

Seminar Fakulteta za fiziku

Vrijeme: utorak, 19. studenoga 2024. u 12:15

Mjesto: O-130, Fakultet za fiziku, Sveučilišni kampus, Radmile Matejčić 2

Jezik: engleski

Cryptic sulfur cycling in marine sediments affected by high fluxes of reactive iron from terrigenous sources

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Abstract

In sediments with high content of reactive iron oxides, nearly all hydrogen sulfide, which is produced by microbial sulfate reductions, is reoxidized to sulfide oxidation intermediates (sulfur, thiosulfate, and sulfite) and, eventually, to the terminal oxidation product, sulfate. Such sulfur cycling is called “cryptic” and is found in a wide variety of marine and limnic systems. One of marine systems, which is characterized by a cryptic sulfur cycle in the sediments is the Gulf of Aqaba, Red Sea. The gulf is strongly affected by high fluxes of aeolian dust deposition from the adjacent deserts, especially from Sahara, which is rich in reactive Fe(III) and Mn(IV) phases. In the first part of my lecture, I will present multiple geochemical lines of evidence for the cryptic sulfur cycling based on concentrations and isotopic composition of the redox-sensitive elements. The second part of the lecture will be devoted to the understanding of the mechanistic and quantitative constraints of the cryptic sulfur cycle in the sediments of the Gulf of Aqaba. In order to calculate the rates of various biogeochemical processes, incubations of amended sediment slurries and direct measurements of sulfate reduction rates were performed. In the last part of my lecture, I will discuss evidence for wide geographic distribution of the cryptic sulfur cycling on the examples of the main basin of the Red Sea and of the eastern Atlantic ocean.

Short CV

Alexey Kamyshny, Associate Professor, Ph.D.

Department of Earth and Environmental Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel

Visiting scientist at the Ruđer Bošković Institute, Zagreb, Croatia

Education:

B.Sc., The Hebrew University of Jerusalem, Chemistry Department, 1998

M.Sc., The Hebrew University of Jerusalem, Casali Institute of Applied Chemistry, 2002

Ph.D., The Hebrew University of Jerusalem, Casali Institute of Applied Chemistry, 2006

Postdoctoral research:

Max Planck Institute for Marine Microbiology, Bremen, Germany

Leibniz Institute for Baltic Sea Research, Warnemünde, Germany

Department of Geology and The Earth System Science Interdisciplinary Center University of Maryland, College Park, USA

Academic employment:

2011 – 2019: Senior Lecturer, Department of Earth and Environmental Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel.

2019 – present: Associate Professor, Department of Earth and Environmental Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel.

Summary funding: 2,064,000 \$

Students and postdoctoral research supervision: 12 M.Sc. students, 6 Ph.D. students, 1 postdoctoral researcher

Publications: 58 peer-reviewed publications with h-index 28, 2 book chapters, 2 patents

Publications in: Nature Communications, Proceedings of the National Academy of Sciences USA, Geology, Inorganic Chemistry, Analytical Chemistry, Environmental Science & Technology, Geochimica et Cosmochimica Acta and other journals