

Célula amperométrica em fluxo imune a bolhas de ar

Amperometric flow cell immune to air bubbles

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Abstract: The association of flow Injection Analysis (FIA) and amperometry at a fixed potential produces a very favorable condition for quantification of electroactive species with elevated sensitivity [1]. When the working electrode is maintained at a constant potential, the charging or discharging of the electrical double layer process is almost null, and so the current recorded is essentially product of the amperometric reaction [2]. Conventional amperometric flow cells are vulnerable to air bubbles, which can cause serious troubles. Contrary to what happens in spectrophotometry – where air bubbles are even utilized to accelerate the washing process - in conventional amperometric cells, the presence of air bubbles can momentarily block the reference electrode, inducing the potentiostat to search for a new condition to satisfy the difference of potential previously established. During a short time that is no contact, the extreme potentials corresponding to the compliance of the potential are attained and under these conditions, the working electrode is significantly affected, being its active area modified, or in extreme situations, the electrode is irreversibly affected. In this paper, we present a new design of flow cell, where air bubbles do not affect the potential of the working electrode.

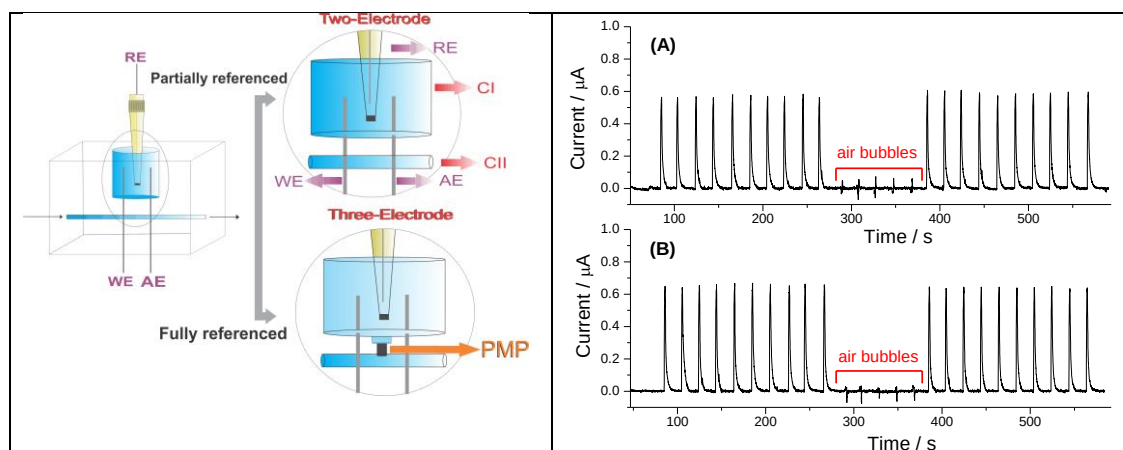


Figure 1: Left: Representation of the flow cell without direct contact of the reference electrode with the channel and with electrolytic contact with the channel; Right: Signals recorded without direct contact of the reference and with electrolytic contact with the reference electrode.

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References:

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