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## ULTRASONIC ASSISTED EXTRACTION – AN ALTERNATIVE FOR SAMPLE PREPARATION (M 4)

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In the last years the ultrasound assisted metal extraction has been frequently proposed as a simple and inexpensive alternative for sample preparation of biological and inorganic samples. The extraction effect is considered as being caused by acoustic cavitation, that is, bubble formation and subsequent disruptive action. The collapse of bubbles created by sonication of solutions results in the generation of extremely high local temperature and pressure gradients, which may be regarded as localized “hot spots”. On a timescale of about  $10^{-10}$  s, effective local pressures and temperature of about  $10^5$  atm and about 5000 K, respectively, are generated under sonochemical conditions. Usually, this method uses a diluted acid medium decreasing blank values and reducing both reagents and time consumption compared to traditional wet digestion systems using conductive or microwave-assisted heating. Furthermore, sonication can also allow the preparation of samples directly within the sample container, thereby preventing sample losses and minimizing sample contamination. Although some controversial results concerning metals extraction behaviour have been reported, they could be explained by analyte-matrix interaction and the ability of the ultrasonic processor to generate ultrasound (*i. e.* the use of an ultrasonic bath or an ultrasonic probe at different power, frequency, and amplitude).

This contribution presents a review of ultrasound assisted metal extraction and recent performance data obtained in our laboratory for determination of elements in biological materials, soils and sediments by ICP-OES and ETAAS. The effect of extraction parameters, such as type and concentration of the leaching solution, sonication time and performance of ultrasonic processor (bath or probe) will be presented.

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