New developments in Bidimensional Spectroelectrochemistry

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Our research group developed in 2001 a new instrumental technique called Bidimensional Spectroelectrochemistry (BSEC) that provides significant information on electrochemical processes. BSEC provides three complementary analytical signals on the process occurring on an electrode surface. The electrochemical measurement provides information on the whole process. Signal in normal configuration respect to the electrode surface depends both on surface processes and in solution processes, while the signal in parallel configuration respect to the electrode surface is uniquely related to the species present in solution. Furthermore, electrochemistry allows controlling the rate and extent of reactions being studied.

Hitherto, two different cells have been developed to perform BSEC measurements. In this work, we have constructed three new cell designs. The first design is based on spatial scanning spectroelectrochemistry [1] allowing us to perform measurements at controlled distances in the parallel configuration respect to the electrode. The other two designs are based on optical fibers [2] that substantially simplify the alignment of the optical system. One of the cells performs measurements in transmission mode and the other one works in reflection mode, in normal configuration respect to electrode surface.

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References
