

meia.org
Newfoundland and Labrador
Environmental Industry Association



**NSERC
CRSNG**



Research Matching with Business

Yolanda F. Wiersma, Associate Professor Landscape Ecology



Research Overview:

- I study “big picture” ecological questions of all kinds – with an interest in boreal and (recently) marine systems
- I am working on how to ensure crowd-sourced data are useful.

R&D Interests and Expertise available:

- GIS
- Spatial modelling
- “Oceans of Data” – workshop on Citizen Science and Ocean Literacy



Materials and coatings:

- Designs to direct the future



- Dr. Kris Poduska
- Department of Physics & Physical Oceanography

- Research Overview:

.We develop thin layers of inorganic materials that have tunable physical responses. Applications include gas sensing and humidity sensing in extreme environments, hydrophobic and ice-phobic coatings, and luminescent coatings for color-controlled solid-state lighting.

- R&D Interests and Expertise available:

.What is it made of? For natural and synthetical materials, we assess chemical composition and structure, particle size, and surface roughness.

- **How does it respond to its environment? We have electrical, optical, magnetic, and mechanical measurement instrumentation and expertise.**

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Indigena Skincare - Founder, Lisa Walsh



Company Overview:

Indigena - Founded in 2009 in Canada's easternmost province, Indigena's production, lab and head office are located in Conception Bay South and it's retail store is located in the Holiday Inn Government Center in the heart of St. John's.

The product range is naturally derived, cruelty free, organic and botanically preserved. We use indigenous extracts made from botanicals from NL's land and surrounding sea.

R&D Interests and Expertise sought:

Indigena has been researching and developing the use of indigenous ingredients from NL that have high antioxidant and anti aging capabilities. We are currently engaged with NRC to commercialize our patent pending formulas. Previously we have collaborated with MUNBG, MUN Biology, MITACS, and RDC to develop and test our proprietary extract formulas these launched in 2013.

Currently we are looking for Chemistry expertise to incorporate blends of extracts in new formulas, and scientific expertise to access certifications and become 3rd party certified. Ultimately we are pursuing a preservative free formula that has proven anti aging properties.

Clinical testing will be a necessity as we move forward.

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Research Overview:

- **My research involves field studies and simulation modeling of marine ecosystem dynamics**
- **Established the science basis for the Gilbert Bay MPA in Labrador (established 2005)**

R&D Interests and Expertise available:

Offsetting the destruction of marine fish habitat during coastal development projects

Marine environmental impact of the Labrador - Island Transmission Link





From Ideas to Innovation:
Building the Green
Economy



Centre for Forest Science and Innovation

Dr. Blair Adams – Director
blairadams@gov.nl.ca

Aloysius Ducey – Marketing Director
Derek Ducey – Managing Director



Company Overview:

- BMS North America (BMSNA) is an environmental product supplier . BMSNA has a licensee agreement with Butler Manufacturing Services Ltd. (BMS) of Ireland to sell and manufacture compact packaged sewage treatment plants and other environmental products for the North American market.

R&D Interests and Expertise sought:

- **BMSna is interested in finding ways to recycle the heat that is lost in the sewage process and harness the heat that is available and expelled during the exothermic reaction in the sludge at the bottom of the tank.**

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Name –Dr. Tom Cooper
Associate Professor, Faculty of Business



Research Overview:

- **Strategic risks**
- **Benefit Agreements**
- **Aboriginal business**

R&D Interests and Expertise available:

- **Risk management**
- **Municipal infrastructure**
- **Aboriginal business – access to finance**
- **Benefit agreements, major projects, socio-economic assessments**
- **Business case development, strategic planning, management consulting**
- **Corporate Social Responsibility, Business Ethics, Business sustainability**

Stephen Hill, CDRF Facility Manager
Dept. of Ocean Sciences, Faculty of Science



A sneak preview of the new Cold-ocean Deep-sea Research Facility

www.mun.ca/osc/CDRF/

Research Overview:

- Facility and services for the study of aquatic life.
- Deep-sea and cold water facilities.
- Impacts of environmental contaminants and climate change.

R&D Interests and Expertise available:

- **Environmental effects monitoring.**
- **Fish health studies:** live trial of vaccines and nutraceuticals. Studies of disease and invasive species.
- Advanced instrumentation for medical and biological research.

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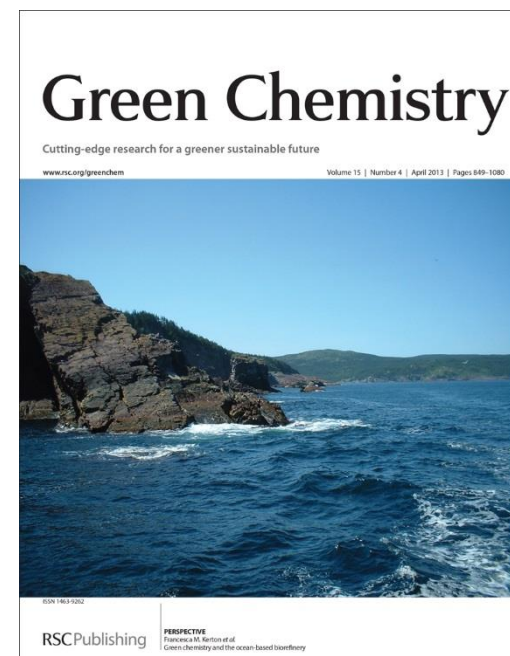


Research Overview:

- Preventing pollution via environmentally-friendly technologies
 - Renewable chemicals and materials with a special focus on ocean-sourced biomass
 - Carbon dioxide utilization and activation

R&D Interests and Expertise available:

- Waste conversion technologies
- Chemical conversion technologies
- Reactions of gases, catalysts, sensitive reagents
- Materials Chemistry
- Access to a suite of analytical equipment



Prof. Fran Kerton – Green Chemistry
E-mail: fkerton@mun.ca



**MUN Green Chemistry and
Catalysis Group, July 2014**

R&D Interests and Expertise available:

- **Solvents and Catalysis**
- **Inert atmosphere chemistry**
- **Spectroscopic reaction monitoring**
- **Kinetics, Activation Energies...**
- **Existing collaborations with Dr. Kelly Hawboldt (MUN Engineering)**
- **Access to range of instruments: GC-MS, GPC, UV-Vis-NearIR, in-situ high pressure IR...**



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Kelly Hawboldt – Professor – Process Engineering

Research Overview:

- **Green processing of natural resources or adding value to waste.**
 - **Identification of valuable by-products in waste (offshore oil/gas waters and gases, fishery wastes, forestry residues, mining/metals), develop chemical/physical/biological processes to recover by-products**
 - **Focus on remote and/or limited infrastructure locations**
 - Treatment/storage/disposal costs are high and management options limited, state of residues/waste, transport of residues/wastes high in moisture is costly

R&D Interests and Expertise available:

- **Develop processes to recover and refine oil for fuel from:**
 - **finfish waste streams**
 - **Forestry residues (bark, saw dust/chips) and co-processing with shellfish and mining waste**
- **Adsorbents derived from wastes (shellfish shells, biochar from forestry, fly ash) → treating soured produced water/gas (offshore), mining effluent, CO₂ removal**
- **Waste as substrate to culture bio-dispersant producing bacteria (brewery effluent, oily waste, glycerol from biodiesel)**
- **Collaboration with Chemistry on sensors**

Name – Dr. Paul Snelgrove



Research Overview:

- ***Canadian Healthy Oceans Network*** seeks to provide new mechanisms to evaluate ocean health, vulnerability and status, and provide scientific guidance on sustainable ocean use and management strategies.

R&D Interests and Expertise available:

- **Marine ecology of coastal and deep-sea environments invertebrates to fishes**
- **Marine spatial planning and ocean management strategies**
- **Tools for ocean observation spanning from ROVs to benthic landers to ship based surveys**
- **Seeks industry partners interested in sustainable ocean strategies**

Xili Duan

Assistant Professor in Mechanical Engineering

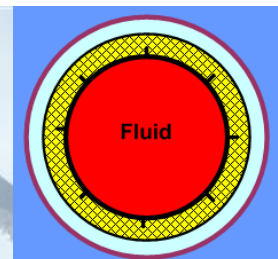
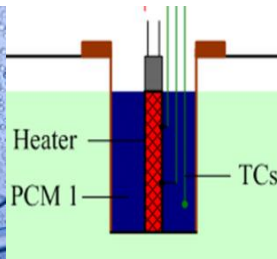
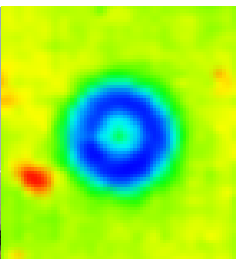


Research Overview:

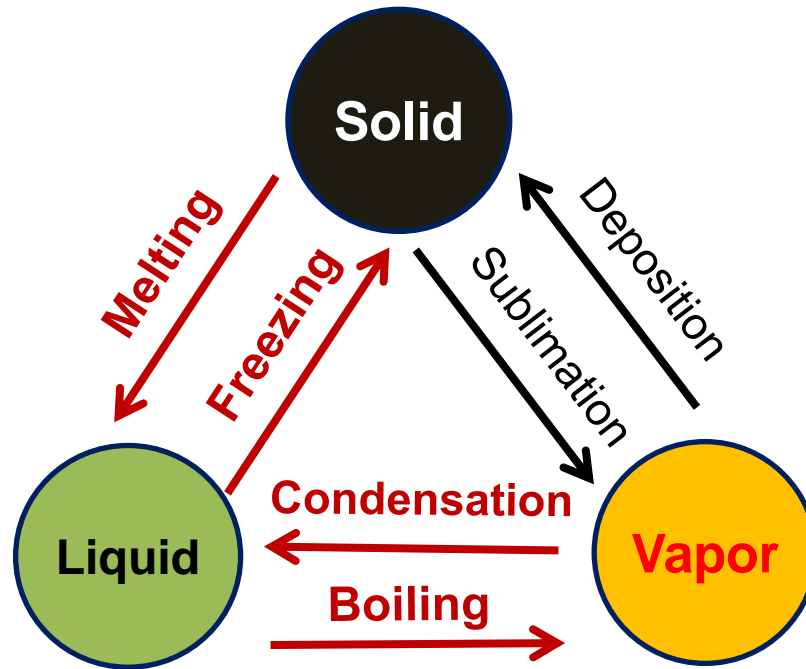
- Freezing-Melting Processes and Thermal Protection of Infrastructure in Cold Environment

R&D Interests and Expertise Available:

- Phase change heat transfer. Modeling and experiments.
- Thermal energy storage with Phase Change Materials, and Macro- and nano-scale engineering technologies

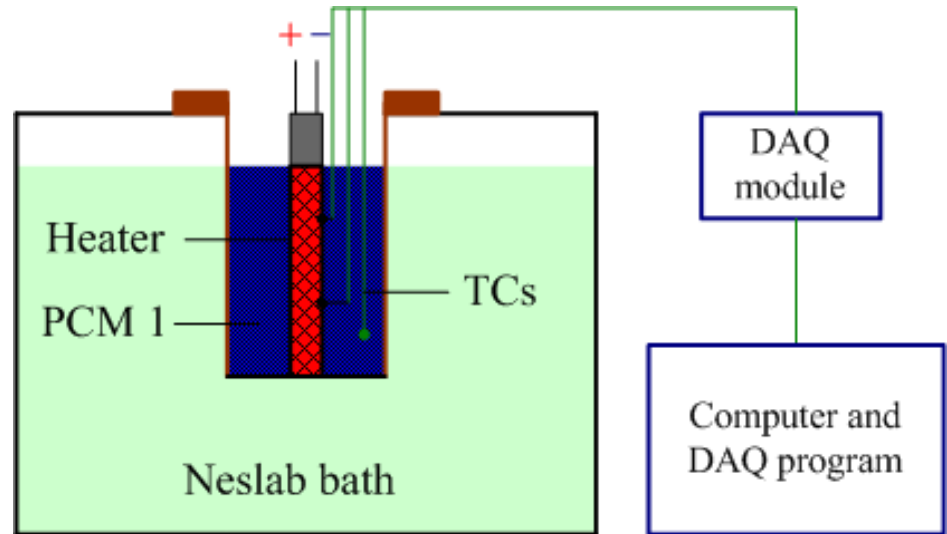
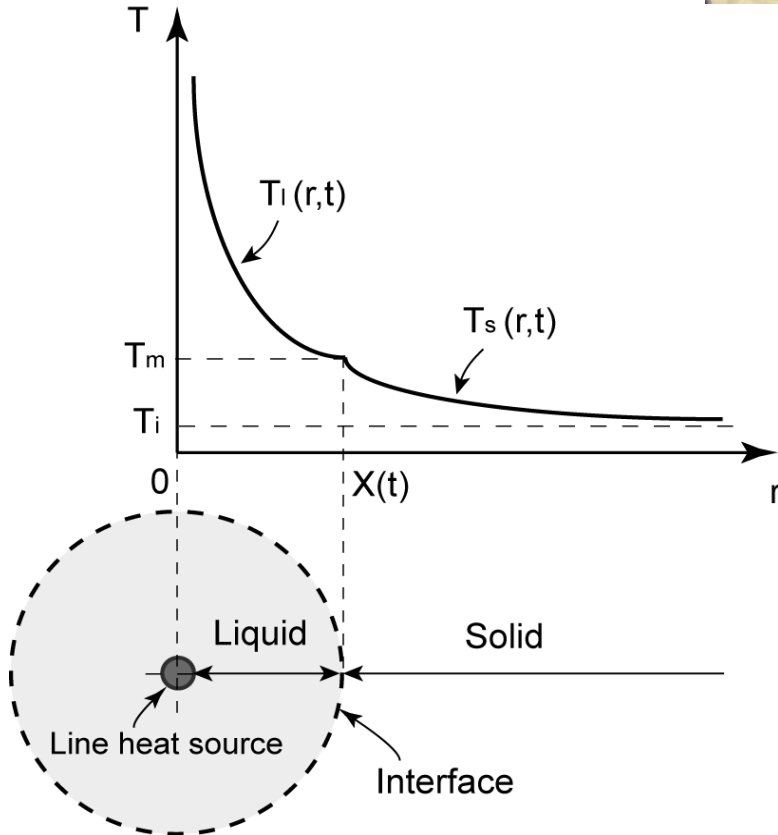
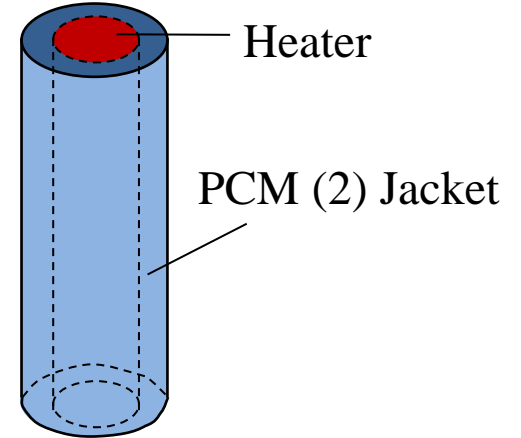


Phase Change Heat Transfer (PCHT) and Phase Change Materials (PCM)



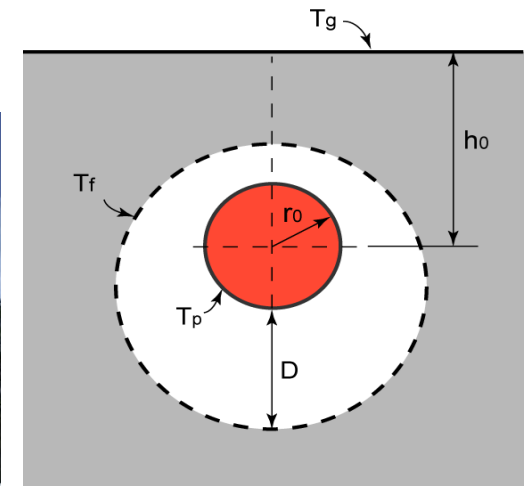
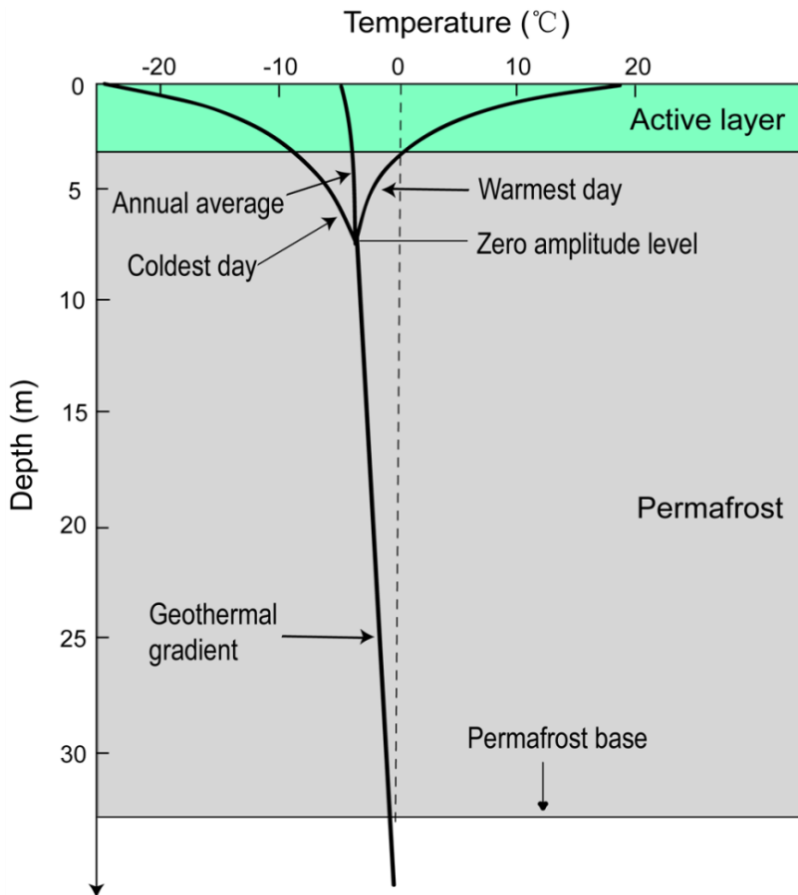
- Tremendous amount of thermal energy being absorbed or released with almost no temperature change, due to latent heat

EV Battery Thermal Management with PCMs



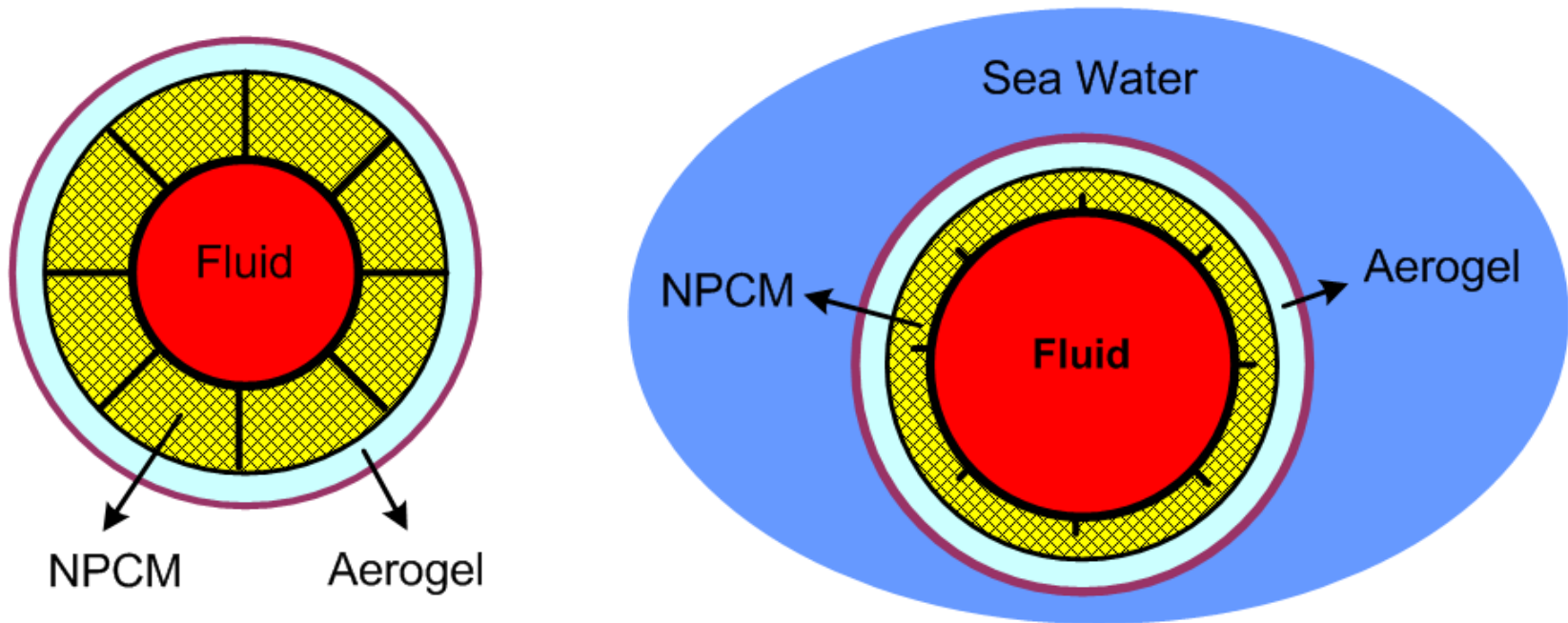
Ground Freezing – Thawing and Thermal Protection of Civil Structure in Cold Regions

- Foundation problems caused by ground thawing freezing cycles



Solar Energy Storage and Subsea Flow Line Insulation

- Nano-enhanced PCM (**NPCM**) with improved energy storage capability
- Advanced thermal energy storage with NPCM for solar energy applications and waste heat recovery in industrial energy processes
- Thermal insulation with energy storage capability for subsea flow lines

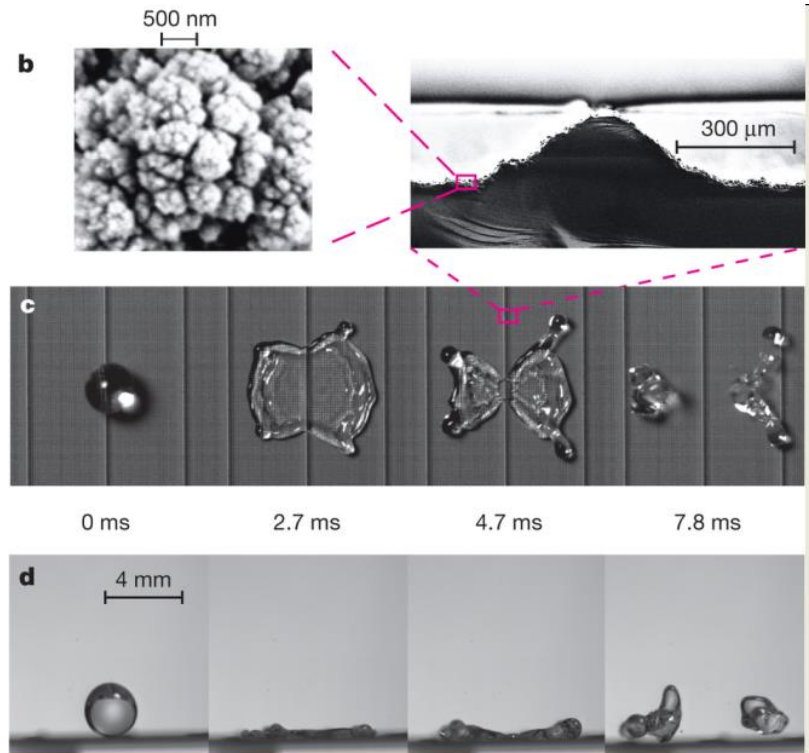


Micro Engineered Surface for Icing Mitigation



56.6um

Microstructures + waxy coating to repel water droplets



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