**Curriculum Vitae**

**ERICA PENSINI, PhD, P.Eng**

**DEGREES**

**PhD, Environmental Engineering, University of Toronto**

Supervisor: Brent E. Sleep, 2007/9 - 2012/5

**MASc and B.Eng, Environmental Engineering, Politecnico di Milano**

Supervisor: Sabrina Saponaro, 1999/9 - 2005/11

**EMPLOYMENT HISTORY**

**2021-present Associate Professor** (School of Engineering, University of Guelph)

**2017-2021 Assistant Professor** (School of Engineering, University of Guelph)

**Main Research Interests:** 1) Groundwater remediation: gels and emulsions for the chemical and biological remediation of surface water and groundwater contaminants (e.g., organic solvents, dyes, phosphorus and heavy metals); 2) Separation processes: removal of salts, metals and water-miscible solvents from water; 3) Biomaterials as plastic substitutes.

**Teaching** (16 hrs/week): ENGG 1100, Design I; ENGG 2560, Environmental Engineering Systems; ENGG6260, Colloids, Interfaces and Emulsions: Concepts and Practical Applications: ENGG4240 Site Remediation.

**Service** (3 hrs/week): participation to committees and thesis defenses, reviewer (e.g., Colloids and Surfaces A, Energy&Fuels, JCIS, JAPS, J. Dispersion Sci. Technol., 2 papers/week), reviewer of NSERC CRD, NSERC IRC and JELF-CFI grants.

**2015-2017 Scientist** (SABIC, Geleen, Netherlands)

R&D: 1) Emulsions: identified emulsifying chemical species in steam crackers and elucidated emulsification mechanisms; investigated methods to treat emulsions. 2) Corrosion: proposed an environmentally friendly corrosion inhibitor to treat process water. 3) Polymerization: probed the catalytic role of iron on radical polymerization and fouling in SABIC’s crackers; analyzed the correlation between the effectiveness of polymerization inhibitors, their chemistry, and the chemical species in the water and oil phases using SEC and FT-IR. Engineering: supported plant trials to introduce a coalescer and additives in the plant. Coaching: coached students conducting an internship at SABIC.

**2014-2015 R&D Associate** (Sanjel Corporation, Calgary, Canada)

R&D: Developed fracking fluids (polymeric gels) resistant to high temperature and shear for the enhanced recovery of oil from scarcely permeable reservoirs; probed the thermal stability of natural and synthetic non-crosslinked polymers; evaluated the effect of water chemistry on the shear and thermal stability of crosslinked polymeric gels; analyzed the effectiveness of conventional breakers on the degradation of fracturing fluids and proposed a novel radical generating breaker for the controlled viscosity reduction of polymeric gels; investigated the correlation between crosslinker type and fracking fluids viscosity, thermal and shear stability. Field support: responded to ad hoc requests from the field to improve the stability of gels when using low quality water available on site. Coaching: trained junior members in Canada and in the USA.

**2012-2014 Post-doctoral Researcher** (Chemical and Materials Engineering, University of Alberta)

Research: studied emulsion stability within the context of bitumen upgrading and crude oil extraction; conducted research on the treatment of emulsions produced in the oil sands industry using polymeric demulsifiers; probed the effect of water chemistry on the physico-chemical properties of films of model compounds and pH switchable polymers at oil-water interfaces using shear and compressional rheology, AFM, SEM, Brewster angle microscopy and a Langmuir trough. Coaching: supported graduate/undergraduate research regarding emulsion stabilization and treatment, trained students to use equipment and coached them during the preparation of papers, reports, theses, and oral presentations for the industry. Lab support: contributed to managing and maintaining the labs.

**2007–2012 PhD** (Environmental Engineering, University of Toronto)

Research: Investigated the factors controlling the transport of nano-scale zero valent iron (nZVI) particles, for the in-situ remediation of chlorinated compounds and heavy metals; probed polymer transport in diverse water chemistries; analyzed the effect of water chemistry on colloidal particle aggregation and sorption onto mineral surfaces using AFM, a QCM-D and SEM; investigated iron particle aging using XPS; modelled the forces of interactions between polymers, particles and solid-liquid interfaces; synthesized composite nano-particles using wet-bench techniques. Teaching support: Teaching assistant for Hydrology and Hydraulics, Engineering Mathematics, Engineering Graphics, Hydrology and Hydraulic, Groundwater Flow and Contamination.

**2006-2007 Environmental Engineer** (MWH, Italy)

Managed remediation plants for the reclamation of sites contaminated by chlorinated compounds (pump&treat/air sparging/soil vapour extraction/bio-enhanced anaerobic remediation); liaised with clients/environmental agencies and prepared progress reports; supervised field work (water quality tests, routine and exceptional plant maintenance).

**2005-2006 Environmental Engineer** (ENSR AECOM, Italy)

Managed and designed plants for sites contaminated by oil spills (air sparging/soil vapour extraction/aerobic bio-enhanced remediation/oxygen enhanced bioremediation); field QA/QC; produced progress reports describing remediation activities; conducted risk assessments, and ESA I, II and III; liaised with clients and regulators responsible for decommissioning approval of industrial sites.

**2004–2005 MASc/B.Eng** (Environmental Engineering, Politecnico di Milano)

Research (thesis): Modelled remediation technologies for soils contaminated by hydrocarbons (air-sparging and soil-vapour extraction) using a numerical model (TOUGH2, UC Berkeley). Main coursework (5 years of courses): Engineering and fundamental science courses included: 1) the treatment of solid waste, liquid and gaseous effluents; 2) soil remediation; 3) hydraulics, hydrology and contaminant transport; 4) chemistry; 5) statistics, geometry, algebra, and numerical methods; 6) mechanics and structural engineering; 7) geology and geotechnical engineering; 8) drafting; 9) physics.

**SERVICE TO THE SCIENTIFIC COMMUNITY**

* Editorial Board Member, Scientific Reports
* Reviewer for the following journals: Journal of Applied Polymer Science, I&EC, Energy&Fuels, JCIS, Colloids and Surfaces A, Journal of Dispersion Science and Technology.
* Reviewer of NSERC IRC and CRD proposals.
* Member of the governance committee of GIER (Guelph Institute of Environmental Research).

**CURRICULUM DEVELOPMENT**

* Introduced a new graduate course (ENGG6260, Colloids, Interfaces and Emulsions: Concepts and Practical Applications)
* Contributed to creating a Systems Control Course, focused on applications for environmental and biological engineers.

**AFFILIATIONS**

* APEGA, member
* GIER (University of Guelph), governance committee
* G360 (University of Guelph), principal investigator
* CSChE, member

**STUDENT SUPERVISION**

**PhD Students:**

Isaac Spotts (September 2019-August 2021): Terahertz Technologies for Environmental Sensors (Co-Advisor; Principal Advisor: Dr. Chris Collier).

**MASC Students (Current and Past):**

Vedant Patel (September 2021-present): THF removal from water using bacteria and bacterially secreted rhamnolipids

Bibiana Bartokova (September 2021-present): Sulfolane separation from water

Alicia Telepanich (September 2021-February 2022): Heavy metal removal from water (sole advisor)

Christine Hood (Sept 2020-Aug 2022): Bio-based materials for environmental applications (sole advisor)

Laura Earnden (Sept. 2020-Aug 2022): Reactive Interfaces: Applications in Soil Remediation and Water Treatment (sole advisor)

Tatianna Marshall (Jan 2020-September 2022): Biomaterials for water purification and groundwater remediation (sole advisor). Modulation of the viscosity of guar-based fracking fluids using salts

Katherine Gatzos (Jan 2020-Dec 2020): Bio-based materials for agricultural applications (principal advisor; co-advisor: P. Daggupati).

Srdjan Malicevic (May 2019 – April 2020): Removal of Phosphorus from Water Using Natural Adsorbent Materials (principal advisor; co-advisor: P. Daggupati).

Klaudine Estepa (May 2019 – April 2020): Biological and Chemical Subsurface Degradation of Hydrocarbons and Organic Solvents (sole advisor).

Peter Safieh (Sept 2018-Aug 2019): Emulsion gels for the remediation of hydrocarbon spills on surface waters (sole advisor).

Amanda Siwik (May 2018-April 2019): Transport of natural polymeric fluids for the in situ treatment of Cr(VI): a rheology and microfluidics study (principal advisor; co-advisor: Dr. Chris Collier).

Arvind Iyer (Aug 2017-Jan 2019): Removal of heavy metals from water using hydrochar (co-advisor; principal advisor: Dr. Ashutosh Singh).

**Undergraduate Students (Research Assistants):**

Celeste Wolske (May 2022-present): Biobased impermeable filming materials (sole advisor).

Hannah Oreskovic (September 2021-present): Simultaneous separation of water miscible solvents and heavy metals from water (sole advisor)

Sierra Foster Eckel (September 2021-present): Herders for the treatment of oil spills in surface waters (sole advisor)

Alicia Telepanich (January 2021-April 2021): Injectable electrodes for the remediation of Cr(VI) (sole advisor)

Kristine Lamont (October 2017-present): Phosphorus removal from water using natural adsorbents; remedial strategies for surface and subsurface contaminants; used cooking oil treatment (sole advisor).

Tatianna Marshall (September 2019-December 2019): Plant-based proteins for the treatment of subsurface contaminant spills (sole advisor).

Ana Paula Pacheco (June 2019-August 2019) Phosphorus removal from water using gypsum. Mitacs Exchange Student (sole advisor).

Connor Palin, undergraduate (June 2018-August 2018): Sensors for the detection of leaks from oil tanks (sole advisor).

Benjamin Preisner (June 2018-August 2018): DNAPL transport in porous media (co-advisor; principal advisor: Dr. Beth Parker).

Ye Eun Chai (August 2018-present): Treatment of used cooking oil for biofuel production (sole advisor).

Katherine Gatzos (October 2017-December 2018): Phosphorus removal from water using natural adsorbents; development of hydrogels for the in-situ treatment of Cr(VI) (sole advisor).

Scham Schewai and Dante Salmon (October 2017-November 2018): Gels for the immobilization and treatment of Cr(VI).

I also advise additional students conducting their final engineering project under my supervision.

**RESEARCH FUNDING HISTORY**

**Enhancing pollutant monitoring in water using AI and Internet of Things**

**(Granted, duration: May 2022-May 2023)**

Role: Co-Applicant; Principal Applicant: Petros Spachos

Funding Sources: University of Guelph (CARE AI SEED Funding program)

Total Funding: 10,000.00 CAD

**Spray on and prefabricated natural coatings as plastic substitutes for sustainable agricultural practices (Granted, duration: April 2022-April 2023)**

Role: Principal Applicant

Co-applicant: Alejandro Marangoni

Funding Sources: OAFRI KTT program, OMAFRA (Ontario Ministry of Food, Agriculture and Rural Affairs)

Total Funding – 20,000 CAD

**Powder X-ray Diffraction Unit for the Characterization of Food and Soft Materials (Granted, April 2021)**

Role: co-applicant

Principal applicant: Alejandro Marangoni

Funding Sources: Natural Sciences and Engineering Research Council of Canada, Research Tools and Instruments Program (NSERC RTI)

Total Funding – 149,925 CAD

**Biobased Sorbents for the Removal of Zinc from Agricultural Water Collection Ponds (Granted, May 2021-May 2023)**

Role: Principal applicant; Co-Applicant: Emily Chiang

Funding Sources: Ontario Ministry of Food Agriculture and Rural Affairs

Total Funding: 112,000.00 CAD

**Improving Food Processing Efficiency Based on Deep Learning and the Internet of Things (Granted, May 2020-May 2021)**

Role: Principal applicant; Co-Applicant: Petros Spachos

Funding Sources: University of Guelph (CARE AI SEED Funding program)

Total Funding: 10,000.00 CAD

**Natural Materials as Alternatives to Plastic Bale Wraps (Granted, June 2020-June 2023)**

Role: Principal applicant; Co-Applicant: Alejandro Marangoni

Funding Sources: Ontario Agri-Food Innovation Alliance Tier I, Ontario Ministry of Food Agriculture and Rural Affairs

Total Funding: 112,000.00 CAD

**Bale and silage wrap from inexpensive and robust biomaterials (Granted, May 2020-May 2022)**

Role: Principal applicant; Co-Applicant: Alejandro Marangoni

Funding Sources: Beef Farmers of Ontario

Total Funding: 20,000.00 CAD

**Bale and silage wrap from inexpensive and robust biomaterials (Granted, May 2020-May 2022)**

Role: Principal applicant; Co-Applicant: Alejandro Marangoni

Funding Sources: Dairy Farmers of Ontario

Total Funding: 10,000.00 CAD

**Benchtop Ultra-small angle X-ray scattering system for nanoscale and nanoparticle characterization (Granted, April 2019)**

Role: co-applicant

Principal applicant: Alejandro Marangoni

Additional co-applicant: Christopher Collier

Funding Sources: Natural Sciences and Engineering Research Council of Canada, Research Tools and Instruments Program (NSERC RTI)

Total Funding – 149,990 CAD

**Enzymatic Transformation of Oil Into Fat via Glycerolis: Health and Sustainability Implications (Granted, September 2019-August 2020)**

Role: Co-Applicant; Principal applicant: Alejandro Marangoni

Funding Sources: Barrett Family Foundation

Total Funding – 50,000.00 CAD

**Engineering the nanoscale structure of food and soft materials (Granted, April 2019)**

Role: Co-Applicant; Principal applicant: Alejandro Marangoni

Funding Source: Natural Sciences and Engineering Research Council of Canada, RTI program

Total Funding – 149.999 CAD

**New Materials for Site Remediation and Pollution Containment: Reactive Polymer Gels and Emulsions (Granted, April 2018-April 2022)**

Role: Principal applicant

Funding Sources: Natural Sciences and Engineering Research Council of Canada, Discovery Grant Program (NSERC DG)

Total Funding – 155,000.00 CAD

**Natural, cost-effective and reusable adsorbents for the removal of phosphorus from tile drainage (Granted, May 2018-May 2020)**

Role: Principal applicant; Co-applicant: Prasad Daguppati

Funding Sources: Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

Total Funding - 112,000.00 CAD

**Improved treatment of used cooking oil as feedstock for biodiesel production (Granted, June 2018-June 2019)**

Role: Principal applicant

Funding Sources: NSERC (Engage), Ontario Centres of Excellence (OCE VIP I) and Walker Industries

Total Funding – 50,000.00 CAD

**Engineering plant proteins to manufacture gluten-free vegan steak (Granted, August 2018-August 2019)**

Role: Co-applicant; Principal applicant: Alejandro Marangoni

Funding Sources: Barrett Family Foundation

Total Funding – 50,000.00 CAD

**Natural adsorbents for the Removal of Phosphorus from Agricultural Drainage Water (May 2019-August 2019)**

Role: Principal applicant

Funding Sources: MITACS Globalink Research Internship

**Sensors for Environmental Applications (Granted, June 2018-August 2018)**

Role: Principal applicant

Funding sources: on-campus co-op grant (University of Guelph)

Total funding: 2,500.00 CAD

**University Research Awards (Granted, June 2018-September 2018)**

Role: Principal applicant

Funding Source: University of Guelph

Total Funding – 8,500.00 CAD

**Application of Graphitized Biocarbon for Smart Materials and Environmental Applications (Granted, May 2018-May 2020)**

Role: sub-contractor of the grant awarded to Manjusri Misra (UofG2017-2870)

Funding sources: Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

Total funding: 21,000.00 CAD

**Replacement Light Scattering Instrument and Capability Enhancement – Measuring Biomolecular Size and Surface Charge (Granted, April 2018)**

Role: co-applicant

Principal applicant: Steffen Graether

Funding Sources: Natural Sciences and Engineering Research Council of Canada, Research Tools and Instruments Program (NSERC RTI)

Total Funding – 150,000.00 CAD

**University of Guelph Start-Up Fund (Granted, June 2017-present)**

Role: Principal applicant

Funding Sources: University of Guelph

Total Funding - 30,000.00 CAD

**University of Guelph Growth Fund (Granted, June 2017-present)**

Role: Principal applicant

Funding Sources: University of Guelph

Total Funding - 30,000.00 CAD

**PRESS RELEASE**

Spray-on bale wrap made from corn to undergo field trials. Ontario Farmer, December 2020

Spray-on edible coating may replace plastic wrap. Farm Show, Vol. 45, No. 3, 2021

Progressive Dairy, March 2021 (<https://www.progressivedairycanada.com/topics/feed-nutrition/keeping-forage-plastics-out-of-the-landfill>)

U of G team trying to develop biodegradable agriculture plastics, Farmtario, 2022, <https://farmtario.com/news/u-of-g-team-trying-to-develop-biodegradable-agriculture-plastics/>

Using Biomaterials to Develop Bale Wrap and Silage Cover, Milkproducer 2022, <https://issuu.com/milkproducer/docs/october_2021>

The U of G team is trying to develop biodegradable agricultural plastics, Industry Update 2022, <https://industry-update.com/the-u-of-g-team-is-trying-to-develop-biodegradable-agricultural-plastics/49995/>

Collaborating to tackle the big issues facing livestock farmers, Ontario Beefarmer, 2021 (<https://www.livestockresearch.ca/article/collaborating_to_tackle_the_big_issues_facing_livestock_farmers>)

Livestock research needs more collaborative approaches, Milk Producer, May 2021 (<https://www.livestockresearch.ca/article/livestock_research_needs_more_collaborative_approaches>)

**WORKING PAPERS (ONGOING PROJECTS)**

1. Surfactant-like polymers for the separation of miscible fluids. (corresponding author). Student contribution: L. Earnden and P. Mezaros.
2. Biobased fiber-reinforced materials. (corresponding author). Student contribution: C. Hood.
3. Simultaneous purification of groundwater polluted with heavy metals and organic solvents. (corresponding author). Student contribution: A. Telepanich and L. Earnden.
4. Effect of copper on diesel and acetonitrile biodegradation (corresponding author). Student contribution: L. Earnden.

**JOURNAL PUBLICATIONS (SUBMITTED)**

1. Alejandro G. Marangoni, Saeed M. Ghazani, Erica Pensini. An entropy-centric equilibrium cooperative theory for the melting behaviour of non-ideal triglyceride mixtures. The Journal of Chemical Thermodynamics (2022), submitted.
2. Laura Earnden, Alejandro G. Marangoni, Thamara Laredo, Jarvis Stobbs, Tatianna Marshall, Erica Pensini. Self-Assembled Glycerol Monooleate Demixes Miscible Liquids through Selective Hydrogen Bonding to Water. Submitted to the Journal of Molecular Liquids. (corresponding author). Student contribution: L. Earnden, T. Marshall.
3. Laura Earnden, Alejandro G. Marangoni, Thamara Laredo, Jarvis Stobbs, Tatianna Marshall, Erica Pensini. Decontamination of water co-polluted by copper, toluene and tetrahydrofuran using lauric acid. First revision submitted to Scientific Reports. (corresponding author). Student contribution: L. Earnden, T. Marshall.

**JOURNAL PUBLICATIONS (ACCEPTED AND PUBLISHED)**

1. Laura Earnden, Alejandro G. Marangoni, Thamara Laredo, Jarvis Stobbs, Erica Pensini. Mechanisms of Separation between Tetrahydrofuran and Water Using Hydroxystearic Acid. Physics of Fluids, 2022 (accepted). (corresponding author). Student contribution: Laura Earnden.
2. Christine Hood, Saeed Mirzaee Ghazani, Alejandro G. Marangoni, Erica Pensini. Flexible Polymeric Biomaterials from Epoxidized Soybean Oil, Epoxidized Oleic Acid, and Citric Acid as Both a Hardener and Acid Catalyst. Journal of Applied Polymer Science (2022), published, https://doi.org/10.1002/app.53011. (corresponding author). Student contribution: Christine Hood.
3. Tatianna Marshall, Laura Earnden, Alejandro G. Marangoni, Thamara Laredo, Erica Pensini. Cubic mesophases of self-assembled amphiphiles separate miscible solvents. Colloids and Surfaces A (2022), 650, pp. 129548. (corresponding author). Student contribution: Tatianna Marshall and Laura Earnden.
4. Laura Earnden, Sierra Eckel Foster, Plamen Tchoukov, Stanislav R. Stoyanov, Erica Pensini. Herding Oil Slicks with a Fatty Alcohol and Carbonaceous Particles. Soil, Air and Water Pollution (2022), 233, 270. (corresponding author). Student contribution: L. Earnden.
5. Christine Hood, Erica Pensini. Alginate-bentonite clay composite porous sorbents for Cu(II) and Zn(II) removal from water. (corresponding author). Soil, Air and Water Pollution (2022), 233, pp. 137. Student contribution: C. Hood.
6. Tatianna Marshall, Alejandro G. Marangoni, Thamara Laredo, M. Sameer Al-Abdul-Wahid, Erica Pensini. Mechanisms of Solvent Separation Using Sugars and Sugar Alcohols. Colloids and Surfaces A (2022), 642, pp. 128707. (corresponding author). Student contribution: T. Marshall.
7. Telepanich, A., Marshall, T., Marangoni, A.G., Pensini E. Separation of Cr(VI), acetonitrile, and tetrahydrofuran from water using reducing sugars and HCl (2022). Water Air Soil Pollution 233, 70. (corresponding author). Student contribution: Alicia Telepanich.
8. Christine Hood, Vanessa Rios de Souza, Alba Ester Illera Gigante, Kevin Keener, Alejandro G. Marangoni, Erica Pensini. Effect of metal salts on high voltage atmospheric cold plasma (HVACP) induced polymerization of acrylamide. Journal of Applied Polymer Science (2022), 139, pp. e52072. (corresponding author). Student contribution: C. Hood.
9. Laura Earnden, Joshua Van Der Zalm, Aicheng Chen, Alejandro G. Marangoni, Roy van Lier, Erica Pensini. Comparative study of corrosion inhibition by three anionic surfactants in an acidic chloride environment. Journal of Surfactants and Detergents (2021), 25 (3), pp. 399-411. (corresponding author). Student contribution: L. Earnden.
10. Laura Earnden, Thamara Laredo, Alejandro G. Marangoni and Erica Pensini. Fenton’s degradation of toluene using chelating and emulsifying surfactants. International Journal of Environmental Science and Technology (2021), published (https://doi.org/10.1007/s13762-021-03708-1). (corresponding author). Student contribution: L. Earnden.
11. Laura Earnden, Thamara Laredo, Alejandro G. Marangoni, Saeed Mirzaee Ghazani, Erica Pensini. Modulation of the viscosity of guar-based fracking fluids using salts. Energy&Fuels (2021), 35 (19), pp. 16007–16019. (corresponding author). Student contribution: L. Earnden.
12. Laura Earnden, Alejandro G. Marangoni, Stefano Gregori, Athanasios Paschos, Erica Pensini. Zein-Bonded Graphene and Biosurfactants Enable the Electrokinetic Clean-Up of Hydrocarbons. Langmuir (2021), 37 (37), pp. 11153–11169. (corresponding author). Student contribution: L. Earnden.
13. F. Yang, X. He, W. Tan, G. Liu, T. Yi, X. Wei, H. Xie, Q. Long, G. Wang, C. Guo, E. Pensini, T. Yang, Z. Lu, Q. Liu, Z. Xu. Adhesion-Shielded Based Synthesis of Interfacially Active Magnetic Janus Nanoparticles. Journal of Colloid and Interface Science (2021), 607 (2), pp. 1741-1753.
14. Tatianna Marshall and Erica Pensini. Vitamin B12 and Magnesium: a Healthy Combo for the Degradation of Trichloroethylene. Soil, Water and Air Pollution (2021) 232, (336), https://doi.org/10.1007/s11270-021-05295-w. (corresponding author). Student contribution: T. Marshall.
15. Alicia Telepanich, Tatianna Marshall, Stefano Gregori, Alejandro G. Marangoni, Erica Pensini. Graphene-Alginate Fluids as Unconventional Electrodes for the Electrokinetic Remediation of Cr(VI). Water Air Soil Pollution (2021), 232 (334). (corresponding author). Student contribution: A. Telepanich and T. Marshall.
16. Erica Pensini, Thamara Laredo, Laura Earnden, Alejandro G. Marangoni, Saeed Ghazani. A ‘Three in One’ Complexing Agent Enables Copper Desorption from Polluted Soil, its Removal from Groundwater and its Detection. Colloids and Surfaces A (2021), 624, pp. 126840 (corresponding author). Student contribution: L. Earnden.
17. Christine Hood, Thamara Laredo, Alejandro G. Marangoni and Erica Pensini. Water-Repellent Films from Corn Protein and Tomato Cutin. (corresponding author). Journal of Applied Polymer Science (2021), 138, pp. 50831 (corresponding author). Student contribution: C. Hood.
18. Lili Zhu, Petros Spachos, Erica Pensini, Konstantinos Plataniotis. Deep Learning and Machine Vision for Food Processing: A Survey. Current Research in Food Science (2021), 4, pp. 233-249.
19. Camille A. Leclerc, Stephanie Williams, Candace Power, Noah Zepp, Daniel Lipworth, Erica Pensini, and Christopher M. Collier. Rapid design and prototyping of microfluidic chips via computer numerical control micromilling and anisotropic shrinking of stressed polystyrene sheets. Microfluidics and Nanofluidics (2021), 25 (12). Student contribution: Camille Leclerc.
20. Tatianna Marshall, Kristine Lamont, Alejandro G. Marangoni, Loong-Tak Lim, Xiuju Wang, Erica Pensini. Trypan Blue Removal from Water with Zein Sorbents and Laccase. SN Applied Sciences (2021), 3 (29), DOI: https://doi.org/10.1007/s42452-020-04107-w (corresponding author). Student contributions: T. Marshall and K. Lamont.
21. Tatianna Marshall, Alejandro G. Marangoni, Loong-Tak Lim, Plamen Tchoukov, Erica Pensini. Oxidizing Emulsifiers: Gelators for Water in Hydrocarbon Reactive Emulsions. Journal of Environmental Chemical Engineering (2021), 9 (1), pp. 104998 (corresponding author). Student contribution: T. Marshall.
22. Tatianna Marshall, Andrew Gravelle, Thamara Laredo, Arturo Rodriguez-Uribe, Manjusri Misra, Amar Mohanti, Alejandro G. Marangoni, Loong-Tak Lim, Erica Pensini. Zein-Based Materials: Effect of Submicron Size Carbon Inclusion and Potential Applications. Journal of Polymers and the Environment (2021), 29, 637-646 (corresponding author). Student contributions: T. Marshall.
23. Tatianna Marshall, Athanasios Paschos, Alejandro G. Marangoni, Fan Yang, Erica Pensini. Injectable cationic traps and sticky bacterial emulsifiers: a safe alliance during diesel bioremediation. Colloids and Surfaces A (2021), 605, pp. 125374. (corresponding author). Student contribution: T. Marshall.
24. Tatianna Marshall, Alejandro G. Marangoni, Maria G. Corradini, Arturo Rodriguez-Uribe, Manjusri Misra, Amar Mohanty, Braulio Macias Rodriguez, Erica Pensini. Path-Dependent Rheology of Carbon-Hydroxyethylcellulose Fluids. Colloids Surfaces A (2021), 612, pp. 126000 (corresponding author). Student contribution: T. Marshall.
25. Tatianna Marshall, Alejandro G. Marangoni, Thamara Laredo, Klaudine M. Estepa, Maria G. Corradini, Loong-Tak Lim, Erica Pensini. Laccase-Zein Interactions at the Air-Water Interface: Reactors on an Air Bubble and Naphthalene Removal. Colloids Surfaces A 2020, 607, pp.125518. (corresponding author) Student contributions: T. Marshall and K. Estepa.
26. K. Estepa, K. Lamont, S. Malicevic, A. Paschos, L. Colaruotolo, M. Corradini, A.G. Marangoni, L.T. Lim, E. Pensini. Chitosan-Based Biogels: A Potential Approach to Trap and Bioremediate Naphthalene. Colloids Surfaces A 2020, 605, pp. 125374. (corresponding author). Student contributions: S. Malicevic, K. Lamont, K. Estepa.
27. T. Marshall, K. M. Estepa, M. Corradini, A.G. Marangoni, B. Sleep, E. Pensini. Selective Solvent Filters for Non-Aqueous Phase Liquid Separation from Groundwater. Scientific Reports 2020, 10 (1), pp. 1-13. (corresponding author). Student contributions: T. Marshall, K. Estepa.
28. S. Malicevic, A. P. Garcia Pacheco, K. Lamont, K. Monica Estepa, P. Daguppati, J. van de Vegte, A. Marangoni, E. Pensini. Phosphate Removal from Water Using Alginate/Carboxymethylcellulose/Aluminum Beads and Plaster of Paris. Water Environment Research 2020, 92 (9), pp. 1255-1267. (corresponding author). Student contributions: S. Malicevic, A. P. Garcia Pacheco, K. Lamont, K. Estepa.
29. P. Safieh, D. Walls, J. Frostad, A. Marangoni, E. Pensini. Effect of toluene and hexane sorption on the rheology and interfacial properties of lecithin-based emulsion gels. Langmuir 2020, 36 (6), pp. 1484–1495. (corresponding author). Student contribution: P. Safieh.
30. T. Marshall, A. Gravelle, A. G. Marangoni, A. Elsayed, E. Pensini. Zein for Hydrocarbon Remediation: Emulsifier, Trapping Agent, or Both? Colloids and Surfaces A 2020, 589, pp.124456. (corresponding author). Student contribution: T. Marshall.
31. K. Lamont, A. Marangoni, E. Pensini. ‘Emulsion Locks’ for the Containment of Hydrocarbons during Surfactant Flushing. Journal of Environmental Sciences 2020, 90, pp. 98-109. (corresponding author). Student contribution: K. Lamont.
32. K. Lamont, E. Pensini, A. Marangoni. Gelation on Demand Using Switchable Double Emulsions: A Potential Strategy for the In Situ Immobilization of Organic Contaminants. Journal of Colloid and Interface Science, 2020, 562, pp. 470-482 (corresponding author). Student contribution: K. Lamont.
33. A. Iyer, E. Pensini, A. Singh. Effect of feedstock type on the physicochemical properties of hydrochar and on its effectiveness in removing hexavalent chromium from water. The Canadian Journal of Civil Engineering 2019, 47(5), pp. 567-583. (corresponding author). Student contribution: A. Iyer.
34. A. Siwik, E. Pensini, B. Macias Rodriguez, A. G. Marangoni, C. M. Collier, B. Sleep. Effect of rheology and humic acids on the transport of environmental fluids: Potential implications for soil remediation revealed through microfluidics. Journal of Applied Polymer Science 2019, 137 (11), pp. 48465. (corresponding author). Student contribution: A. Siwik.
35. P. Safieh, E. Pensini, A. Marangoni, K. Lamont, S. Mirzaee Ghazani, N. Callaghan-Patrachar, M. Strüder-Kypke, F. Peyronel, J. Chen, B. Macias Rodriguez. Natural emulsion gels and lecithin-based sorbents: a potential treatment method for organic spills on surface waters. Colloids and Surfaces A: Physicochemical and Engineering Aspects 2019, 574, pp. 245-259. (Corresponding author). Student contribution: P. Safieh.
36. L. Molnar, E. Pensini, Md A. Asad, C. A. Mitchell, L.C. Nitsche, L.J. Pyrak-Nolte, M.M. Krol. Colloid Transport in Porous Media: A Review of Classical Mechanics and Emerging Topics. Transport in Porous Media 2019, pp. 1-28.
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**CONFERENCE PAPERS**

E. Pensini, F. Cuoq, R. Van Lier, W. Hater, P. Kraft, T. Halthur. Laboratory Investigations for The Replacement of Cyclohexylamine by 2-(Diethylamino)Ethanol in Film Forming Amine Product Formulations. JIE, 2016. Poitiers (France).

**PRESENTATIONS**

**E. Pensini**, Earnden L., Van Der Zalm J., Chen A., Marangoni A.G., van Lier, R. Comparative study of corrosion inhibition by three anionic surfactants in an acidic environment. Film Forming Substances, Virtual Conference (2022). Invited presentation.

**E. Pensini**. Colloid, polymer, and interface science applied to water treatment and groundwater preservation. World Water Day (Guelph, 2022). Invited presentation.

**E. Pensini**. Unravelling New Threads to Freshwater. G360 Fall Focus Meeting, Spring (Texas) (2021). Invited presentation.

**E. Pensini**. Novel Materials for Subsurface Remediation: Gels, Emulsions and Colloidal Particles. Symposium for New Research in Groundwater Science (SyNRGS), Western (2019). Invited Keynote Lecture.

**E. Pensini**, A. Elsayed, B. Macias Rodriguez, A. Marangoni, K. Lamont, A. Singh, C. Collier. Reactive Polymer Gels for the in Situ Remediation and Containment of Hexavalent Chromium. CSChE Conference, Toronto (2018).

K. Lamont, **E.Pensini**, P. Dagguppati. Natural reusable calcium-rich adsorbent for the removal of phosphorus from water. CSBE Conference, University of Guelph (2018).

C. Palin, **E. Pensini**, S. Gregori. Low cost polymer-based sensor for the detection of oil leaks. CSBE Conference, University of Guelph (2018).

**E. Pensini**, A. Elsayed, B. Macias Rodriguez, A. Marangoni, K. Lamont, A. Singh, C. Collier. Reactive Polymer Gels for the in Situ Remediation and Containment of Hexavalent Chromium. CSBE Conference, University of Guelph (2018).

**E. Pensini,** L. Vleugels, M. Frissen, K. Wadhwa, R. van Lier, G. Kwakkenbos.Novel Colloid Chemistry Approach to Resolving Emulsions for Fouling Control in Steam Crackers.AiChE Annual Meeting, San Francisco (2016).

**E. Pensini**, D. Harbottle, P. Tchoukov, F. Yang, Z. Li. The use of a polymeric EO-PO demulsifier to break water-in-oil emulsions. Oil Sands Conference, University of Alberta (2014).

**E. Pensini**, D. Harbottle, P. Tchoukov, F. Yang, Z. Li. Performance of polymeric EO-PO demulsifiers to break water-in-oil emulsions. NSERC Chair Meeting. Invited oral presentation, University of Alberta (2013).

**E. Pensini**, D. Harbottle, P. Tchoukov and F. Yang. Effect of asphaltene concentration and water chemistry on the rheological behaviour of asphaltene films. Asphaltene Seminar Series, University of Alberta (2013).

**E. Pensini**, B.E. Sleep, C. Yip. Transport of Iron Particles in the Subsurface: Effect of Water Chemistry and Carboxymethyl-cellulose Polymer Coatings. Scientific poster, AGU Fall Meeting (2011).

**E. Pensini**, B.E. Sleep, C. Yip. Transport of Aged Iron Particles in the Subsurface: an AFM Study. Oral presentation, ACS Colloid Symposium (2011).

**E. Pensini**, B.E. Sleep, C. Yip. Interaction forces present in subsurface transport of aged iron particles. Invited oral presentation, University of Western Ontario (2010).

**E. Pensini**, B.E. Sleep, C. Yip. Forces Governing Iron Particle Transport: Interactions between Iron Particles and Geological Substrates. Invited oral presentation, University of Western Ontario (2010).