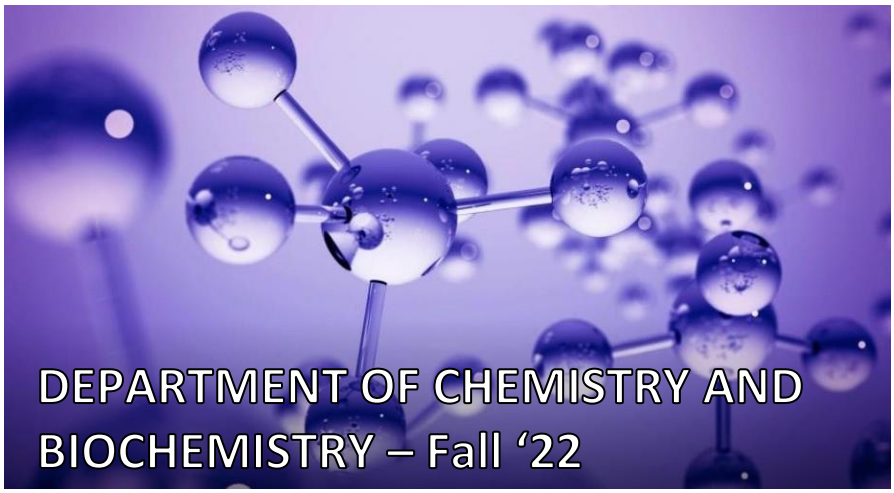

THE SALZBERG CHEMISTRY SEMINAR SERIES

The City College of New York

CREST IDEALS PHASE II

Monday, November 21, 2022 @ 12:00 noon – MR1027

Metal-organic assemblies for environmental sustainability

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Abstract: The high demand of food of the ever increasing global population involves the extensive use of agrochemicals to increase crop production. However, this goal also poses real threats to human health (110,000 deaths/year and 5 million pesticide related illnesses), aquatic ecosystems, and the environment at large. One of the most common classes of pesticides, organophosphates (OPs), are highly toxic to humans and ecosystems as a consequence of their acetylcholinesterase (AChE) inhibition activity. An additional related concern, is the deliberate contamination with highly toxic organophosphate compounds as a consequence of the action of destabilizing groups. Finally, another problem associated with agricultural sustainability is the extensive use of phosphate fertilizers from non-renewable phosphate rock sources and their leaching to soil/aquatic media leading to severe environmental problems.

In this seminar, I will summarize some results of our group of what metal-organic frameworks (MOFs) and metal-organic polyhedra (MOPs) can offer to remediate this paramount health and environmental threat. Specific topics to be discussed include:

- Capture and detoxification of organophosphates
- Reactivation of organophosphate inhibited AChE (Figure 1)
- Phosphate recovery from waste water

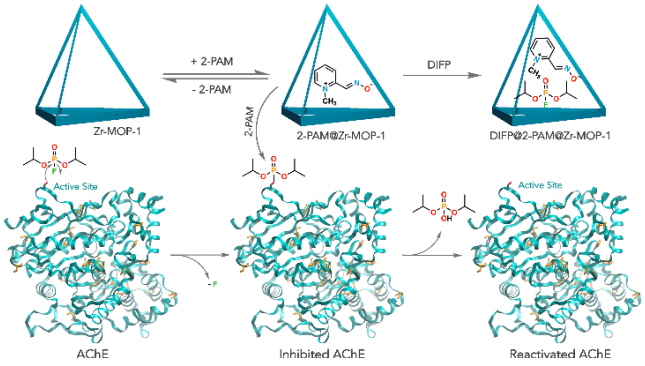

Figure 1. Dual behavior of Zr-MOP assemblies for organophosphate capture, drug controlled release and acetylcholinesterase (AChE) reactivation.

Biography: Jorge A. R. Navarro, born in 1969 is Full Professor of Inorganic Chemistry at the University of Granada since 2010. His research is focused on the synthesis and applications of discrete and extended polygonal coordination/covalent/supramolecular assemblies with molecular recognition properties suitable for applications in the fields of environmental and biomedical chemistry. Special focus is in the use of metal organic frameworks for separation of challenging gas mixtures as well as capture and catalytic degradation of toxic compounds (including highly toxic **chemical warfare agents**). He is also interested in the use of porous materials as platforms for the controlled delivery of drugs.

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https://ccny.zoom.us/meeting/register/tZYuf-2orDorG9EdR3m8V2yHJsoO9O4cusPY