Oceanography-2013
OMICS Group Conferences
Accelerating Scientific Discovery
International Conference on
Oceanography
August 21-23, 2013 Orlando-Florida, USA

Nickel complexation by organic ligands in the coastal waters: Sewage pollution as a potential source for organic ligands

Radwan Al-Farawati

King Abdulaziz University, Saudi Arabia

Abstract

Cathodic stripping voltammetry is a powerful technique for determination of trace metals speciation in seawater. It was used to evaluate and determine the extent of nickel complexation by potential organic ligands in Reayat Al-Shabab and Al-Arbaeen; a heavily polluted coastal lagoons on the eastern Red Sea. The data revealed the presence of two classes of ligands: a strong complex that has an average log conditional stability constant (log K'_{NiL1}) of 15 with an average ligand concentration of 71 nM; and a weak complex that has an average log conditional stability constant (log β'_{NiL2}) of 13.9 with an average ligand concentration of 430 nM. The ligand concentrations for both classes were high indicating the important of sewage as a potential source for organic ligands to the marine environment. The speciation calculation of dissolved Ni showed that more than 90% of Ni was complexed by the organic ligands. This has impact on biogeochemical cycle of Ni in the coastal waters.

Biography

Radwan Born and raised in Taif, Saudi Arabia. Al-Farawati earned a B.S. in Marine Chemistry in 1990 from Faculty of Marine Sciences, King Abdulaziz University. After graduation, he enrolled as a student at Oceanography Laboratories, Liverpool University, obtaining a PhD degree in Oceanography in 1998. . Al-Farawati subsequently spent 12 years in the Faculty of Marine Sciences at the University of King Abdulaziz. In 1999 he was appointed the chairman of marine chemistry department, a post he held up to now. his main interest is to study the distribution of nutrients and trace metals in the coastal waters of eastern Red Sea; and speciation of dissolved trace metals in seawater. Recently, He participated in research collaboration with institute of Geomar in Germany to study the geochemistry of methane in the hot brines and shallow areas of the Red Sea. Besides that, Al-Farawati participated in many projects to study marine natural products from marine organisms such as corals, algae and sponges.