Environ* **2024**, https://doi.org/10.1007/s10924-024-03257-x.

51) Uchefuna, C.; Bousfield, D.; Gramlich, W. M.* "Montmorillonite Pigment Effects on the Water Barrier Properties of Paper Coated with Latexes Synthesized through Surfactant and Pickering Emulsion Methods." *Progress in Organic Coatings* **2024**, 189, 108367.

50) Ahmad, A. A. L.; Gramlich, W. M.* "Methacrylate and polymer grafting pulp pretreatments reduce refining energy to produce modified cellulose nanofibrils." *Cellulose*, **2024**, 31, 2865 – 2880.

49) Senkum, H.; Kelly, P. V.; Ahmad, A. A. L.; Shams Es-haghi, S.; Gramlich, W. M.* "Strengthening polylactic acid (PLA) composites with poly(methyl methacrylate)-functionalized cellulose nanofibrils created through grafting-through emulsion polymerization." *RSC Appl. Polym.* **2024**, 2, 224-237.

48) Morrison, T. X.; Gramlich, W. M.* "Tunable, thiol-ene, interpenetrating network hydrogels of norbornene-modified carboxymethyl cellulose and cellulose nanofibrils." *Carbohydrate Polymers* **2023**, *319*, 121173.

47) Driscoll, M. E.; Kelly, P. V.; Gramlich, W. M.* "Impact of Aqueous Grafting of Polystyrene through Methacrylate-Modified Cellulose Nanofibrils on Emulsion Stabilization and Drying Behavior." *Langmuir* **2023**, *39*, 7079 – 7090.

46) Kelly, P. V.; Shams Es-haghi, S.; Lamm, M. E.; Copenhaver, K.; Ozcan, S.; Gardner, D. J.; Gramlich, W. M.* "Polymer-Grafted Cellulose Nanofibrils with Enhanced Interfacial Compatibility for Stronger Poly(lactic acid) Composites." *ACS Applied Polymer Materials* **2023**, *5*, 3661 – 3676.

45) Khoda, B.; Gramlich, W. M.; Shovon, SM N.; Khalil, I. "Effect of molecular weight on polymer solution facilitated transfer of non-Brownian particles." *Progress in Organic Coatings* **2023**, *176*, 107394.

44) Christau, S.; Alyamac-Seydibeyoglu, E.; Thayer, K.; Gramlich, W. M.* "Effects of an aqueous surface modification via a grafting-through polymerization approach on the fibrillation and drying of bleached softwood kraft pulp." *Cellulose* **2023**, *30*, 901-914.

43) Wang, L.; Kelly, P. V.; Ozveren, N.; Zhang, X.; Korey, M.; Chen, C.; Li, K.; Bhandari, S.; Tekinalp, H.; Zhao, X.; Wang, J.; Seydibeyoğlu, M. O.; Alyamac-Seydibeyoglu, E.; Gramlich, W. M.; Tajvidi, M.; Webb, E.; Ozcan, S.; Gardner, D. J. "Multifunctional polymer composite coatings and adhesives by incorporating cellulose nanomaterials." *Matter* **2023**, *6*, 344 – 372.

42) Lamm, M. E.; Li, K.; Copenhaver, K.; Kelly, P. V.; Senkum, H.; Tekinalp, H.; Gramlich, W. M.; Ozcan, S. "Aqueous-based polyimine functionalization of cellulose nanofibrils for effective drying and polymer composite reinforcement." *ACS Applied Polymer Materials* **2022**, *4,* 7674 – 7684.

41) Shovon, Naser S. M.; Alam, A.; Gramlich, W. M.; Khoda, B. "Micro-particle entrainment from density mismatched liquid carrier system." *Scientific Reports* **2022**, 9806. DOI: 10.1038/s41598-022-14162-5

40) Copenhaver, K.; Li, K.; Wang, L.; Lamm, M.; Zhao, X.; Korey, M.; Neivandt, D.; Dixon, B.; Sultana, S.; Kelly, P.; Gramlich, W. M.; Tekinalp, H.; Gardner, D. J.; MacKay, S.; Nawaz, K.; Ozcan, S. "Pretreatment of lignocellulosic feedstocks for cellulose nanofibril production." *Cellulose* **2022**, *29,* 4835 – 4876.

William Mike Gramlich, Ph. D.

Associate Professor of Chemistry

Department of Chemistry
University of Maine, 171 Aubert Hall
Office: (207)581-1173
E-mail: william.gramlich@maine.edu

39) Flanders, M.; Gramlich, W. M.* "Water-Soluble and Degradation-Resistant Curcumin Copolymers from Reversible Addition–Fragmentation Chain (RAFT) Copolymerization." *Macromolecules* **2022**, *55*, 4064 – 4075.

38) Tavana, J.; Faysal, A.; Vithanage, A.; Gramlich, W. M.*; Schwartz, T. J. "Pathway to fully-renewable biobased polyesters derived from HMF and phenols." *Polymer Chemistry* **2022**, *13*, 1215 – 1227.

37) Zhu, Y.; Bousfield, D.; Gramlich, W. M.* "The influence of pigment modulus on failure resistance of paper barrier coatings." *Nordic Pulp and Paper Research Journal* **2021**, *37,* 97 – 107.

36) Kelly, P. V.; Gardner, D. J.; Gramlich, W. M.* "Optimizing lignocellulosic nanofibril dimensions and morphology by mechanical refining for enhanced adhesion." *Carbohydrate Polymers* **2021**, *273*, 118566.

35) Senkum, H.; Kelly, P. V.; Gramlich, W. M.* "Water-Stable Thin-Film Nanostructures from Amphiphilic Cationic Bottlebrush Block Copolymers by Grafting-through Ring-Opening Metathesis Polymerization." *Macromolecules* **2021**, *54*, 7987-7997.

34) Fein, K.; Bousfield, D. W.; Gramlich, W. M.* "Processing Effects on Structure, Strength, and Barrier Properties of Refiner-Produced Cellulose Nanofibril Layers." *ACS Applied Polymer Materials* **2021**, *3*, 3666-3678.

33) Zhu, Y.; Bousfield, D.; Gramlich, W. M.* "Failure prediction of waterborne barrier coatings during folding." *Journal of Coating Technology and Research* **2021**, *18*, 1117-1129.

32) Dadoo, N.; Zeitler, S.; McGovern, A. D.; Gramlich, W. M.* "Waterborne functionalization of cellulose nanofibrils with norbornenes and subsequent thiol-norbornene gelation to create robust hydrogels." *Cellulose* **2021**, *28*, 1339 - 1353**.**

31) Kelly, P. V.; Cheng, P.; Gardner, D. J.; Gramlich, W. M.* "Aqueous Polymer Modification of Cellulose Nanofibrils by Grafting-Through a Reactive Methacrylate Group." *Macromolecular Rapid Communications* **2021**, *42*, 2000531.

30) Fein, K.; Bousfield, D.; Gramlich, W. M.* "Thiol-norbornene reactions to improve natural rubber dispersion in cellulose nanofiber coatings." *Carbohydrate Polymers* **2020,** *250*, 117001.

29) Hossen, M.R., Talbot, M.W., Gramlich, W.M., Mason, M. D. "Robust nanofibrillated cellulose composite SERS substrate for capillary preconcentration and trace level detection of organic molecules." *Cellulose* **2020,** *27*, 10119 – 10137.

28) Ji, S.; Abaci, A.; Morrison, T.; Gramlich, W. M.; Guvendiren, M. "Novel bioinks from UV-responsive norbornene-functionalized carboxymethyl cellulose macromers." *Bioprinting* **2020**, *18*, e00083.

27) Senkum, H.; Gramlich, W. M.* "Cationic bottlebrush polymers from quaternary ammonium macromonomers by grafting-through ring-opening metathesis polymerization." *Macromolecular Chemistry and Physics* **2020**, *221*, 1900476.

26) Fein, K.; Bousfield, D.; Gramlich, W. M.* "The influence of versatile thiol-norbornene modifications to cellulose nanofibers on rheology and film properties." *Carbohydrate Polymers* **2020**, *230*, 115672

25) Purington, E.; Bousfield, D.; Gramlich, W. M.* "Fluorescent dye adsorption in aqueous suspension to produce tagged cellulose nanofibers for visualization on paper." *Cellulose* **2019**, *26*, 5117 – 5131.

24) Zhu, Y.; Bousfield, D.; Gramlich, W. M.* "The influence of pigment type and loading on water vapor barrier properties of paper coatings before and after folding." *Progress in Organic Coatings* **2019**, *132*, 201 – 210.

William Mike Gramlich, Ph. D.
Associate Professor of Chemistry

Department of Chemistry
University of Maine, 171 Aubert Hall
Office: (207)581-1173
E-mail: william.gramlich@maine.edu

23) Salari, M.; Bitounis, D.; Bhattacharya, K.; Pyrgiotakis, G.; Zhang, Z.; Purington, E.; Gramlich, W. M.; Grondin, Y.; Rogers, R.; Bousfield, D.; Demokritou, P. "Development & characterization of fluorescently tagged nanocellulose for nanotoxicological studies." *Environmental Science: Nano* **2019**, *6*, 1516 – 1526.

22) McOscar, T. V. C.; Gramlich, W. M.* "Hydrogels from Norbornene-Functionalized Carboxymethyl Cellulose Using a UV-Initiated Thiol-Ene Click Reaction." *Cellulose* **2018**, *25*, 6531 – 6545.

21) Hossen, M. R.; Dadoo, N.; Holomakoff, D. G.; Co, A.; Gramlich, W. M.; Mason, M. D. "Wet Stable and Mechanically Robust Cellulose Nanofibrils (CNF) Based Hydrogel." *Polymer* **2018**, *151*, 231 – 241.

20) Flanders, M. J.; Gramlich, W. M.* "Reversible-addition fragmentation chain transfer (RAFT) mediated depolymerization of brush polymers." *Polymer Chemistry* **2018**, *9*, 2328 – 2335.

19) Wang, L.; Gramlich, W. M.; Gardner, D. J.; Han, Y.; Tajvidi, M. "Spray-Dried Cellulose Nanofibril-Reinforced Polypropylene Composites for Extrusion-Based Additive Manufacturing: Nonisothermal Crystallization Kinetics and Thermal Expansion." *Journal of Composites Science* **2018**, *2*, 7.

18) Kwon, M. Y.; Vega, S. L.; Gramlich, W. M.; Kim, M.; Mauck, R. L.; Burdick, J. A. "Dose and Timing of N-Cadherin Mimetic Peptides Regulate MSC Chondrogenesis within Hydrogels." *Advanced Healthcare Materials* **2018**, 1701199.

17) Ghasemi, S.; Tajvidi, M.; Bousfield, D. W.; Gardner, D. J.; Gramlich, W. M. "Dry-Spun Neat Cellulose Nanofibril Filaments: Influence of Drying Temperature and Nanofibril Structure on Filament Properties." *Polymers* **2017**, *9*, 392.

16) Purington, E.; Blakely, A.; Bousfield, D.; Gramlich, W. M.* "Visualization of latex and starch in paper coatings by tagging with fluorescent dyes." *Nordic Pulp and Paper Research Journal* **2017**, *32*, 395-406.

15) Dadoo, N.; Landry, S. B.; Bomar, J. D.; Gramlich, W. M.* "Synthesis and spatiotemporal modification of biocompatible and stimuli responsive carboxymethyl cellulose hydrogels using thiol-norbornene chemistry." *Macromolecular Bioscience* **2017**, *17*, 1700107.

14) Wang, L.; Gramlich, W. M.; Gardner, D. J. "Improving the Impact Strength of Poly(lactic acid) (PLA) in Fused Layer Modeling (FLM)." *Polymer* **2017**, *114*, 242-248.

13) Vithanage, A. E.; Chowdhury, E.; Alejo, L. D.; Pomeroy, P. C.; DeSisto, W. J.; Frederick, B. G.; Gramlich, W. M.* "Renewably sourced phenolic resins from lignin bio-oil." *Journal of Applied Polymer Science* **2017**, *134*, 44827.

12) Dadoo, N.; Gramlich, W. M.* "Spatiotemporal modification of stimuli responsive hyaluronic acid/poly(N-isopropylacrylamide) hydrogels." *ACS Biomaterials Science and Engineering* **2016**, *2*, 1341-1350.

11) Wade, R. J.; Bassin, E. J.; Gramlich, W. M.; Burdick, J. A. "Nanofibrous hydrogels with spatially patterned biochemical signals to control cell behavior." *Advanced Materials* **2015**, *27*, 1356–1362.

10) Gramlich, W.M.* "Toughening polylactide with phase-separating complex copolymer architectures." *Macromolecular Chemistry and Physics* **2015**, *216*, 145–155.

9) Kerstetter, J. L.; Gramlich, W.M.* "Nanometer-scale Self-Assembly of Amphiphilic Copolymers to Control and Prevent Biofouling." *Journal of Materials Chemistry B* **2014**, *2*, 8043-8052.

8) Gramlich, W.M.; Rai, R.; Holloway, J. L.; Burdick, J. A. "Transdermal gelation of methacrylated macromers with near-infrared light and gold nanorods." *Nanotechnology* **2014,** *25*, 014004.

William Mike Gramlich, Ph. D.

Associate Professor of Chemistry

Department of Chemistry
University of Maine, 171 Aubert Hall
Office: (207)581-1173
E-mail: william.gramlich@maine.edu

7) Gramlich, W. M.; Kim, I. L.; Burdick, J. A. "Synthesis and orthogonal photopatterning of hyaluronic acid hydrogels with thiol-norbornene chemistry." *Biomaterials* **2013**, *34*, 9803–9811. **(Featured as an Editor's Choice Article in *Science*, 342, 165.)**
6) Moughton, A. O.; Sagawa, T.; Gramlich, W. M.; Seo, M.; Lodge, T. P.; Hillmyer, M. A. "Synthesis of block polymer *mikto*brushes." *Polymer Chemistry* **2013**, *4*, 166–173.
5) Gramlich, W. M.; Theryo, G.; Hillmyer, M. A. "Copolymerization of isoprene and hydroxyl containing monomers by controlled radical and emulsion methods." *Polymer Chemistry* **2012**, *3*, 1510–1516.
4) Gramlich, W. M.; Hillmyer, M. A. "Catalytic synthesis and post polymerization functionalization of conjugated polyisoprene." *Polymer Chemistry* **2011**, *2*, 2062–2067**.**
3) Gramlich, W. M.; Robertson, M. L.; Hillmyer, M. A. "Reactive compatibilization of poly(L-lactide) and conjugated soybean oil." *Macromolecules* **2010**, *43*, 2313–2321.
2) Robertson, M. L.; Chang, K.; Gramlich, W. M.; Hillmyer, M. A. "Toughening of polylactide with polymerized soybean oil." *Macromolecules* **2010**, *43*, 1807–1814.
1) Gramlich, W. M.; Gardner, D. J.; Neivandt, D. J. "Surface treatments of wood-plastic composites (WPCs) to improve adhesion." *Journal of Adhesion Science and Technology* **2006**, *20*, 1873–1887.

Invited Presentations (presented by W. M. Gramlich)

21) William M. Gramlich "Sustainable Composite Chemistry for Large Scale Additive Manufacturing." Maine ACS Local Section Meeting, Orono, ME. February 22, 2024.
20) William M. Gramlich "Waterborne modifications to cellulose nanofibrils for biomaterials, coatings, and composites." Cellulose Nanomaterials Forum, Orono, ME. August 24, 2023.
19) William M. Gramlich "Wood derivable polyesters with tunable properties." Lignin Production & Application Webinar, March 14, 2023
18) William M. Gramlich "Woody biomass derivable polyesters with selectable pendant groups." American Chemical Society Fall National Meeting, Chicago, IL, August 21-25, 2022.
17) Hathiathep Senkum, William M. Gramlich "Surfactant free emulsion polymerization to create polymer brush modified cellulose nanofibril reinforcements for poly(lactic acid)" American Chemical Society Fall National Meeting, Chicago, IL, August 21-25, 2022.
16) William M. Gramlich "Amphiphilic bottlebrush copolymers for biomedical applications synthesized from challenging monomers" Rowan University Department of Chemistry, Virtual, April 13, 2022.
15) William M. Gramlich "Aqueous modified cellulose nanofibrils that improve the mechanical properties of poly(lactic acid) composites" APPTI Biobased Nanocellulose Materials for Advanced Manufacturing Webinar, Virtual, April 4, 2022.
14) William M. Gramlich "Sustainable polymers from wood" University of Massachusetts – Dartmouth, Virtual, February 9, 2022.
13) William M. Gramlich "Sustainable polymers from wood" Western Connecticut State University, Virtual, September 17, 2021
12) William M. Gramlich "Waterborne modifications to CNF" Cellulose Nanomaterials Forum, Orono, ME. August 26, 2021.

William Mike Gramlich, Ph. D.

Associate Professor of Chemistry

Department of Chemistry
University of Maine, 171 Aubert Hall
Office: (207)581-1173
E-mail: william.gramlich@maine.edu

11) William M. Gramlich "Waterborne modifications to CNF" Cellulose Nanomaterials Forum, Orono, ME. August 29, 2019.
10) William M. Gramlich "New sustainable, forest-based bioplastics - Creating sustainable polyesters with higher usable temperatures" Bioplastics Summit, Orono, ME. May 2, 2019.
9) William M. Gramlich "Spatiotemporally modifiable hydrogels as extracellular matrix mimics" Maine Biological and Medical Science Symposium, Bar Harbor, ME. April 29, 2017.
8) William M. Gramlich "Spatiotemporally Modifiable Hydrogels from Cellulose" BioEngineering 2017: BioMEMS, 3D-Bioprinting, Tissue Engineering & Synthetic Biology Conference, Boston, MA. March 17, 2017.
7) William M. Gramlich "Spatiotemporally modifiable hydrogels as controllable extracellular matrix mimics" The Jackson Laboratory, Bar Harbor, ME. December 9, 2016.
6) William M. Gramlich "Next Generation Hydrogels from Renewable Sources for Biomedical Applications" Colby College, Waterville, ME. September 30, 2016.
5) Nayereh Dadoo, Samuel Landry, William M. Gramlich "Green methods to functionalize cellulose derivatives to create robust hydrogels" American Chemical Society Fall National Meeting, Philadelphia, PA. August 22, 2016.
4) Nayereh Dadoo, William M. Gramlich "Modular assembly of spatiotemporally patternable, stimuli responsive hydrogels" American Chemical Society Spring National Meeting, San Diego, CA. March 14, 2016.
3) William M. Gramlich "Creating hierarchically structured sustainable materials using modular synthesis strategies" Oak Ridge National Laboratory Center for Nanophase Materials Sciences User Meeting, Oak Ridge, TN. September 02, 2015.
2) William M. Gramlich "Synthesis of spatially and temporally controlled hydrogels" University of Maine Department of Chemical and Biological Engineering Seminar Series, Orono, ME. January 24, 2014.
1) William M. Gramlich "Hierarchical patterning of polymers towards creating biomimetic surfaces" University of Maine Physics Colloquium, Orono, ME. November 22, 2013.

Funded Research Projects

18) Customizable 3D Matrix to Investigate Glycan Function. (9/24). Role: co-PI. Responsibility: 50%. Funder: National Institutes of Health. Amount: $434,385/36 mo.
17) Innovative High-Feed Rate Additive Manufacturing Using Sustainable Nano- Micro- Cellulose-Reinforced Thermoplastic Composites Supplement. (4/24)
Role: co-PI. Responsibility: 10%. Funder: Department of Energy. Amount: $1,999,000/21 mo.
16) Bio-based polyurethane foams for wall cavity retrofits. (11/23)
Role: PI. Responsibility: 60%. Funder: Department of Energy. Amount: $40,000/6 mo.
15) Sustainable Forest Based Packaging. (10/22)
Role: co-PI. Responsibility: 10%. Funder: USDA Agricultural Research Service. Amount: $1,007,267/36 mo.
14) Understanding how latex stabilizers affect coating barrier properties. (1/22)
Role: PI. Responsibility: 50%. Funder: University of Maine Paper Surface Science Program. Amount: $68,100/24 mo.
13) Large-Scale additive manufacturing. (11/20)

William Mike Gramlich, Ph. D.
Associate Professor of Chemistry

Department of Chemistry
University of Maine, 171 Aubert Hall
Office: (207)581-1173
E-mail: william.gramlich@maine.edu

Role: co-PI. Responsibility: 5%. Funder: Department of Energy. Amount: $9,000,000/36 mo.

12) Innovative High-Feed Rate Additive Manufacturing Using Sustainable Nano- Micro- Cellulose-Reinforced Thermoplastic Composites. (10/19)
Role: co-PI. Responsibility: 5%. Funder: Department of Energy. Amount: $9,000,000/36 mo.

11) Design, Development, and Evaluation of Prototype Engineered Energy Efficient and Low Logistic Burden Materials and Processes. (10/18)
Role: co-PI. Responsibility: 1%. Funder: US Dept of Defense through Consortium Management Group (CMG). Amount: $6,418,000/36 mo.

10) Understanding how pigment shape and flexibility in barrier coatings affects coating cracking during folding. (9/18)
Role: PI. Responsibility: 50%. Funder: University of Maine Paper Surface Science Program. Amount: $68,100/24 mo.

9) Acquisition of a 500 MHz NMR spectrometer with improved sensitivity and accessibility to benefit research and education at UMaine. (9/18)
Role: co-PI. Responsibility: 10%. Funder: National Science Foundation. Amount: $535,900/36 mo.

8) Technical and economic feasibility evaluation and pilot-scale production of composite panels made from low-cost cellulose nanomaterials and wood residues. (9/17)
Role: co-PI. Responsibility: 8%. Funder: USDA Agricultural Research Service Amount: $399,999/36 mo.

7) Functionalization of starch to modify hydrophobicity and flexibility. (9/17)
Role: PI. Responsibility: 100%. Funder: Sappi North America. Amount: $75,270/15 mo.

6) Production of snack packaging using a cellulose nanofiber layer. (3/17)
Role: co-PI. Responsibility: 25%. Funder: P3Nano - US Endowment for Forestry and Communities USDA Amount: $299,967/36 mo.

5) Functionalizing cellulose nanofibrils for packaging applications. (9/16)
Role: PI. Responsibility: 50%. Funder: University of Maine Paper Surface Science Program. Amount: $68,100/24 mo.

4) Acquisition of an environmental scanning probe microscope for multidisciplinary research, teaching, and outreach. (9/15)
Role: co-PI. Responsibility: 20%. Funder: National Science Foundation. Amount: $374,580/36 mo.

3) Using cellulose nanofibrils as a green adhesive for particleboard manufacture. (2/15)
Role: co-PI. Responsibility: 10%. Funder: P3Nano - US Endowment for Forestry and Communities. Amount: $348,284/36 mo.

2) Maine EPSCoR: The Nexus of Coastal Marine Social-Environmental Systems. (9/14)
Role: senior personnel. Responsibility: 1%. Funder: National Science Foundation. Amount: $20,000,000/60 mo.

William Mike Gramlich, Ph. D.

Associate Professor of Chemistry

Department of Chemistry
University of Maine, 171 Aubert Hall
Office: (207)581-1173
E-mail: william.gramlich@maine.edu

1) Tagging starch and latex for visualization in paper coatings. (9/14)
   Role: PI. Responsibility: 50%. Funder: University of Maine Paper Surface Science Program. Amount: $170,250/60 mo.