

Hrvatsko udruženje slatkovodnih ekologa  
Vas poziva na predavanje pod naslovom:

## Elemental bio-imaging at the nanoscale with Nano Secondary Ion Mass Spectrometry (NanoSIMS): technique and applications

koje će u **utorak, 3.12. u 16.00 h** u predavaonici BO1 Biološkog odsjeka PMF-a,  
Rooseveltovej trg 6, održati

**Prof. dr. Dirk Schaumlöffel (CNRS, Francuska)**

### Abstract

The lecture gives an introduction to the imaging of chemical elements in biological cells and tissues at the nanoscale which can help to investigate biosorption and bioaccumulation processes at cellular and subcellular level. Scientific progress in this field is directly related to new instrumental and methodological analytical developments. Nano secondary ion mass spectrometry (NanoSIMS) is an analytical technique which relies on the sputtering of ions from a solid surface by focused positive or negative primary ion beams and the subsequent analysis of the produced secondary ions by a mass spectrometer under high vacuum. NanoSIMS allows chemical imaging of a sample surface with lateral resolution below 50 nm combined with high sensitivity and thus it is perfectly suited to localize the distribution of chemical elements with high spatial resolution in biological samples. Advantages and challenges of NanoSIMS bioimaging of chemical elements at nanometer level will be discussed. Recent examples from our laboratory will be presented showing different applications where NanoSIMS element bioimaging can be used.



Dirk Schaumlöffel has been a research professor at the French National Center for Scientific Research (CNRS) since 2011 working at the Institute of Analytical Sciences and Physicochemistry for Environment and Materials at the University of Pau (France). His scientific research focuses on analytic-chemical developments for essential and toxic trace elements in biological organisms. One of his main activities includes trace element imaging in biological cells and tissue at nanometer level by nano secondary ion mass spectrometry (NanoSIMS) with applications in environment, biomedicine and toxicology. He graduated in chemistry from the Philipps-Universität Marburg in Germany where he obtained his doctorate (Dr. rer. nat.) in 1995. After leaving the University of Marburg he continued his academic career as research scientist at the GKSS Research Center in Geesthacht, Germany, and in 2003 he entered the CNRS in France. From the University of Pau he obtained his habilitation in analytical chemistry and the title of a professor. Furthermore, Dirk Schaumlöffel is Editor-in-Chief of the *Journal of Trace Elements in Medicine and Biology*, General Secretary of the *Federation of European Societies on Trace Elements and Minerals* (FESTEM), and President of the *German Society for Minerals and Trace Elements* (GMS).