Verification of Diffuse Reflectance Spectroscopy Using Monte Carlo Method

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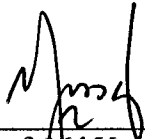Assoc. Prof. Dr. Mohd Hanapiah bin Mohd Yusoff
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ABSTRACT

VERIFICATION OF DIFFUSE REFLECTANCE SPECTROSCOPY USING MONTE CARLO METHOD

A Monte Carlo model of steady-state light transport in multi layered tissue (mcml) and the corresponding convolution program (conv) have been coded in ANSI standard C. This is a study to model Diffuse Reflectance using Monte Carlo method. The aim of this study is to investigate the influence of number of photons used in the Monte Carlo Simulation program on the Reflectance Spectrum generated. Data of apple properties were use during the verification of the experimental results. The absorption coefficient, μa and scattering coefficient, μs, were obtained from a journal, which is 0.39 and 21.45 respectively. These figures are then input into the MCML program to compute the simulation. Several parameters were also input into the MCML program such as the number of photon that were used was 3,000,000. The MCML output is then input into the CONV program in order to obtain the results of Diffuse Reflectance versus radius, where the radius is the radial distance from the source to the detector. From the result obtained through the CONV program, it is interpret into graph of Diffuse Reflectance