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ERRATUM

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3	**Scientific Committee** Feliks Jaroszyk – Chairman Marcin Molski Janusz Sławiński Leszek Kubisz Krzysztof Piotr Michalak	**Scientific Committee** Feliks Jaroszyk – Chairman Marcin Molski Janusz Sławiński Leszek Kubisz Krzysztof Piotr Michalak Alina Sionkowska
8	From mitogenetic to necrotic radiations – toward the photon cycling in biological systems and electromagnetic existence J. Sławiński	From mitogenetic to necrotic radiations – toward the photon cycling in biological systems and electromagnetic existence J. Sławiński, K. P. Michalak
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19a		**21. MONTE CARLO APPROACH TO ELECTROMAGNETIC WAVE PROPAGATION THROUGH BIOLOGICAL TISSUE** **Pawel Ossowski, Slawomir Orlowski, Wieslaw Nowak** Institute of Physics, ul. Grudziadzka 5, Nicolaus Copernicus University, 87-100 Torun, Poland Monte Carlo (MC) simulation provides a statistical method for creating realistic models of the experiment based on initial and characteristic parameters, geometries, parameters of light source and detector. MC modeling provides a stochastic modeling of light propagation in the scattering medium. The aim of this study is to create an open fast and easy to change modern C++ code that provides MC model for simulation of the interaction between biological tissue and light. The various optical properties of the media were used to compare simulation results with experimental data. The Monte Carlo model for simulation of the interaction between biological tissue and light has been developed using modern, object oriented C++ and Visual Studio. The program has an open architecture and it is easy to modify. These were main goals for the first state of developing the application. First, preliminary results have been obtained using our software package. These results shows that our solution is stable and it produces consistent data. Unit tests have been carried out using real initial data (refractive indices n = 1.0 and n = 1.37, absorption coefficient μ_a = 0.1 cm^{-1}, scattering coefficient μ_s = 100 cm^{-1} and anisotropy factor g = 0.9). Fluences as a function of depth for two semi-infinite media has been obtained and compared to available data [1]. Detailed data about photons distributions in biological media have been collected: internal fluence vs. depth of the medium (semi-infinite tissue), diffuse reflectance and histogram of the total pathlength in tissue for transmitted photons (tissue thickness d = 0.02 cm). We cannot compare this data to the experiments. However, obtained characteristics have

		expected shapes. These results show that the code has no numerical, logical or "physical" errors. The MC simulations can shed light on optical coherence tomography (OCT) imaging and the light propagation in biological tissue [2]. The first step in the way of producing modern, object-oriented, fast and easy to modify Monte Carlo code has been done. This code is going to be used in Spectral OCT method. **References** [1] L. Wang et al. "MCML – Monte Carlo modeling of light transport in multi-layered tissues" Comp. Meth. Prog. in Biomed. 47 (1995) 131-146 [2] R.K. Wang, "Signal degradation by multiple scattering in optical coherence tomography of dense tissue: a Monte Carlo study towards optical clearing of biotissues", Phys. Med. Biol. 47 (2002) 2281–2299