

عنوان مقاله:

Non-enzymatic ethanol sensor based on a nanostructured disposable screen-printed electrode

محل انتشار:

یازدهمین سمینار سالانه الکتروشیمی ایران (سال: 1394)

تعداد صفحات اصل مقاله: 2

نویسندگان:

Pablo Fanjul Bolado - *Edificio CEEI, Parque Tecnológico de Asturias, 33428 Llanera, Asturias, Spain*

Marta M. Pereira Silva Neves - *Edificio CEEI, Parque Tecnológico de Asturias, 33428 Llanera, Asturias, Spain*

m Begoña González-García - *Edificio CEEI, Parque Tecnológico de Asturias, 33428 Llanera, Asturias, Spain*

David Hernández - *Edificio CEEI, Parque Tecnológico de Asturias, 33428 Llanera, Asturias, Spain*

خلاصه مقاله:

The determination of ethanol is of great importance in food and beverage industries which need fast, simple and economic analytical methods to control fermentation processes and the quality of products [1]. A variety of methods (e.g., gas chromatography, liquid chromatography, refractometry, spectrophotometry, among others) had been reported for the determination of this analyte [2]. These methods need bulky instrumentation and are relatively expensive and complex to perform. For that reason, the development of alternatives to perform in situ determination of ethanol is demanded. Electrochemical sensors (ES) appears as promising methods for the development of simple, fast, cost effective and portable platforms for in situ analysis. Among ES, several enzymatic ethanol sensors have been developed in recent years. However, aspects such as the chemical and thermal instabilities intrinsic of the nature of enzymes, as well as the tedious fabrication procedures, appear as important disadvantages of these enzymatic sensors [3]. Therefore, in order to surpass these drawbacks, great attention is being paid to metal nanomaterials, which can be useful for catalytic and analytical applications. The excellent catalytic properties of platinum nanoparticles (Pt-NPs) for the oxidation process of alcohols have already been described [4, 5]. Herein, a simple and sensitive method for the electrocatalytic detection of ethanol using disposable screen-printed carbon electrodes modified with Pt-NPs is presented. The electrochemical results obtained revealed that Pt-NPs can effectively enhance the electron transfer between the analyte of interest and the electrode. The content of ethanol was assayed in different alcoholic beverages such as beer, wine and spirituous drinks; moreover alcohol-free beverages were also analyzed. The electrochemical behaviour of this screen-printed enzymatic free ethanol sensor was carefully evaluated assessing aspects such as sensitivity, limits of detection and reproducibility and the analytical figures of merit were obtained.

کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/546532>



