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Title: Wavelength Selective a-SiC:H p-i-n/p-i-n Heterostructure for Fluorescent Proteins Detection
Source: Sensor Letters, 8 (3): 413-418 Sp. Iss. SI JUN 2010
Language: English
Document Type: Proceedings Paper
Conference Title: Spring Meeting of the European-Materials-Research-Society
Conference Date: JUN 08-12, 2009
Conference Location: Strasbourg, FRANCE
Author Keywords: Voltage Controlled Optical Filters; Fluorescent Proteins Detection; FRET; Monolithic Optical Transducers; Spectral Analysis
KeyWords Plus: DEVICES
Abstract: In this paper we present results on the optimization of multilayered a-SiC:H heterostructures that can be used as optical transducers for fluorescent proteins detection using the Fluorescence Resonance Energy Transfer approach. Double structures composed by pin based aSiC:H cells are analyzed. The color discrimination is achieved by ac photocurrent measurement under different externally applied bias. Experimental data on spectral response analysis, current-voltage characteristics and color and transmission rate discrimination are reported. An electrical model, supported by a numerical simulation gives insight into the device operation. Results show that the optimized a-SiC:H heterostructures act as voltage controlled optical filters in the visible spectrum. When the applied voltages are chosen appropriately those optical transducers can detect not only the selective excitation of specimen fluorophores, but also the subsequent weak acceptor fluorescent channel emission.
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Publisher: AMER SCIENTIFIC PUBLISHERS
Publisher Address: 25650 NORTH LEWIS WAY, STEVENSON RANCH, CA 91381-1439 USA
ISSN: 1546-198X
DOI: 10.1166/sl.2010.1287
29-char Source Abbrev.: SENS LETT
ISI Document Delivery No.: 604PT