Harry Gray
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Harry Gray is the Arnold O. Beckman Professor of Chemistry and the Founding Director of the Beckman Institute at the California Institute of Technology. In 1961, after graduate work in inorganic chemistry at Northwestern University and postdoctoral research at the University of Copenhagen, he joined the chemistry faculty at Columbia University, where he investigated the electronic structures and reactions of inorganic complexes. In 1966, he moved to Caltech, where for over 40 years he has been working on problems in biological inorganic chemistry and in organic photochemistry. Awards for his work include: the National Medal of Science in 1986; the Priestley Medal in 1991; the National Academy of Sciences Award in Chemical Sciences in 2003; the Benjamin Franklin Medal in Chemistry and the Wolf Prize in Chemistry in 2004; and the Welch Award in Chemistry in 2009. He is a member of the National Academy of Sciences; the American Academy of Arts and Sciences; the American Philosophical Society; a foreign member of the Royal Danish Academy of Sciences and Letters; the Royal Swedish Academy of Sciences; the Royal Society of Great Britain; and the Academia Nazionale dei Lincei.

Fifty years of metal-oxos

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, which was formulated over 50 years ago, predicts that there must be an “oxo wall” between Fe-Ru-Os and Co-Rh-Ir in the periodic table. After reviewing this early work, I will make connections between the electronic structures and reactivities of metal-oxos that are key players in catalytic chemistry required for the production of solar fuels.