

OXIDATION OF J⁻ IONS IN PROPILEN CARBONAT

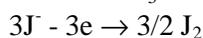
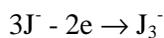
V. Komnenic, S. Mentus¹ and V. Vojinovic

Faculty of Metallurgy and Technology,
University of Montenegro, 81000 Podgorica,
YU

and ¹Faculty of Physical Chemistry,
University of Belgrade, 11000 Belgrade,
Studentski trg 16, YU

The anodic behaviour of J⁻ ions in propilen carbonat (PC), using Pt rotating disc electrode (PC), using Pt rotating disc electrode was investigated. The literature data about kinetics and mechanism of this reaction are available in various solvents (DMSO, DMF, AN)^{1,2,3}, but not in PC.

The voltammograms obtained in NaJ solutions and the influence of rotation speed of the disc electrode are shown in Fig.1. The two anodic waves represent a two step oxidation of J⁻ ions in PC. The ratio of the heights of the first and second wave is 2:3 and remains constant regardless to the rotation speed. This ratio is in accordance with the number of exchanged electrons in two steps of the overall reaction:



The linear dependance of the wave heights on the square root of rotation speed show that the both steps are under diffusion control. The value of diffusion coefficient is found to be $0.46 \cdot 10^{-6} \text{ cm}^2/\text{s}$. Using the cyclovoltammetric method on stationary electrode it was shown that the oxidation of J⁻ ions was reversible process. The narrow potential region in which the Tafel relation is valid confirms the previous conclusion. The value of the Tafel slope is found to be 80 mV/dec.

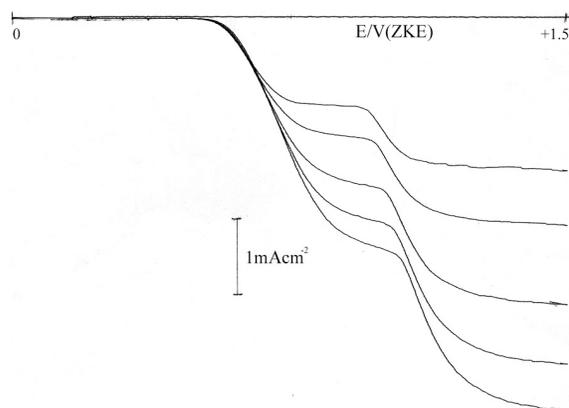


Fig.1. The voltammograms recorded on rotating platinum disc in PC + 0.5 M LiClO₄ + 0.014 M NaJ solutions; $\nu=50 \text{ mV/s}$; rotating frequency: 5, 10, 20, 30 and 40 rps.

REFERENCES:

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