conferenceseries.com

Cancer Diagnostics Conference & Expo

June 13-15, 2016 Rome, Italy

Engineering design process and comparison of multi wavelength real time auto-fluorescence and fluorescence imaging guide system irradiance with xenon lamps and light emitting diodes (LEDs) for open and laparoscopic cancer surgery

Hyun Soo Lim[1, 2] and **Necla Kenar**[2, 3]
[1]Chungnam National University, South Korea
[2]Sakarya University, Turkey
[3]Kocaeli University, Turkey

To improve the imaging depth, positive surgical margin rates in high risk cancers, high accuracy of surgery speed, performance of the signal-to-noise ratio (SNR) and resolution, we designed the Real Time Auto-Fluorescence and Fluorescence Imaging Guide System for open and laparoscopic surgery to designate and complete removal of microscopic metastatic cancerous tissue in addition to primary tumor tissue. We used two kinds of light sources such Xenon Lamp and LEDs with maximum output power, intensity and homogeneity. Excitation wavelengths of the light source used are white light, 340 nm, 405 nm, 540 nm, 780 nm, 850 nm. Taking into account the background interference, we calculated SNR and the contrast ratio (ratio of the fluorescent light intensity to the total incoming light intensity). Illumination and collection optics (lenses, filters, and cameras) are selected according to required optimal the field of views (FOV) and numerical apertures (NA), transmissions, and the sensitivity and noise characteristics.

Biography

Hyun Soo Lim has completed his PhD in 1993 from Myongji University, Department of Biomedical Engineering, Seoul, Korea. His academic life continued in the Chungnam National University, School of Medicine, Department of Biomedical Engineering from 1986 (as Assistant Teacher and Researcher) till date as Professor. His research interests are Biomedical Photonics including Development of Photodynamic Therapy (PDT) Laser Systems, Photodynamic Diagnostic (PDD) Systems and medical instrumentation and tissue optics including Monte Carlo Simulations to measure light dosimetry in biological tissue, measurement of the oxygen of biological tissue using optical method signal processing method in frequency domain for measuring oxygen saturation in biological tissue and measurements of optical coefficients of biological tissue.

hslim@cnu.ac.kr

Notes: