

## Synthesis of metal-ion complexes as detectors for nitrate pollutant ions

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Nitrates and nitrites are found to have overall health risks, particularly involved with food products and the digestive system when nitrites are converted into carcinogenic nitrosamines. Nitrate reductase, found in plants, algae, fungi, and bacteria (not humans), converts nitrate into nitrite. The enzyme active site consists of a coordinated molybdenum, NAD(P)H, iron-heme, and FAD as redox cofactors involved within nitrate electron transport. Our aim is to synthesize a model to mimic the enzyme's reducing function. Two organometallic complexes have previously been made, as a dipodal (bidentate) and the tripodal (tridentate) models. Both models have demonstrated nitrate coordination.

Binding/coordination of nitrate by the metal complex was measured by UV-vis absorption spectroscopy. Recent efforts have included the synthesis of additional organic ligand scaffolds with variable hydrogen bond capability in order to develop a flexible and improved nitrate detection in solution.