

# Nagissa Mahmoudi

## McGill University (EPS)

# What's on the menu? Investigating the selective diet of microbes using novel isotopic tools

Tuesday, 9 April 2019 • 3:30 pm  
*MSI Conference Room • 3550 University*

The biogeochemical transformation and cycling of carbon in marine sediments is driven by the activity of complex and diverse microbial communities. Reactions initiated by microbial enzymes at the molecular scale drive the rate and extent of organic matter (OM) remineralization to CO<sub>2</sub> and CH<sub>4</sub>. A major unknown in carbon biogeochemistry is determining what controls the reactivity (or bioavailability) of OM to microorganisms. Recent studies have found that the ability to use different carbon sources varies among microorganisms, suggesting that the reactivity of certain pools of carbon can be specific to the taxa that utilize the pool. Here, we ask the question: to what extent is the reactivity and transformation of OM dependent on the species that are present and active in the environment. Using a novel bioreactor system (IsoCaRB), we carried out time-series incubations using model marine bacterial isolates and sterilized organic-rich sediment collected from Guaymas Basin (Gulf of California). The IsoCaRB system allows us to measure the production rate and natural isotopic ( $\Delta^{14}\text{C}$  and  $\delta^{13}\text{C}$ ) signature of microbially-respired CO<sub>2</sub> to constrain the type and age of organic matter that is bioavailable to each species. Our results suggest that organic matter transformation in marine environments may depend on the metabolic capabilities of the microbial populations that are present and active.

Institut Spatial de McGill



McGill Space Institute

## MSI Seminar Series