

ISSN 1822-7759

***Book of Abstracts
of the 13-th International Conference-School***

ADVANCED MATERIALS AND TECHNOLOGIES

27-31 August 2011, Palanga, Lithuania



P86. Prosthetic Poly Metha Methylacrylate Surface Wettability Resulted by UV Radiation

Yu. Dekhtyar, L. Lancere

*Biomedical and Nanotechnologies Institute, Riga Technical University,
Riga, Str. Ezermalas 6, LV-1034, Latvia*

Poly methyl metha acrylate (PMMA) is widely in use for eye prostheses and contact lenses. The latter is under ultraviolet radiation of Sun. Therefore the PMMA properties could be influenced and bring the patient to discomfort, because of polymer surface wettability alteration. The latter is under the focus of the present research. While many methods are used to improve polymers and obtain desired properties like wettability property, during the modification several unwanted reactions occure like photodegradation. There still is no stable solution found for protecting polymers from photodegradation and aging.

This article is targeted to describe a possible simple solution how to influence alterations of PMMA wettability by non-ionizing UV radiation in range of 200-400nm. Processed material was examined by means of detecting contact angle, electron work function and absorption spectra to find relationship between wettability and other surface properties.

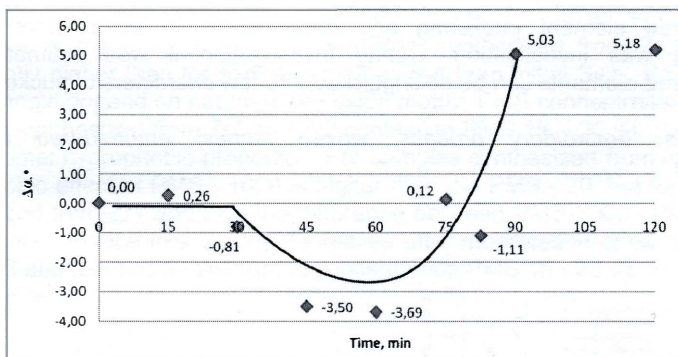


Fig.1. Contact angle increment dependence on exposure time.

In figure 1 it can be noticed that after radiation time of 0-60min PMMA becomes more hydrophilic and then starting from 90 exposure min material turns to more hydrophobic state. The changes in hydrophobic/hydrophilic equilibrium are explained with surface structural restructurization and/or surface charging.

Other results show that by increasing of UV exposure time, not only PMMA surface but also bulk properties change.

Keywords: PMMA, surface properties, hydrophilic, hydrophobic, electron transmissions