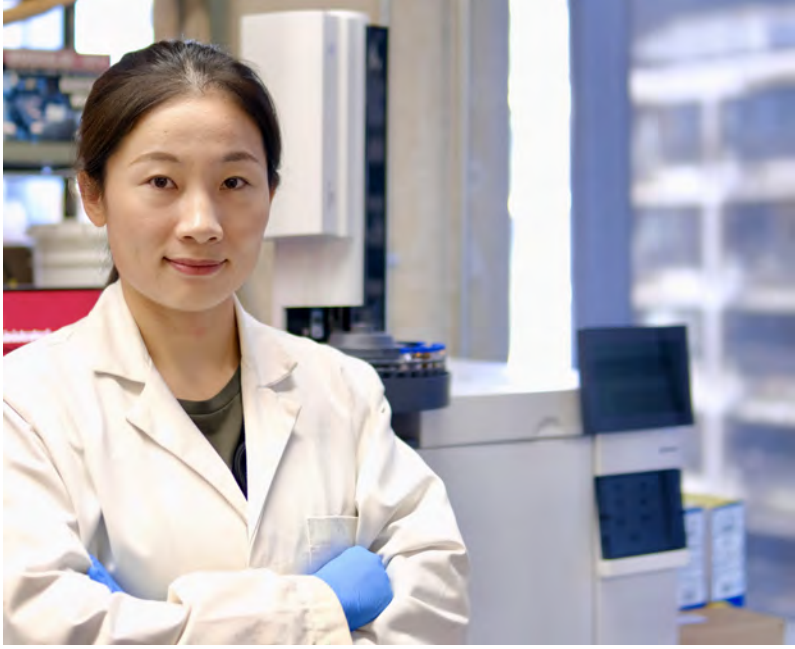
MEMBER SPOTLIGHT

Meet Huifang Bi

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Describe your work or studies.

Spilled oil reaching shorelines can be highly weathered and hard to remove, and there is a need to develop an environmentally friendly, easy way to wash out the deposited oil, or even prevent the spilled oil from adhering on the shoreline. My research focuses on the development of green shoreline oiling prevention and treatment techniques to reduce the impacts of spilled oil in coastal regions. I am currently developing a biomass-derived coating with special wetting properties to reduce oil adhesion on sensitive shorelines and structures during emergency spill response. Meanwhile, I am also exploring whether this *functionalized coating* (one that has novel functions beyond its primary purpose) can enhance the biodegradation rates of the residual oil released into surrounding waters.

What inspired you to enter this work?

I grew up in a city by the shoreline, and I love the peaceful feeling of walking by the water. Since May 2019, as a master's student at Concordia University, I have participated in research projects related to shoreline cleanup during oil spill response, funded by the Multi-Partner Research Initiative (MPRI) under Canada's Oceans Protection Plan. As a core team member, I conducted extensive research on the use of surface washing agents for oil cleanup. In particular, I had the opportunity to work with many experts from academia, industry, and government in Canada, the United States, and Norway, and I received valuable suggestions from them. These experiences sparked my growing passion for this field, leading me to pursue a Ph.D. on this topic. As my research progressed, I continuously reflected on how to further reduce the impacts of spilled oil on the Canadian coastal environment and communities. In my opinion, using an environmentally friendly method to prevent the adhesion of spilled oil on shorelines is far superior to removing stranded oil. This led to the development of the idea of a functionalized coating for shoreline oiling prevention. Although still in the exploratory phase, my preliminary results showed that this method is both feasible and meaningful, with the potential to revolutionize oil spill response on shorelines.

What are your professional aspirations?

I hope to become a research scientist in the field of oil spill response, focusing on developing innovative solutions like functionalized coatings for shoreline oiling prevention. I aim to continue advancing this technology to minimize environmental disturbance while effectively protecting shorelines. In the long term, I aspire to lead a research team dedicated to transforming the developed technologies into practical applications for the oil spill response toolbox, helping responders protect coastal and freshwater ecosystems more sustainably.

What is something about yourself that you'd like to share with other IAGLR members?

In addition to my research, I actively participated in some forums, workshops, and conferences (e.g., IAGLR 2024) to share my research with a wider audience and engage with experts. These interactions provided me with valuable insights into the latest developments in oil spill science and response strategies, while also fostering collaborations that enhance the practical applications of my findings. I am deeply passionate about seeing my work transform into real-world solutions that protect shorelines.

Additionally, I am actively involved in event organization and knowledge dissemination, which gives me opportunities to demonstrate my leadership skills. For example, I led the promotion of International Oil Spill Science Conference 2022 through various channels and provided technical support for several online events, such as MPRI Student Research Forum 2021 and ITAC-MPRI Virtual Forum 2021. My contributions to shoreline cleanup research and my engagement with oil spill communities have been well recognized. For instance, I have published 21 papers in international journals. In recognition of my achievements, I was awarded the 2023 Vanier Canada Graduate Scholarship (the most prestigious of the doctoral scholarships offered by the Canadian federal government) and 2024 International Oil Spill Conference Scholarship.

What advice to you have for graduate students interested in pursuing oil spill science?

Don't hesitate to explore innovative solutions like nanotechnology or advanced materials, as these cutting-edge approaches may address complex challenges in oil spill prevention and cleanup. Innovation often leads to more efficient and sustainable outcomes, so keep an open mind and be willing to test new ideas.