

Mobile Water Mass-Spectrometer

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Composition determination of salts of different metals in sea water with automated mobile mass spectrometer is discussed in this work. The most significant systems of this instrument are inlet system, extractor and ion source. Jet inlet system proposed in the work provides automatic introduction of a water sample on the base plate of extractor. After vacuum drying, the base plate is build into the ion source of mass spectrometer. Sample vapors produced by thermal desorption from the base plate are ionized by electron impact with high efficiency. Electron impact mode supplies determination of the salt composition, while surface ionization mode serves to carry out mass calibration of the instrument with help of alkaline metals. The inlet system and the extractor are interfaced with ion source in that way which allows to carry out multiple automatic mass spectrometry analysis.

Testing of a prototype of mass spectrometer is carried out for the chloride compounds of some metals. Resolving power of mass spectrometer is 150 at 10%. Detection limits with ion impact ionization $<(10-100)$ ppb. The results of testing are discussed.