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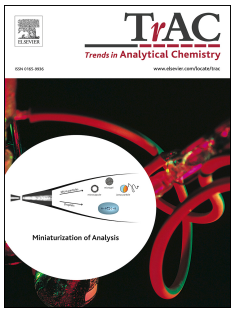

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Applications and challenges of multi-way calibration in electrochemical analysis

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Abstract

This review focuses on applications and challenges of multi-way calibrations in electrochemical analysis based on the growing literature in this field. Chemometrics has scarcely been used for the analysis of electroanalytical data in comparison with its use for the other types of analytical data, because the challenges arising from the nature of voltammetric data including alterations in the baselines, and sample-to-sample potential shifts restricted the application of chemometrics in electrochemical analysis. We primarily emphasize the relevance of the subject to electroanalytical chemistry. We intend to introduce required information in multi-way calibration and then we focus on the available second- and third-order algorithms, generation of second- and third-order voltammetric data and the pre-processing techniques to cope with challenges arising from the nature of voltammetric data. Finally, we present a number of works selected from the literature and the results will be concluded.

Keywords: Chemometrics; Second- and third-order electroanalytical data; Multi-way calibration; Baseline; Potential shift.