

Metal oxos in chemistry and biology



Harry B. Gray
California Institute of Technology
Professor of Chemistry

Abstract:

The dianionic oxo ligand occupies a very special place in coordination chemistry, owing to its ability to donate pi electrons to stabilize high oxidation states of metals. The ligand field theory of multiple bonding in metal-oxos predicts that there must be an “oxo wall” between Fe-Ru-Os and Co-Rh-Ir in the periodic table. There have been many

attempts to break down the wall, but in my seminar I will report that it is still standing! I will discuss the roles metal-oxos play in two of the most important chemical reactions on planet Earth, water oxidation to oxygen in photosystem II, and hydrocarbon oxygenation catalyzed by cytochrome P450.

Global Impact: Fuel, Materials, Food

