

THE SALZBERG CHEMISTRY SEMINAR SERIES



The City College
of New York

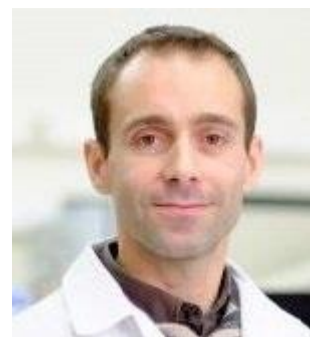


Monday, February 6, 2023 @ 12:00 noon – MR1027

Carbon-based membranes: An alternative to the application of conventional powder catalysts in water treatment

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Abstract: Despite the ability of the existing technologies to reduce organic micropollutant and microbial loads, drawbacks such as high operational and maintenance costs, formation of toxic by-products, and absence of residual effect, have been leading to the search for alternative advanced water treatment options, namely the so-called advanced oxidation technologies. These rely upon the production of reactive oxygen species, such as superoxide ($O_2^{\bullet-}$), sulfate ($SO_4^{\bullet-}$), and hydroxyl (HO^{\bullet}) radicals. $SO_4^{\bullet-}$, which can be obtained by catalytic activation of the persulfate ion ($S_2O_8^{2-}$), has been attracting a great deal of attention from the scientific community working on water treatment applications mostly due to its high reduction potential.

Carbon materials in powder form have been extensively employed in activated persulfate oxidation carried in batch mode of operation. However, no real-scale applications are known. The main reason for that lays on the need to implement a subsequent treatment step to recover the powder catalyst after the treatment stage.

This lecture will feature the presenter's route towards developing a continuous mode system for water treatment recruiting the functionalities of metal-free carbon-based catalytic membranes for persulfate activation and subsequent degradation of organic micropollutants and disinfection.

Biography: Rui S. Ribeiro completed his PhD at University of Porto, Portugal, in 2018. His work has been focused on the development of carbon-based materials for environmental remediation and environmental monitoring applications, and electrochemical energy conversion. He has published numerous pioneering works in top-tier peer-reviewed international journals and delivered 5 invited presentations to internationally established conferences and advanced schools. Dr Ribeiro is currently a Visiting Fulbright Scholar at The City College of New York, NY, and a Postdoctoral Researcher at University of Porto.

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