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Stepwise and dissociative mechanisms of the electron transfer in electrochemical reactions involving organosilicon compounds: Molecular-thermodynamic approach

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Abstract

Electrochemical reduction of organochlorosilanes and oxidation of hexaorganodisilanes may occur via dissociative and stepwise mechanisms, the choice between which is determined by the balance between fundamental structural parameters of elementoorganic molecules. The formation of radical anions of silyl-substituted chloromethane in the conditions of an electrochemical experiment is shown. The formation is due to α-silicon stabilization of the intermediate during the electron transfer. The role of conjugation and hyperconjugation in the organosilicon compounds' reactivity is analyzed.