

Curriculum Vitae
Jacqueline Marie Tront, Ph.D.
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Objective Develop, guide and implement environmental technology strategies through collaborative efforts within an innovative research organization.

Education

Senior Research Fellow	Current	Institute for Geotechnical Engineering, ETH-Zürich <u>Research Focus:</u> Microbial Fuel Cell Technology <u>Advisor:</u> Alexander M. Puzrin
Postdoctoral Fellow	2005	Environmental Engineering, Georgia Institute of Technology <u>Research Focus:</u> Microbial Degradation of TNT <u>Advisor:</u> Joseph B. Hughes
Ph.D.	2004	Environmental Engineering, Georgia Institute of Technology <u>Doctoral Thesis Topic:</u> “Plant Activity and Organic Contaminant Processing by Aquatic Plants” <u>Minor:</u> Biochemical Processes <u>Advisor:</u> F. Michael Saunders
MS	2002	Environmental Engineering, Georgia Institute of Technology
BSCE (with honors)	1998	Civil Engineering, Georgia Institute of Technology

Registration Engineer in Training, Georgia 1999

Honors and Awards

Fellowships and Scholarships

- Research Associate Award, The National Academies Fellowship Program, 2003
“Immunochemical Methods for Environmental Monitoring Applications” (declined in favor of postdoctoral position)
- Dissertation Fellowship, American Association of University Women, 2002-2003
- Presidential Fellowship, Georgia Institute of Technology, 2002-2004
- Georgia Air and Waste Management Scholarship, 2003
- SEASPACE Scholarship, 2002-2003
- Steven De La Torre Scholarship, Georgia Engineering Foundation, 2001
- Phillip R. Karr Scholarship, Georgia Water and Pollution Control Association, 2001
- R. Berl Elder/Consulting Engineers Council of Georgia Scholarship recipient, 1997

Academic Honors

- Outstanding Doctoral Candidate, Association of Environmental Engineers and Scientists, 2002
- NSF Engineering Education Scholars Program Workshop Participant, 2001
- Honorary Member of the International Water Association (IWA)
- Georgia Tech’s Dean’s List 1994 – 1998; Georgia Tech’s Faculty Honors, 1998
- Outstanding Civil Engineer named by Society of Women Engineers, Georgia Tech 1997, 1998

- Outstanding Junior Civil Engineer named by Society of Women Engineers, Georgia Tech 1996

Paper and Presentation Awards

- SAIC Student Paper Competition Award Winner, 2002 “Development of a Mathematical Model for Prediction of Fate of Contaminant in Aquatic Plant Systems Incorporating Plant Activity.”
- Student Poster Competition Award, Georgia Air and Waste Management Association, 2000 “Phytoremediation of Chlorophenols”

Publications

Tront, J. M., and F. M. Saunders. (2006) “Sequestration of a Fluorinated Analog of 2,4-Dichlorophenol and Metabolic Products by *L. minor* as Evidenced by ¹⁹F NMR.” *Environmental Pollution* (in press)

Tront, J. M., and F. M. Saunders. (2006) “Role of plant activity and contaminant speciation in aquatic plant assimilation of 2,4,5-trichlorophenol .” *Chemosphere* 64 (3), 400 – 407.

Tront, J. M., Amos, B. A., Löffler, F. L. and F. M. Saunders. (2005) “Activity of *Desulfitobacterium* sp. strain Viet1 Demonstrates Bioavailability of 2,4-Dichlorophenol Previously Sequestered by the Aquatic Plant *Lemna minor*.” *Environmental Science and Technology* 40 (2), 529-535.

Tront, J. M., and J. B. Hughes. (2005) “Oxidative Microbial Degradation of 2,4,6-Trinitrotoluene via 3-Methyl-4,6-dinitrocatechol.” *Environmental Science and Technology*, 39 (12), 4540-4549.

Tront, J. M., Reinhold, D. M., Wrona, A., and F. M. Saunders. “Predictive Relationships for Uptake of Halogenated Phenols by Aquatic Plants.” *Journal of Environmental Engineering Research* (in review)

Tront, J. M., and F. M. Saunders. “Conceptual Model for Coupled Uptake and Inhibition of Aquatic Plants by an Ionizable Contaminant” (in progress)

Tront, J. M., and F. M. Saunders (2002). “Sequestration and Detoxification of Chlorinated Phenols by Aquatic Plants.” Remediation of Chlorinated and Recalcitrant Compounds – 2002 Proceedings of the Third International Conference on Remediation of Chlorinated and Recalcitrant Compounds (Monterey, CA; May 2002) Battelle Press, Columbus, OH

Saunders, F. M., Chang, S.-Y., Day, J. A., and **J. Tront.** (2001) “Phytoremediation - A Core Technology for Remediation of Mixed-Waste Contaminated Plumes and Soils.” *DE FC09-97SR18911* Final Report, Centers of Excellence - Groundwater & Soil Remediation. Education, Research and Development Association (ERDA), Georgia Research Alliance and Department of Energy, Savannah River Site Aiken, SC

Tront, J. M., Henry, B. and J. W. Burns. (1997) “Guide for Transplantation of Submerged Aquatic Vegetation (SAV) in the Lower St. Johns River: *Vallisneria americana* and *Ruppia maritima*.” Internal Report for the St. John’s River Water Management District, Palatka, FL

Presentations

Tront, J. M., J. D. Fortner, R. Bencheikh, F. E. Löffler, J. B. Hughes, A. M. Puzrin. “Electricity-supported contaminant reduction.” Poster Presentaiton at the Swiss Microbial Ecology Meeting, Bellinzona, Switzerland, September 29, 2006.

Tront, J. M., J. D. Fortner, F. E. Löffler, J. B. Hughes, A. M. Puzrin. “Electricity-supported contaminant reduction: *Geobacter* and *Anaeromyxobacter* as model systems.” Platform Presentation at the International Society for Microbial Ecology, Vienna, Austria, August 25, 2006.

Tront, J. M., Reinhold, D. M., and F. M. Saunders. “Uptake of Ionizable Organic Contaminants by the Aquatic Plant *L. minor*.” Platform Presentation at the Society of Environmental Toxicology and Chemistry Meeting, Baltimore, MD, November 15, 2005.

Tront, J. M., and J. B. Hughes. “Identification of Intermediates in a Novel Pathway for Aerobic Biodegradation of 2,4,6-Trinitrotoluene (TNT)” Poster Presentation at the American Society for Microbiology National Meeting, Atlanta, GA, June 8, 2005

Tront, J. M., Amos, B. K., Löffler F. E., and F. M. Saunders. “Bioavailability of Plant Sequestered Organics and Impacts on Contaminant Cycling.” Poster Presentation at the Society of Environmental Toxicology and Chemistry Meeting, Portland, OR, November 18, 2004

Tront, J. M., and F. M. Saunders. “Organic Contaminant Toxicity and Impacts on Uptake and Metabolism by Plant Systems.” Poster Presentation at the Society of Environmental Toxicology and Chemistry Meeting, Portland, OR, November 15, 2004

Reinhold, D. M., **Tront, J. M.**, and F. M. Saunders. “Fate of Fluorinated Organics in Aquatic Plant Systems in Surface Waters and Reclamation Systems.” Platform Presentation at the American Chemical Society Fall Meeting, Philadelphia, PA, August 23, 2004

Reinhold, D. M., **Tront, J. M.**, and F. M. Saunders. “Sequestration of Toxic Organic Contaminants by Aquatic Plants: Implications for Overall Pollutant Fate and Exposure Risk.” Platform Presentation at the Southeastern Ecology and Evolution Conference, Atlanta, GA, March, 2004

Amos, B. K., Löffler F. E., Saunders, F. M. and **J. M. Tront**. “Use of *Desulfitobacterium* sp. Strain Viet1 to Assess the Fate of 2,4-Dichlorophenol Sequestered by the Aquatic Plant *Lemna minor*.” Poster Presentation at the International Society for Microbial Ecology, Cancun, Mexico, August 23, 2004

Tront, J. M. and F. M. Saunders. “Use of Fluorinated Analogs to Explore Pollutant Fate in Plant Systems” Platform Presentation at the American Chemical Society Spring Meeting, New Orleans, LA, March 23, 2003

Tront, J. M., and F. M. Saunders. “Role of Aquatic Plants in Sequestration of Toxic Organic Contaminants.” Poster Presentation at Bioremediation and Biodegradation: Current Advances in Reducing Toxicity, Exposure and Environmental Consequences, Asilomar Conference Center, Pacific Grove, CA, June 10, 2002

Tront, J. M., and F. M. Saunders. “Sequestration and Detoxification of Chlorinated Phenols by Aquatic Plants.” Platform Presentation at Remediation of Chlorinated and Recalcitrant Compounds Conference, Monterey, CA, May 21, 2002

Tront, J. M., and F. M. Saunders. “Contaminant Uptake and Plant Activity Assessments in Aquatic Plant Systems.” Platform Presentation at Quadrangle Conference, Chapel Hill, NC February 10, 2002

Tront, J. M., Day, J. A. and F. M. Saunders. “Removal of 2,4,5-Trichlorophenol by *L. minor*.” Poster Presentation at Water Environment Federation Annual Conference and Exposition (WEFTEC) Atlanta, GA October 16, 2001

Tront, J. M. “Association of Environmental Engineers and Scientists: The Secrets of Our Success.” Workshop given at the *Student Chapter...Sharing Programs Workshop*, Water Environment Federation Annual Conference and Exposition (WEFTEC), Atlanta, GA October 14, 2001

Tront, J. M., Day, J. A. and F. M. Saunders. “Phytoremediation Kinetics: Removal of 2,4,5-Trichlorophenol with *Lemna minor*.” Poster Presentation at the American Society for Microbiology General Meeting, Orlando, FL May 22, 2001

Tront, J. M., and J. A. Day. “Phytoremediation of Chlorophenols.” Poster Presentation at Georgia Air and Waste Management Association Conference, September 14, 2000. Winner of GA-AWMA Student Poster Competition

Presentations made as a part of the Georgia Tech Environmental Engineering Program

Association of Environmental Engineers and Scientists Symposium:

Development of a Model for Phytoremediation of Chlorophenols, 1999

Removal of Chlorophenols by *L. minor*, 2001

Removal of 2,4,5-Trichlorophenol by *L. minor*, 2002

EnvE Research Seminar Presentations:

Bioremediation of Chlorophenols Using Aquatic Plants, 2002

Nuclear Magnetic Resonance for Probing Fate of Xenobiotics in Aquatic Plants, 2003

Predictive Relationships for Uptake Halogenated Phenols by Aquatic Plants, 2003

Anaerobic Microbial Degradation of Plant Sequestered Contaminant, 2004

Professional Experience

Senior Research Fellow

August, 2005 - present

Geoenvironmental Engineering and Clay Mineralogy Research Group

Institute for Geotechnical Engineering, Swiss Federal Institute of Technology (ETH-Zürich)

Advisor: Alexander M. Puzrin

Research Focus: Microbial Fuel Cell Technology

Research efforts are focused on development of microbial fuel cell technology for remediation of contaminated subsurface, biodegradation of unique waste streams. Collaborative efforts include interactive research with environmental microbial ecologists, environmental chemists and environmental engineers in the Swiss Federal System (ETH Zurich, eawag and EPFL), and Georgia Tech (School of Civil and Environmental Engineering).

Postdoctoral Fellow

May, 2004 – August 2005

Environmental Engineering, Georgia Institute of Technology

Advisor: Joseph B. Hughes

Research Focus: Microbial Degradation of TNT

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Efforts were focused on investigation of a novel pathway for aerobic TNT metabolism, where TNT is the sole carbon, nitrogen and energy source. Results showed the ability of microorganisms to mineralize TNT through removal of a nitro-group, oxygenation of the aromatic ring and subsequent oxygenolytic ring cleavage. The metabolic intermediate, 3-methyl-4,6-dinitrocatechol, was positively identified through stable isotope mass spectroscopy and tandem mass spectroscopy. Ongoing research efforts will focus on furthering current research on aerobic degradation of TNT in terms of novel degradation pathway delineation, microbial population characterization and classification. Future novel TNT degradation pathway research will focus on enhancing engineering strategies and providing remediation solutions. Gained valuable project and personnel management experience.

Graduate Research Assistant

1998 – 2004

Environmental Engineering, Georgia Institute of Technology

Advisor: F. Michael Saunders

Doctoral Thesis Topic: Plant Activity and Organic Contaminant Processing by Aquatic Plants

Fate of organic contaminants in aquatic plants and the interactions between assimilation and inhibition processes were explored. Aquatic plants were used to uptake, transform or sequester toxic contaminants from the aqueous phase with emphasis on inhibitory effects of contaminants on pollutant transformation. Plant activity was linked to contaminant transformation and conjugation processes in plants through development of a model that delineated responses in plant activity with contaminant exposure and a related model that quantifies transformation and conjugation products and contaminant assimilation. Experimental development and linkage of these models for a plant-contaminant system showed how contaminant metabolism affected plant growth. Understanding interactions of contaminants in aquatic plant systems represented a critical step in commercialization and use of this emerging innovative technology by providing the groundwork for development of natural systems that are sustainable and effectively harnessed for pollutant removal.

Environmental Safety Technician

Summer, 1998

BFI Waste Industries of North America, Atlanta, Georgia

Supervisor: Joel Karpa

Monitored four solid waste facilities to ensure EPA and GEPD compliance; prepared Title V air quality compliance documentation and Storm Water Management Plans for each site; supervised landfill activities including installation of gas containment system and monitored leachate storage facilities; performed routine site inspections; prepared and implemented Wildlife Habitat Enhancement Program and oversaw program certification

Undergraduate Research Assistant

1996 - 1998

Environmental Engineering, Georgia Institute of Technology

Advisor: F. Michael Saunders

Project: Phytoremediation of Chlorophenols

Environmental Science Intern

Summer 1997

St. John's River Water Management District, Palatka, Florida

Supervisor: John Burns

Co-authored report on *V. americana* and *R. maritima* transplantation; conducted feasibility study of for transplant in the Lower St. John's River; gathered background data for creation of map of aquatic

vegetation utilizing a GPS/GIS system; performed lab work related to epiphyte growth study; monitored submerged aquatic vegetation canopy height and speciation; gathered fish population data and samples for gut analysis; took water quality, cyanobacteria, and phytoplankton samples

Environmental Technician, Groundwater Team
Draper Aden Associates, Blacksburg, Virginia
Supervisor: Bill Newcomb

Summer 1996, 1995

Researched groundwater metals contamination prediction methods; explored risk for exposure levels related to land fill sites; researched background information on lead contamination; prepared UST trust fund reimbursement documents; AutoCAD development of schematic representations of well borings and proposed drilling sites

Teaching Experience

Teaching Assistant

- Guest Lecturer at ETHZ on Environmental Chemistry, Biological Remediation W '05, Su '06 (M. Ploetze, R. Hermans)
- GT CEE 4803 Engineering and the Environment, F '03 (J. Mulholland, F. Löffler, F. M. Saunders)
- GT CEE 4803 Engineering and the Environment, Sp '04 (F. Löffler, K. Pennell, M. Bergin)
- GT CEE 6331 Biological Processes, 2000 (F. M. Saunders)
- Guest Lecturer in GT CEE 6351 Biodegradation of Xenobiotics, F '04, Sp '05 (F. Löffler)

Undergraduate Research Mentor

Mentored senior CEE undergraduate students in independent research projects consisting of laboratory and literature studies with written and oral presentation deliverables

- Kaysie Jimenez, Sp '05 "Characterization of biologically active aerosols"
- Jesse Adison, Sp '05 "Enhancing the rate of biodegradation of TNT"
- Matthew Sellers, Sp '05 "Characterization of halogenated phenol degrading microbial populations"
- Cody Parham, F '04 "Characterization of biological degradation of TNT"
- Angela Wrona, Su '03, "Examining effects of molecular structure on plant uptake, processing and sequestration"
- Kurt Banner, Summer-F '02 "Bioaccumulation of plant sequestered xenobiotics"

Georgia Tech Environmental Engineering Research Internship Program (GTEERIP)

- Emily Lee and Josephine Lee, Su '05 "Designing a Wastewater Powered Biological Fuel Cell to Operate a Water Treatment System Applicable to Developing Nations"

Tutoring

- Georgia Tech Athletic Association tutor, 1999-2001
MATH 1711 Finite Mathematics; MATH 1712 Survey of Calculus
- Private Tutor for Biology, Physics, Calculus, 1999-2001

Faculty Development Workshop

- Engineering Education Scholars Program Workshop Participant, 2001

Professional Society Memberships

American Academy of Environmental Engineers	2000 - present
American Chemical Society	2000 - present
American Society for Microbiology	2000 - present

Association of Environmental Engineering and Science Professors	2000 - present
Association of Environmental Engineers and Scientists	1998 - present
Georgia Water and Pollution Control Association	2000 - present
International Water Association	2001 - present
Society of Toxicology and Environmental Chemistry	2003 - present
reviewer, Environmental Toxicology and Chemistry	
Water Environment Federation	2000 - present

Professional Service at Georgia Tech

- Faculty Advisor, Georgia Tech Women's Volleyball Club
- Association of Environmental Engineers and Scientists
President, 2000-2001
Professional Development Chair, 1999-2000
Awards Committee Chair, 2001
AEES Distinguished Lecturer Coordinator, 2001
Symposium committee, member 1998, 1999, 2003
- Graduate Student Senate; Environmental Engineering representative
- American Chemical Society, Colloid and Surface Science Symposium June, 2003 - Volunteer
- Society of Women Engineers
Service Committee Chair 1994-1995
Outreach Committee Member 1994-1996
- CEE graduate student recruitment program participant, 2000-2003
- Connect with Tech, Advisory Board 1995-1998; Host 1994-1995
Responsibilities included the planning and overall preparation of Georgia Tech's high school and minority recruitment program
- Career Fair Liaison, 1995
Responsibilities included hosting visiting engineering companies
- Campus Tour Guide, 1994-1998
Lead private and public campus tours and training tour guides
- Co-Chair of the SUCCEED Mousetrap car competition
Responsibilities included initiation, planning, and implementation of a high school outreach program that facilitated Atlanta-area girls in design and race a mousetrap car

Language German (B2) functional, conversational, non-technical capabilities

References Provided upon request