

An adaptable lab-on-chip for in-field analysis in agriculture

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Lab-on-Chip (LoC) technology offers miniaturized systems able to perform bimolecular analysis in different fields such as life sciences, medical diagnostics and agriculture. At the beginning, Lab-on-Chip were essentially microfluidic networks accomplishing faster reaction kinetics and lower sample and reagents consumption. Recent devices integrate several functional modules, that fluid handling, extraction, biomolecular recognition and detection. This talk presents a lab-on-chip, where thin film sensors and actuators are combined in a multifunctional optoelectronic platform. In particular, the platform integrates amorphous silicon sensors for on-chip detection and temperature control and optical filters for selection of specified wavelength. Coupled to a microfluidic network, this platform enables application in the field of mycotoxin detection and DNA amplification of bacteria and virus.