

Documents

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Electrochemical properties of closo-2,3-dicarbundecaborane in dichloromethane at a glassy carbon electrode using potentiostatic, galvanostatic and digital simulation methods

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Abstract

Electrochemical properties of closo-2,3-dicarbundecaborane cluster have been investigated potentiostatically using cyclic voltammetry. A convolutive voltammetry and galvanostatically via chronopotentiometry techniques combined with digital simulation method at a glassy carbon electrode in 0.1 M tetrabutylammonium perchlorate (TBAP) in solvent dichloromethane. The electroreduction of the carborane cluster exhibited two reduction peaks. The first peak was attributed to a two - electron reduction of carborane to form the dianion. Both the charge transfer processes were followed by fast chemical processes. The second peak represents the further reduction of the dianion by gain one electron to form the trianion followed by a fast chemical reaction. The chemical processes which follow the two - steps of the charge transfer may be due to fast isomerization or structural rearrangement. The chemical and electrochemical parameters of the investigated carborane were determined experimentally and verified theoretically via digital simulation method. © J. New Mat. Electrochem. Systems.

Author Keywords

Chronopotentiometry; Convolutive voltammetry; Cyclic voltammetry; Dicarbundecaborane; Digital simulation

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