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Integrated UV Sensors in Microfluidics for Biosensing

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Microfluidic devices integrated with a sensor for biological to electrical signal transducing provides a miniaturized, cost effective, quicker and portable solution for point-of-care biological analysis systems with applications on biomedical, environmental and food safety fields. The fact that the transducing mechanism that will be developed during thesis does not require biomolecules labelling, as fluorophores, provides the benefit of not altering the native characteristics of the biomolecules.

In this thesis an hydrogenated amorphous silicon p-i-n photodiode will be optimized and integrate it in a microfluidic structure for biodetection based on UV absorbance. In order to perform biodetection at low light absorption levels, the focus will be on the optimization of photodiode design, signal processing and circuit configuration.

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