

Sažetak predavanja:

The early evolution of life on Earth was intimately coupled with the development of the oceans' chemical composition and redox conditions. The biogeochemical processes of the ancient oceans – today reflected in the chemical and isotopic compositions of sedimentary rocks – are studied by comparing the rock compositions with the chemical and isotope fractionation patterns that are formed in laboratory experiments under controlled conditions. Such approach may lead to uncertainties and false interpretations due to chemical and biological complexity of natural aquatic systems. In my presentation, I will discuss a novel approach, which can help to overcome these difficulties and to add significantly to understanding of biogeochemistry of the ancient oceans: study of modern limnic analogs of ancient oceans, which can be used as “biogeochemical time machines”. I will demonstrate how application of this approach sheds light on the evolution of biogeochemical and redox conditions throughout the history of the ocean, the cradle of life on Earth. At the end of my presentation, I will discuss preliminary results of my quest for biogeochemical time machines in Croatia.

O predavaču:

Prof. Alexey Kamysny is a biogeochemist, Associate Professor and a head of the MarineLab at the Department of Earth and Environmental Sciences at the Ben-Gurion University of the Negev, Israel. His research focuses on the cycling of the redox sensitive elements such as S, Fe, Mn, and C and the role of processes involving these elements in the origins and early evolution of life on Earth. His research involves field studies as well as laboratory investigations of thermodynamic and kinetic parameters of chemical transformations involving these elements. Currently, he is leading the Israel Science Foundation Funded Project "Mechanistic and kinetic controls on sulfurization and desulfurization of sedimentary organic matter during early diagenesis". During his sabbatical research visit to IRB (2024/2025) he executes a project "Evaluation of applicability of Croatian lakes as the analogs of Archean and Proterozoic oceans."