Katarzyna Grubel

Inorganic/Organic Seminar

23rd January 2009

3:30 pm, Widt 330

Abstract

Nitrates in drinking water pose a threat to human health. Although not considered immediately dangerous, nitrate conversion to nitrites in the human body is associated with cancer and liver damage. Especially endangered are infants, in which nitrates are the cause of the "blue baby syndrome". The material to be presented in this seminar focuses on methods of drinking water purification and the idea of using new tetranuclear, water-soluble $\{V_4\}$ catalysts for nitrate reduction. The choice of vanadium as a catalyst stems from the fact that vanadium is found in the active site of nitrate reductase enzymes. Especially interesting is the fact that these vanadium-containing enzymes are able to reduce NO_3^- by more than two electrons, while nitrate reductases containing other metals are not. It seems reasonable that a new series of vanadium complexes of appropriate nuclearity and metal oxidation state should be able to carry out the reduction of NO_3^- to harmless N_2. Approaches toward this idea will be presented.