

ELECTROANALYTICAL METHODS AND A NEW IN SITU SAMPLER FOR THE CHARACTERISATION OF PORE WATERS OF SEDIMENTS OF THE LAGOON OF VENICE

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The understanding of the early diagenesis processes in superficial sediments of transitional environments is particularly important in order to know the effect and fate of toxic pollutants discharged in the environment. Precious information helping in the solution of such a complex problem can be drawn by continuously monitoring of pore waters. Sampling methods providing reliable samples and analytical techniques with satisfactory precision and accuracy need to be available. Moreover, since a wide range of analyses are necessary, a good advantage could derive from using analytical techniques, preferably with speciation capabilities, able to give concentration information on a variety of substances.

Among other analytical methods, electroanalysis is increasing its importance in ecosystem studies, particularly in chemical oceanography, being many substances of relevancy in the characterization of marine waters electroactive. Moreover, electroanalysis have the advantage that measurements can be carried out directly in crude marine waters with few or none chemical pre-treatments, without altering natural equilibria.

On the other hand, as far as marine pore waters is concerned, several problems arise from the availability of suitable sampling methods and apparatus able to avoid alterations of chemical equilibria and in the natural composition of the sample.

In this communication we describe a new prototype *in situ* pore water sampler which allows temporal sampling of pore-water from intertidal sediments. The system consists of a nylon device provided with regularly spaced chambers, double filtering ports and pipes for sample recovering. The field use of this apparatus for determining sulfur species and heavy metals in pore-waters is described; a satisfactory agreement between data gained by using the proposed *in situ* sampler and by core-squeezing in proper experimental conditions is obtained.

The concentration profiles for reduced sulfur species, iron and manganese are determined by cathodic stripping voltammetry, while the concentration of copper lead and cadmium are measured by anodic stripping voltammetry. Moreover the application of new electroanalytical methods such as ion exchange voltammetry at polymer coated glassy carbon electrodes, is exploited for determining dissolved mercury.

The peculiarities and the flexibility of coupling of the here described sampling apparatus with electroanalytical methods allow to study seasonal variations and cycling as well as changes in the composition sampled in mud flats and marsh lands.

Finally, we discuss the relevance of the obtained data to understand the influence of equilibria between heavy metals and reduced sulfur species to the mobilization of the pollutants.