Electron and hydrogen atom transfers in the electrochemical reduction of biphenyl halides in dimethylformamide and acetonitrile studied by means of fourier transform faradaic admittance measurements (FT-FAM).

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Rok wydania

1986

Czasopismo

Journal of Electroanalytical Chemistry and Interfacial Electrochemistry

Numer woluminu

201

Strony

315-327

DOI

10.1016/0022-0728(86)80057-2

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

The electrochemical reduction of three biphenyl halides was studied by Fourier transform faradaic admittance measurements. The results reflect competition between heterogeneous and homogeneous electron transfers and hydrogen atom abstraction in converting the halide to biphenyl. The hydrogen atom abstraction route prevails in the process when acetonitrile is the solvent and the decomposition rate of the initially formed halobiphenyl radical anions is high. The rate constant of the latter reaction for 2-bromobiphenyl in the acetonitrile system was determined to be equal to 1.5 x 10^4 s^{-1}.

Adres publiczny

http://dx.doi.org/10.1016/0022-0728(86)80057-2

Strona internetowa wydawcy

http://www.elsevier.com