Curriculum Vitae

Thomas LeFevre

5690 Annie St, Unit 3E, Bozeman MT 59718
(715) 780-0502 | thomaslefevre@montana.edu

Education:
Montana State University | Bozeman, MT | June 2016 – Present
PhD Student - Chemical Engineering | Expected 2020
Research Topics: Colloid interaction measurements; Centrifuge Force Microscopy; 3D printing of microbial hydrogels
Research Advisor: James N. Wilking

Michigan Technological University | Houghton, MI | September 2006 – December 2010
BS Biomedical Engineering; International Minor in Spanish | GPA: 3.7

Teaching Experience:
Teaching Assistant – Chemical Engineering Laboratory I – ECHM 442 (1 semester)
Teaching Assistant – Downstream Processing – EBIO 439 (1 semester)
Teaching Assistant – Elementary Princ. of Chem. and Bio. Eng. – ECHM 201 (1 semester)

Research Experience:
Wilking Lab | MSU Bozeman | June 2016 – Present
- Designed and built a novel, fluorescence capable, wireless Centrifuge Force Microscope for characterizing colloidal interactions
- Measured colloidal dispersion and depletion interactions and the effects of ionic strength, colloid type, and surface cleaning on those interactions
- Developed a new, cost-efficient lithographic process for creating custom SU8 platelet microparticles
- Investigated the diffusion of nutrients into 3D printed microbial hydrogels using confocal microscopy
- Characterized the efficacy of custom hose adapters for introducing flow into 3D printed microbial hydrogels
- Designed and fabricated custom liquid handling fixtures for statewide SARS-CoV-2 testing

Peer-Reviewed Publications:
- An Optimization Approach to Light-Based 3D Printing of Vascularized Hydrogels (published 2019)
- Coupling Fluid Flow to Modular Hydrogels with “Pop-it” Connections (under review 2020)

Presentations:
- MI-STAR 2020 M.S. in Education ENG5400: Applications of Engineering in the Life Sciences – invited lecture
- MSU 2019 EMAT 464: Injection molding for biomedical applications – invited lecture
- PALM Summer School 2018, Gif-sur-Yvette, France – Characterizing Biofilms using Centrifuge Force Microscopy
- Montana State University Center for Biofilm Engineering (CBE) Montana Biofilm Meeting (MBM) 2018 – “Characterizing Biofilms using Centrifuge Force Microscopy”
- Montana State University Center of Biomedical Research Excellence (COBRE) Work in Progress (WIP) Seminar 2018 – “Characterizing biofilms using Centrifuge Force Microscopy”
- Montana State University Inter-Departmental Science and Engineering Symposium 2018, “Characterizing the adhesion and rheology of soft materials using Centrifuge Microscopy”

- American Chemical Society Spring 2018 Montana Section Meeting, Materials Chemistry Session, "Characterizing the adhesion and rheology of soft materials using Centrifuge Microscopy"
- MSU 2018 EBIO 439: Introduction to injection molding – invited lecture
- American Chemical Society 254th National Meeting 2017, Division of Environmental Chemistry, "Characterizing microbial adhesion strength with Centrifuge Force Microscopy"

Outreach:
- Volunteer – MSU Peaks and Potentials 2018
- Volunteer – MSU STEM Days 2018
- Volunteer – FIRST Lego League 2017
- Center for Biofilm Engineering (CBE) Operations Committee (OC) member 2016-2017
- Mentor of two summer interns – 2012 (Kimberly-Clark)

Other Experience:
Manufacturing Engineer | Phillips-Medisize | Phillips, WI | July 2014 – May 2016
Injection Molding
- Resolved process quality and productivity issues in cooperation with customers
- Coordinated designing and building End-of-Arm Tools for new molds
- Served as technical facilitator for resin delivery department
- Implemented corrective and preventative actions for medical and automotive customers
- Resolved a $100K annual resin distribution problem

Process Engineer | Kimberly-Clark | Maumelle, AR | Feb. 2011 – July 2014
Wet Wipes Manufacturing
- Qualified (via IQ/OQ/PQ Validation) a new Valve Matrix responsible for blending and distributing liquid ingredients to all production assets
- Served as facility process lead for a $4.5M packaging equipment upgrade
- Facilitated a continuous improvement team to reduce machine waste by targeting mechanical and electrical opportunities, cutting the waste percent by one-third
- Implemented a business-critical adhesive application system that improves product dispensing
- Led trials, projects, validations, and daily operations in a Lean, FDA-regulated facility

Intern | Kimberly-Clark | Various Locations | Fall 2007 – Summer 2010
Process Engineer – Infant care manufacturing – Ogden, UT
- Fine-tuned machine speed ratios and start-up curves to save $100K annually

Research & Development – Nonwoven materials – Roswell, GA
- Integrated various facility test methods to produce a more definitive and useful method for abrasion resistance of nonwoven fabrics

Research & Development – Sustainable technologies – Neenah, WI
- Developed laboratory procedure for converting corn starch amylopectin into amylose
- Assessed the variables affecting quality test results to increase testing accuracy

Research & Development – Manufacturing support – Neenah, WI
- Completed a $4M material reduction cost-savings project