



The use of solid amalgam electrodes in food, environmental and pharmaceutical analysis

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Abstract: In the last decades, the electrochemical techniques have proven to be a powerful tool in the identification and quantification of wide variety of organic and inorganic compounds in various complex matrices types. The applicability of these techniques is related to its inherent sensitivity, a wide dynamic linear range for different chemical classes, easy in the use of instrumentation, rapid analysis time and relatively cheap instrumentation. The success in its use depends mainly the adequate choice of working electrode materials. Some electrochemical determinations are realized using the hanging mercury drop electrode, solid electrodes with modified surfaces and enzymatic electrodes. However, the highly toxic nature of mercury, the memory effects associated with the strong adsorption processes of redox reactions in solid electrodes and the low stability of the enzymes in complex samples, not allow the use of electroanalytical techniques in ordinary food, environmental and pharmaceutical analysis. Based on this, the solid amalgam is convenient to use as working electrodes due to their use minimize any environmental contamination with mercury because the amount discarded in each analysis is minimal. Additionally, the solid amalgam electrodes reduce the effects associated with redox products adsorbed using a simple, rapid and easy electrochemical regeneration process. This way, some applications of the solid amalgam electrodes in environmental, food and pharmaceutical analyses developed by LEABE will be presented, such as pesticides in natural water samples, additives in foods samples and pharmacy compounds in pharmaceuticals samples.

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References:

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