Isotopic signatures were pioneered some 20 years ago with Thermal Ionisation Mass Spectrometry. Ten years ago the development of Multicollector ICP/MS has opened new doors in the understanding of the fate elements in the environment. Initially, the instruments and their isotopic capabilities were dedicated to the exploration of major geological processes. However, building upon our work in speciation, we used our knowledge of ICP/MS, using a multicollector instead of a quadrupole as a detector. This created the possibility of using isotopic signatures in a transient mode for speciation and also at very low concentration levels, which is currently unique in the world. This instrument was then developed as a prototype with a unique detection configuration to allow us, with close partnership with Nu Instruments, to promote new possibilities in many areas at ultra-trace levels while also addressing species detection. This is paramount and has not been developed before.
As part of the Equipex MARSS, we developed a unique configuration of detectors on a high resolution MC ICP/MS. This now results in a unique instrument which will permit us to not only address the reactivity and origins of the elements in consideration, but also the chemical processes that promoted the formation of these species. Such a complete set of information had never been developed before and now will be routinely accessible within UPPA’s MARSS Equipex. This unique HS HR ICP/MS MC platform will be one of the key instruments of the MARSS project and will allow researchers to explore new areas of environmental, medical, food and industrial research. It will be a key part of MARSS’ speciation and chemical 2D and 3D imaging capacities.