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2014

Dostupný z <http://www.nusl.cz/ntk/nusl-175704>

Dílo je chráněno podle autorského zákona č. 121/2000 Sb.

Tento dokument byl stažen z Národního úložiště šedé literatury (NUŠL).

Datum stažení: 07.08.2024

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Electrochemical behaviour of amino acids on thin layers of ZnO prepared by ink-jet printing

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Abstract

The solid-phase interface behaviour under contact with various electrolytes plays the key role in understanding of physicochemical processes occurring on the surface. Especially the surfaces of various semiconductors are studied for their potential utilization as sensors or actuators. The systems involving semiconductors surfaces and electrolyte solutions possess very complex processes on atomic scale. Among many physical processes involved, the hydrodynamic processes and diffusion of species are of greatest interest. A small perturbation induced by the concentration change of electro-active species or gradient of temperature can cause a very sharp change in electrochemical behaviour on the interface.

The standard system worked with thin layers of ZnO on ITO glass deposited by ink-jet printing. As electrolyte 0.1M Na₂SO₄ solution with various concentration of amino acids (glycine, glutamic acid, aspartic acid, histidine and methionine) was used. The electrochemical behaviour was tested by Open Circuit Potential measurement. A kinetic study of involved electro active species was expressed.

Acknowledgement

Authors wish to express their thanks and gratitude to the financial support by the TA03010548.