Title: Detection of Change in Fluorescence Between Reactive Cyan and the Yellow Fluorophores Usinga-SiC:H Multilayer Transducers

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Abstract: Optical colour sensors based on multilayered a-SiC:H heterostructures can act as voltage controlled optical filters in the visible range. In this article we investigate the application of these structures for Fluorescence Resonance Energy Transfer (FRET) detection, The characteristics of a-SiC:H multilayered structure are studied both theoretically and experimentally in several wavelengths corresponding to different fluorophores. The tunable optical p-i'(a-SiC:H)-n/p-i(a-Si:H)-n heterostructures were produced by PECVD and tested for a proper fine tuning in the violet, cyan and yellow wavelengths. The devices were characterized through transmittance and spectral response measurements, under different electrical bias and frequencies. Violet, cyan and yellow signals were applied in simultaneous and results have shown that they can be recovered under suitable applied bias. A theoretical analysis supported by numerical simulation is presented.

Author Keywords: FRET Detection; Optical Transducer; Multispectral Structures; Electrical Simulation

KeyWords Plus: Devices

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