Carbon surface derivatization by electrochemical reduction of a diazonium salt in situ produced from the nitro precursor

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Résumé en anglais	Two different surface derivation procedures have been used to modify glassy carbon electrodes based on the electrochemical reduction of diazonium cations in situ generated from the nitro precursor. The first sequential procedure completely reduces the nitro group into the corresponding amine, which is further diazotized in situ. This unique sequential procedure allows surface derivatization by species having extended conjugation as illustrated by the use of a p-nitrophenylethynyl benzene precursor. The second concerted procedure yields the diazonium cation in situ by the conversion of the nitro group into the corresponding amine in presence of all reagents required for the diazotization reaction. The major advantage of this one-pot procedure is that the diazonium cation is generated locally in close proximity to the electrode surface by rapid diazotization of the electrogenerated amine. The in situ production of diazonium cations and subsequent surface attachment is monitored using a p-nitrophenylethynyl benzene precursor bearing a catechol group. Surface coverages are determined from the cyclic voltammograms of the surface-confined catechol groups. A comparative study of the surface coverage values obtained for redox surfaces prepared with different conditions, allows optimization of the one pot procedure, leading to an efficient surface modification. (C) 2011 Elsevier B.V. All rights reserved.

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