DEVELOPMENT OF A LOW-COST EPIFLUORESCENCE MICROSCOPE

Omar Ormachea y Alex Villazón

ABSTRACT

The epifluorescence microscopy is a powerful technique with high levels of sensibility and microscopic resolution that is applied in several areas, notably in the biomedical field. In this article, we present the design and development of a low-cost epifluorescence microscope based on laser excitation, a simplified barrier filter, and an embedded system (hardware and software) for digital visualization and control. The proposed prototype uses an absorption barrier filter based on a Rhodamine 6G dye solution (in ethylic alcohol), capable of absorbing effectively the laser excitation radiation and transmitting the fluorescence signal of the sample. The optical magnification of the prototype is around 100X and allows identifying fluorescent microparticles (~10 μm). The encouraging results obtained with the prototype, show its viability and potentiality for biomedical applications.

Keywords: Epifluorescence Microscopy Embedded Systems, Laser Excitation.

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