

DEVELOPMENT OF E-NOSE-BASED METHODS FOR THE CHARACTERIZATION OF COSMETIC PRODUCTS

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In the last years electronic noses (e-noses), generally constituted by an array of gas sensors with low chemical specificity which responses are analyzed by means of chemometric approaches [1], have become powerful tools for discriminating samples on the basis of their characteristic composition of volatile substances, namely their olfactive fingerprint, finding applications in various fields, such as food quality and safety assessment, environmental monitoring and clinical diagnosis [2,3]. Despite aroma is a fundamental factor in determining the commercial success of cosmetic products, the applications of e-noses in this field are still very few. While it is true that the e-nose technology cannot parallel the performance of expert human panels, it could find a wide range of applications in the cosmetic industry, such as routine quality control of raw materials, production intermediates and final products.

Herein, we report the development of methods for the characterization of cosmetic products, employing a 6-MOS (metal oxide semiconductor) array e-nose of a second generation (EOS507C, Sacmi Imola). Employing this system, we show that the introduction of instrumental solutions to eliminate response variability due to sample humidity and sensors drift significantly enhance the analytical performance with respect of first generation MOS-based e-noses (in this work EOS835, Sacmi). In one application, aromatherapeutic creams were analyzed in order to assess the ability of the system to discriminate between different formulations, in terms of type and amount of added essential oils, and to assess their state of conservation in different conditions. In a second application, a method was developed for the assessment of the efficiency of a deodorizing spray product for domestic use.

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[3] A. D. Wilson, M. Baietto, *Sensors* **2009**, *9*, 5099–5148.