



Modification of Carbon Electrode with Aryl Groups Having an Aliphatic Amine by Electrochemical Reduction of In Situ Generated Diazonium Cations

Submitted by Emmanuel Lemoine on Tue, 02/04/2014 - 16:12

Titre	Modification of Carbon Electrode with Aryl Groups Having an Aliphatic Amine by Electrochemical Reduction of In Situ Generated Diazonium Cations
Type de publication	Article de revue
Auteur	Breton, Tony [1], Bélanger, Daniel [2]
Type	Article scientifique dans une revue à comité de lecture
Année	2008
Langue	Anglais
Date	2008/08
Numéro	16
Pagination	8711 - 8718
Volume	24
Titre de la revue	Langmuir
ISSN	0743-7463
Résumé en anglais	<p>The electrochemically induced functionalization of glassy carbon electrode by aryl groups having an aliphatic amine group was achieved by reduction of in situ generated diazonium cations in aqueous media. The corresponding diazonium cations of 4-aminobenzylamine, 2-aminobenzylamine, 4-(2-aminoethyl)aniline, N-methyl-1,2-phenylenediamine, and N,N-dimethyl-p-phenylenediamine were generated in situ with sodium nitrite in aqueous HCl. The kinetics of electrochemical grafting were investigated with electrochemical impedance spectroscopy and electrochemical quartz crystal microbalance measurements (with carbon-coated quartz crystal), and the barrier properties of the grafted layers were evaluated by cyclic voltammetry in the presence of electroactive redox probes such as $\text{Fe}(\text{CN})_6^{3-/4-}$ and $\text{Ru}(\text{NH}_3)_6^{3+}$. The grafting efficiency of aryl groups was found to depend on the nature of the amine (primary, secondary, and tertiary), the chain length of the alkyl substituent, and the substitution position on the aromatic ring. The nitrosation of the ?aliphatic? amine, in the case of secondary and tertiary amines, was also evidenced by X-ray photoelectron spectroscopy.</p>
URL de la notice	http://okina.univ-angers.fr/publications/ua1960 [3]
DOI	10.1021/la800578h [4]
Lien vers le document	http://dx.doi.org/10.1021/la800578h [4]

Liens

[1] <http://okina.univ-angers.fr/t.breton/publications>

[2] [http://okina.univ-angers.fr/publications?f\[author\]=2758](http://okina.univ-angers.fr/publications?f[author]=2758)

[3] <http://okina.univ-angers.fr/publications/ua1960>

[4] <http://dx.doi.org/10.1021/la800578h>

Publié sur *Okina* (<http://okina.univ-angers.fr>)