

Dissertation Title	Study of 1550 nm Laser Heat Profile for Skin-Thermolysis by Using Egg White Protein Simulation Model
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Abstract

Nowadays, the technology of laser in dermatological profession had developed and provided the effective result to patients by using laser 1550 nm. The depth of skin and quantity of treatment can be controlled step by step. Patients do not have any side effect after having treatment and can continue regular lifestyle as usual. It is because laser beam was divided in a great number of small beams for each treatment area, which cannot see the trace of injury by eyes. Controlling the energy of laser for getting the most suitable depth and appearance of injury for each skin disease is very important. Testing the right parameter of laser by biopsy from volunteer patient is difficult in terms of data analysis. The sample size could be very limited, which leads to insignificant statistic result problem. It is because of the ethical problem. Therefore, the development of laser in dermatological profession is slower than other industrial and science fields.

Creating substitute material for the experiment of laser 1550 nm is very important. Substitute material has to have the physical reaction similar to human skin. This will benefit to the study of heating expansion in human skin before operating the laser treatment with volunteer patients. This research presents egg white as a substitute material. Egg white has mechanism to absorb the energy from laser 1550 nm, which is similar to mechanism in human skin. Analyze the pattern of laser beam in egg white by microscope from liquid egg white is fast. This could be done immediately after operating the experiment. The experiment time and expenses of egg white experiment are 0.01% and 0.001% of volunteer patient experiment. The result from egg white experiment has 4000% statistical accuracy if compare with the biopsy from volunteer patients.

Keywords: 1550nm Laser Fraction laser thermolysis