Sonoelectrochemistry: fundamental and applied studies

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Different classical chemical methods were used to characterize a commercial sonoreactor (20kHz, 100W) supplied by Undatim, such as aluminium foil analysis, $Fe(CN)_6^{3-}/Fe(CN)_6^{4-}$ (electrochemical probe for local mechanical effects) and iodide and Fricke dosimeters (chemical probes for global effects). Moreover, a new electrochemical redox probe, based on lead dioxide electrodeposition was investigated in order to characterize the local radical production during the cavitation process. Numerical simulations have been carried out in order to characterize the ultrasonic field propagation and to obtain the spatial distribution of the mechanical effect derived from it. Finally, 20kHz sonoreactor were used in the chlorinated organic compounds degradation.