

PhD. Thesis Title

Rapid Food Scanning Techniques for Enhancing National Security

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Abstract

Food security is a very important issue which needs extremely high attention. There is a high need of tools able to perform fast on-site screenings of food for different substances, able to submit the results to the authorities for further action. Voltametric and stochastic sensors were developed, characterised and validated for the on-site enantioanalysis of limonene and aspartic acid, and for on-site determination of sorbic acid, atrazine, β -carotene, and ethyl propionate. High sensitivities were recorded on wide working concentration ranges, which allow the assay of the above substances from fg/mL to few mmol/mL from simple to very complex matrices. The sensors were placed in sensing platform able to measure in real time the compounds of interest in food, as well as to submit the results to a mobile device. One of the features of the proposed tools is their utilisation in supermarkets for food control.