

# Autumn Elniski

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## EDUCATION

**SUNY College of Environmental Science and Forestry; Syracuse, NY**

**Ph.D., Biomaterials Engineering | May 2023**

Dissertation: *The Effect of Hot Water Extraction of Lignocellulosic Biomass and Recovered Lignin Addition on Fuel Pellet Properties*

Graduate Research Project Assistant (July 2017 – December 2022)

Herman L. Joachim Graduate Fellow (July 2017 – June 2019)

**Syracuse University; Syracuse, NY**

**M.S., Teaching and Curriculum | May 2023**

Certificate of University Teaching | December 2022

**SUNY College of Environmental Science and Forestry; Syracuse, NY**

**M.S., Paper Engineering | May 2017**

Thesis: *Biogas Production from the Anaerobic Codigestion of Office Paper and Cow Manure in a Batch Reactor*

Herman L. Joachim Graduate Fellow (August 2015 – June 2017)

**SUNY College of Environmental Science and Forestry; Syracuse, NY**

**B.S., Paper Engineering | May 2015**

Departmental Scholar for Graduating Class of 2015

## RESEARCH AND SCHOLARLY INTERESTS

- Thermomechanical processing and densification of lignocellulosic biomass
- Integration and characterization of renewable fibrous materials for engineered products
- Design and development of adaptive, structured instructional tools to support multi-step engineering problem solving and skill mastery
- Evidence-based pedagogical innovation in undergraduate engineering education

## ACADEMIC AND INSTRUCTIONAL APPOINTMENTS

**SUNY College of Environmental Science and Forestry; Syracuse, NY**

Instructional Support Specialist SL-4; Department of Chemical Engineering | January 2026 – Present

Curriculum Development, Instruction, and Academic Leadership

- Enhanced PSE 462 (Papermaking Processes I) by developing instructional materials and learning activities that integrate laboratory experiences, engineering design, project management, pilot-scale manufacturing, and industry-informed practices
- Restructured the instructional organization of ECH 202 (Principles of Mass and Energy Balances) by reorganizing course materials, refining preparation activities, and sequencing instructional content to strengthen scaffolded learning and increase opportunities for in-class problem solving
- Redesigned ECH 355 (Engineering Design Economics) course structure, sequencing, and assessments to strengthen alignment with measurable learning objectives

- Integrated structured pre-run preparation, mass and energy balance workflows, and industry-informed reporting formats into PSE 478/678 (Papermaking Processes II)
- Directed an undergraduate research project within the Paper and Bioprocess Technology Center (PBTC) focused on safety, maintenance, and operating documentation for pilot-scale and commercial-scale equipment
- Mentored graduate teaching assistant in lesson preparation, content delivery, assessment design, and reflective feedback practices
- Provided guidance on academic development, research progress, and technical content as steering committee member for Ph.D. candidacy committee

#### Pilot-Scale Operations and Production Support

- Operated pilot-scale and semi-commercial paper machines as part of the core production team during instructional runs and external client trials
- Performed preventative maintenance and facility upkeep, including equipment cleaning, minor repairs, and process readiness improvements
- Trained students and collaborators in equipment operation and safe laboratory practices across pilot plant and laboratory spaces
- Improved team readiness and accountability by implementing a shared task-tracking system supporting pilot plant operations, instructional activities, and research assistance
- Supported institutional outreach through pilot plant tours, community engagement activities, and promotion of facility capabilities

#### Camp Fire Program Administration

- Designed communication materials, including annual report summaries, student spotlights, and newsletters, to highlight program activities and accomplishments for internal and external stakeholders
- Coordinated with external vendors and university administrative offices to establish program accounts and operational resources for research and outreach activities
- Developed a structured information management system to organize program activities, publications, personnel, and other resources for website development and long-term program documentation

### **SUNY Onondaga Community College; Syracuse, NY**

Adjunct Faculty; Department of Chemistry and Physical Sciences | January 2023 – Present

- Adapted and implemented lecture materials and instructional activities for CHE 171 – General Chemistry I Lecture, CHE 171L – General Chemistry I Laboratory, CHE 121L – Introductory Chemistry Laboratory; CHE 172L – General Chemistry II Laboratory
- Revised laboratory handouts, instructional materials, and experimental procedures to improve clarity, organization, and student success
- Designed and implemented “Beaker Briefs” for General Chemistry I Laboratory, concise visual laboratory reference guides integrating experiment objectives, calculations, safety information, waste disposal procedures, and key concepts into at-bench instructional resources for students
- Fostered an inclusive laboratory learning environment by adapting instruction and providing individualized guidance to students with diverse academic backgrounds

## **SUNY College of Environmental Science and Forestry; Syracuse, NY**

Visiting Instructor; Department of Chemical Engineering | August 2023 – May 2025

Department of Chemistry

| August 2023 – December 2023

- Developed and implemented instruction for several undergraduate and graduate engineering and chemistry courses:
  - FCH 150 (General Chemistry I Lecture)
  - PSE 465/665 (Paper and Fiber Properties)
  - ECH 355 (Engineering Design Economics)
  - ECH 202/PSE 570 (Principles of Mass and Energy Balances)
  - PSE 462/662 (Papermaking Processes I)
  - PSE 478/678 (Papermaking Processes II)
- Applied instructional design principles and modern pedagogical practices through the redesign and restructuring of learning objectives, assessment materials, and course activities
- Created instructional materials including syllabi, lecture content, in-class activities, homework assignments, quizzes, examinations, worksheets, and projects
- Supervised and mentored graduate and undergraduate teaching assistants while coordinating instructional activities across multiple courses
- Supported student success through office hours, review sessions, individualized feedback, and continuous improvement of instructional materials
- Contributed to departmental service through ABET accreditation documentation, curriculum development, and faculty course assessment reporting

## **RESEARCH APPOINTMENTS**

### **SUNY College of Environmental Science and Forestry; Syracuse, NY**

Post-Doctoral Scholar; Department of Chemical Engineering | September 2023 – December 2025

Research Support Specialist; Department of Chemical Engineering | January 2023 – September 2023

- Conducted research for the Air Force Office of Scientific Research (AFOSR) funded project entitled “Focused Manufacturing of Hypersonic Materials” in collaboration with Kansas State University, Purdue University, and industrial partner Heetshield:
  - Produced insulation materials via laboratory handsheets and pilot scale paper machine
  - Executed optical and physical characterization of materials using standard and non-standard testing methods
  - Performed Scanning Electron Microscope (SEM) measurements on materials for surface and elemental analysis
  - Collaborated with faculty and staff across partnering institutions to interpret experimental data and support material modeling and uncertainty analysis
  - Disseminated research findings via sponsor meetings, conference presentations, and peer-reviewed publications

## **GRADUATE ACADEMIC APPOINTMENTS**

### **SUNY College of Environmental Science and Forestry; Syracuse, NY**

Herman L. Joachim Graduate Fellowship and Assistantship | August 2015 – December 2022

- Directed curriculum development, assessment design, course materials, and instructional delivery for GNE 330/530 (Professional Engineering Skills) over seven semesters, transitioning from a faculty-mentored instructional role to independently leading course instruction and administration
- Restructured and implemented the undergraduate internship and cooperative education program for the Department of Chemical Engineering from Spring 2016 through Spring 2018
- Assisted in the execution of the annual Order of the Engineer Ceremony for graduating Chemical Engineering undergraduate students
- Supported departmental operations and special events for the Syracuse Pulp and Paper Foundation and the Department of Chemical Engineering, including bi-annual meetings, donor mailings, and graduation ceremonies
- Engaged prospective students, families, and community members through recruitment, outreach, and networking events, including Open Houses, Accepted Student Days, the Central New York Girls' Summit, and high school career fairs
- Represented SUNY-ESF and the Syracuse Pulp and Paper Foundation as a general and special awards judge at the Central New York Science and Engineering Fair, evaluating projects for environmental science and paper engineering awards

## **ADDITIONAL TEACHING EXPERIENCE**

### **New York Academy of Sciences; Syracuse, NY**

Young Naturalist Educator and Library STEM Program Educator | June 2018 – August 2018

- Designed and delivered STEM instructional materials, hands-on learning activities, and instructional materials for elementary and middle school students participating in community library outreach programs
- Collaborated in the development of Individual Service Plans (ISP) and implemented STEM activities to support learning outcomes for underserved youth
- Mentored students through after-school programming by providing individualized academic support and STEM homework assistance

### **SUNY College of Environmental Science and Forestry; Syracuse, NY**

Academic Success Center Tutor | January 2011 – May 2013

- Provided individualized and small-group tutoring in Calculus I-III, General Chemistry I-II, Differential Equations, and Computing Methods to support undergraduate student success

## PUBLICATIONS

Sergio A.; Paulien, Lucas; Elniski, Autumn; Daryabeigi, Kamran; Miller, Steve; Berg, Matthew J. 2026.

“Modeling radiative transfer in carbon-opacified fiber composites”. International Journal of Heat and Mass Transfer. Volume 255, Part 1, 127776.

Elniski, Autumn; Bujanovic, Biljana. 2025. “Effect of Hot Water Extraction of Lignocellulosic Biomass on Fuel Pellet Properties”. Fuels 6(4): 74.

Carvajal, Sergio A.; Paulien, Lucas; Elniski, Autumn; Daryabeigi, Kamran; Berg, Matthew J. 2025. “Analytical models of radiative transfer in fibrous insulation under collimated irradiation”. International Journal of Heat and Mass Transfer. Volume 244, 126961.

Elniski, Autumn; Dongre, Prajakta; Bujanovic, Biljana. 2023. “Lignin Use in Enhancing the Properties of Willow Pellets”. Forests 14(10): 2041.

Elniski, Autumn. 2023. “The Effect of Hot Water Extraction of Lignocellulosic Biomass and Recovered Lignin Addition on Fuel Pellet Properties”. PhD Dissertation. State University of New York College of Environmental Science and Forestry, Syracuse, NY. ProQuest Dissertations and Theses. Web.

Elniski, Autumn R.; Chatterjee, Siddharth G.; Mondal, Chanchal; and Doelle, Klaus. 2019. “Effects of Substrate to Inoculum Ratio on Biogas Production from Anaerobic Co-Digestion of Office Paper and Cow Manure.” Journal of Energy Research and Reviews 3(4): 1–15.

Elniski, Autumn. 2017. “Biogas Production from the Anaerobic Codigestion of Office Paper and Cow Manure in a Batch Reactor”. MS thesis. State University of New York College of Environmental Science and Forestry, Syracuse, NY. ProQuest Dissertations and Theses. Web.

## GRANTS AND FUNDING

### **Innovative Instruction Technology Grants (IITG) and Open Educational Resources (OER) Impact Grant**

Principal Investigator

State University of New York | FY 2026-2027 | \$14,000

*“Development of a Criterion Referenced Instructional Tool for SUNY Engineering Programs to Support Student Remediation and Learning”.*

- Continued development of instructional tool and refinement of skill packages

Co-Principal Investigator

State University of New York | FY 2025-2026 | \$14,500

*“Development of a Criterion Referenced Instructional Tool for SUNY Engineering Programs to Support Student Remediation and Learning”.*

- Prepared Institutional Review Board (IRB) materials for research involving human subjects, developed instructional tool base with Blackboard integration, and coordinated with sponsors

### **New York State Energy Research and Development Authority (NYSERDA) Contract Agreement 63029**

Graduate Researcher

NYSERDA | FY 2017-2023

*“Lowering Ash Content of Biomass Using Hot-Water Extraction (HWE) and Hot-Water Extracted Lignin”*

- Assisted in preparing successful no-cost extension proposal, including technical justification, sponsor communication, progress reporting, and development of the proposed research scope.

## CONFERENCE AND SCHOLARLY PRESENTATIONS

### **National Aeronautics and Space Administration (NASA) and Air Force Office of Scientific Research (AFOSR) Radiation Mitigation Review**

NASA and AFOSR | Langley, VA | 2024

- Presented research on manufacturing and characterizing Opacified Fibrous Materials (OFM) during a technical review involving researchers from SUNY-ESF, Kansas State University, Purdue University, Heetshield, Sabanci University, NASA Langley, University of Connecticut, University of Southern California, NASA Headquarters

### **Air Force Office of Scientific Research (AFOSR) Joint Review**

AFOSR | University of Notre Dame; University of California – Davis | 2023; 2024

- Presented research on laboratory scale product development and base manufacturing of Opacified Fibrous Materials (OFM) involving researchers from SUNY-ESF, Kansas State University, Purdue University, University of Notre Dame, and University of California – Davis

### **Technical Association of the Pulp and Paper Industry (TAPPI) Student Summit**

TAPPI | Cincinnati, OH; Atlanta, GA; Charleston, SC | 2023; 2020; 2018; 2017

- Roundtable Discussion Leader: “From Internships to Research: Two Worlds of Working with Paper Related Fields”; “Industrial Wastewater Treatment in the Pulp and Paper Industry”; “Three Questions to Ask About Wastewater Treatment”; “Environmental Impact and Water Treatment [in the paper industry]”; “Humbly Promoting Yourself without Boasting”
- Panel Moderator: “How to get the most out of an Internship/Co-op”

### **International Bioenergy and Bioproducts Conference**

TAPPI | Providence, RI | 2022

- Research Presentation: “The Effects of Hot Water Extraction of Lignocellulosic Biomass on Fuel Pellet Properties”

### **International Forest Biorefining Conference and Symposium on Lignocellulosic Materials**

Lakehead University Biorefining Research Institute | Thunder Bay, ON, CA | 2019

- Research Presentation: “Valorization of Hot Water Extracted Lignin from Different Angiosperms”

### **Syracuse Center of Excellence 17<sup>th</sup> Annual Symposium**

Syracuse Center of Excellence | Syracuse, NY | 2017

- Poster Session: “Enhancements of Pellets from Lignocellulosic Biomass: Installation of Pelheat Pelletizer and Preliminary Research”.
- Poster Session: “Modeling Biogas Production from the Anaerobic Digestion of Cow Manure.”
- Co-authors: Chatterjee, S., Mondal, C., Doelle, K.

### **Northeastern Area Association of State Foresters (NAASF) Forest Utilization Annual Meeting**

NAASF | Syracuse, NY | 2017

- Poster Session: “Biogas Production from the Anaerobic Codigestion of Office Paper and Cow Manure.”
- Co-authors: Chatterjee, S., Mondal, C., Doelle, K.

## **GUEST LECTURES AND INVITED TALKS**

### **ECH 380 – Process Simulation Modeling**

Guest Lecture | SUNY-ESF | 2025; 2026

- Presentation: “Profitability and Economic Evaluation of Projects”

### **PSE 350 – Fiber Processing**

Guest Lecture | SUNY-ESF | 2018; 2019; 2020; 2021; 2022

- Presentation: “Fuel Pellets: A Brief Introduction”
- Laboratory Demonstration: Pellet Production with Pelheat Pelletizer

### **BPE 300 – Introduction to Industrial Bioprocessing**

Guest Lecture | SUNY-ESF | 2017

- Presentation: “The Importance of Wastewater Treatment and an Introduction to Anaerobic Digestion”

### **Syracuse Pulp and Paper Foundation Joachim Speaker Series**

Invited Talk | SUNY-ESF | 2016

- Presentation: “What the Effluent? Getting Your Feet Wet in Industrial Wastewater”

## **INDUSTRIAL EXPERIENCE**

### **Norampac Industries Inc. ; Niagara Falls, NY**

Environmental Production Engineering Intern | May 2013 – August 2015

- Authored Standard Operating Procedure and Troubleshooting manuals (SOPs) for all processes and laboratory procedures in the Effluent Treatment Plant (ETP)
- Assisted Greenpac Health and Safety Administrator in documenting A-Risk (Hazardous) Factors in the Norampac Paper Mill
- Designed Microsoft Excel-based data management systems for the ETP
- Trained operators and managers in the use of laboratory equipment and testing procedures
- Compiled Material Safety Data Sheet (MSDS) binder for laboratory and bulk chemicals in ETP
- Facilitated the establishment of the ETP testing laboratory, including identifying required tests, purchasing and installing equipment, and organizing workflows
- Evaluated the safety of the ETP work environment with official Personal Protective Equipment (PPE) Hazard Assessment Certification
- Completed online training seminars for workplace safety, including asbestos, confined space entry, harassment, fire safety, emergency action plans, PPE, and hazard recognition

### **Rock-Ten Company ; Solvay, NY**

Water Recycling Facility Laboratory Intern | August 2012 – December 2012

- Performed daily and weekly laboratory tests to monitor the concentrations of specific physical, chemical, and biological compounds in influent and effluent in the Water Recycling Facility (WRF)
- Assisted in reporting and troubleshooting anomalies with wastewater test results with effluent treatment manager

**Fibermark, Inc. ; Brownville, NY**

General Mill Intern | May 2012 – August 2012

- Transformed old site documents into a new formatted database using Microsoft Word, Microsoft Excel, and Powerbuilder for International Organization for Standardization (ISO) certification
- Trained quality control team and human resource department in navigating the formatted database
- Participated in troubleshooting regarding wet end and dry end chemical issues impacting the paper machine and paper coater

**PROFESSIONAL DEVELOPMENT****United States National Science Foundation Advancing Careers in Academic Disciplines with Education and Mentorship in Engineering (ACADEME); Akron, OH**

US-NSF ACADEME Fellow, NSF EEC 2405232 | July 2025 – Present

- Selected as an NSF ACADEME Fellow to participate in a year-long professional development and mentoring program designed to prepare future engineering faculty
- Participated in workshops and mentoring emphasizing:
  - Faculty career development and tenure expectations
  - Research planning, budgeting, and proposal development
  - Evidence-based teaching, assessment, and ABET accreditation
  - Instructional design, lesson planning, and rubric development
  - Academic leadership, mentoring, and professional networking

**Certificate of Completion of Responsible Conduct of Research for Engineers Course**

CITI Program – SUNY College of Environmental Science and Forestry | June 2025

**Certificate of Completion of Independent Designing Your Online Course Training**

Quality Matters – SUNY Onondaga Community College | Summer 2023

**Certificate of Brightspace Fundamentals Training**

SUNY Center for Professional Development | Summer 2023

**Certificate of University Teaching**

Syracuse University Future Professoriate Program | December 2022

**Six Sigma Yellow Belt Certification**

SUNY College of Environmental Science and Forestry | May 2016

**National Occupation Competency Testing Institute (NOCTI) Certification in Forestry and Forest Products**

McKinley High School | June 2010

## **LEADERSHIP, OUTREACH, AND PROFESSIONAL SERVICE**

### **Professional Service**

- Technical Association of the Pulp and Paper Industry (TAPPI) Student Summit Planning Committee Member (2017 - Present)
- New York State Science Congress Senior Division Poster Judge (June 2026)
- ESF in the High School Environmental Summit Judge (June 2026, June 2024)
- Senior and Special Awards Judge at the Central New York (CNY) Science and Engineering Fair (March 2025 – March 2017; March 2015)
- Syracuse Academy of Science Elementary School Fourth Grade Science Fair Judge (February 2022)
- Twin Tiers Regional Science and Engineering Fair Judge (March 2021)
- Terra Science and Education/Rochester Institute of Technology GENIUS Olympiad Judge (June 2021 – June 2019)
- West Genesee Middle School Science Fair Judge (February 2020)

### **STEM Outreach and Community Engagement**

- Explore Engineering Camp Faculty Research Project Leader (August 2026)
- Central New York's Girls' Summit Activity Developer and Leader for Chemistry (April 2026)
- New York State Fair Activity Leader and Volunteer for SUNY-ESF Chemical Engineering Department (August 2025, August 2024, August 2023)
- ESF in the High School Campus Visit Activity Leader (November 2024)
- Central New York's Girls' Summit STEAM Keynote Speaker (April 2024)
- Central New York's Girls' Summit Activity Leader (April 2024, April 2022, April 2019)
- Van Buren Elementary STEM Night Fair Host (March 2022)
- Scientist in Residence (SiR) Program Tutor and Activity Planner (January 2018 – May 2018)
- Girl Scout and Boy Scout Merit Badge Day Coordinator and Implementer (2015 – 2018)

### **Leadership**

- Vice President of the Student Pagan Information, Relation, and Learning (SPIRAL) Group (May 2018 – May 2020)
- Alpha Phi Omega (APO) Co-Ed Service Fraternity Lifetime Member (Spring 2014 – Present)
- New York Academy of Sciences Scientist in Residence Program Participant (Spring 2018)
- APO Phi Chapter Executive Board: Vice President of Pledging (Fall 2015), Vice President of Recruitment and Retention (Spring 2016), Vice President of Fellowship (Fall 2016), Parliamentarian (Spring 2017)
- Treasurer of the SUNY-ESF Earth Week Celebration Planning Committee (Spring 2014, Spring 2013, Spring 2012)
- Treasurer of the SUNY-ESF Paper and Bioprocess (PBE) Club (Fall 2013-Spring 2014)

## **PROFESSIONAL MEMBERSHIPS**

### **Alpha Phi Omega (APO) National Co-ed Community Service Fraternity**

Phi Chapter | Lifetime Member | February 2014 – Present

### **Technical Association of the Pulp and Paper Industry (TAPPI)**

Non-Profit, Non-Governmental Organization | Member | September 2012 – Present

## **HONORS AND AWARDS**

### **Distinguished Service Key (DSK)**

Alpha Phi Omega | Phi Chapter | December 2018

- The highest honor a chapter can bestow on a member for exemplifying the core principles of leadership, fellowship, and service.

### **Renata Marton Endowed Scholarship**

SUNY-ESF | Syracuse Pulp and Paper Foundation | Academic Years: 2017 – 2018; 2020 – 2021; 2021 – 2022

- Named for the first female faculty member in the Paper Engineering program. Awarded to students who demonstrate excellence in GPA, difficulty and level of courses, record of research quality and accomplishments, and recognition by peers as having good character.

### **Herman L. Joachim Graduate Fellowship**

SUNY-ESF | Syracuse Pulp and Paper Foundation | August 2015 – December 2022

- The Joachim Graduate Fellowship is awarded to students who show exemplary academic success with a focus on management within the pulp, paper, and related industries.

### **Paper and Bioprocess Engineering Departmental Scholar for Class of 2015**

SUNY-ESF | May 2015

- Awarded to one graduating undergraduate student per department that exemplifies academic excellence and exhibits well-roundedness in character through multiple extracurricular activities, community involvement, and campus promotion.

### **ESF Memorial Scholarship**

SUNY-ESF | ESF Alumni Association | March 2013; May 2015

- Awarded to students for excellence in extracurricular activities, outstanding character, and exceptional record of academic achievement.

### **Grossman Southern Container Scholarship**

SUNY-ESF | Syracuse Pulp and Paper Foundation | Academic Years: 2012 – 2014; January 2015

- Awarded to a student who demonstrates excellence in academics and leadership.

### **Nicholas DeCandia Scholarship**

SUNY-ESF | Syracuse Pulp and Paper Foundation | October 2013

- Awarded to a student who demonstrates academic success and exhibition of excellent character.

### **John P. Clark Memorial Scholarship**

SUNY-ESF | Syracuse Pulp and Paper Foundation | January 2011

- Awarded to a student for high academic achievement.