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## Thin Film Technology Meets Lab-on-Chip System

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Professor Domenico Caputo will give the invited talk about Thin Film Technology Meets Lab-on-Chip System.

### *Short description:*

Lab-on-Chip technology is gaining great interest due to the many possibilities that it offers in the fields of life sciences, from parallel analysis in genomics to point-of-care devices in medical diagnostics. At the beginning, Lab-on-Chip devices essentially consisted of a microfluidic network that miniaturized the analytical procedures leading to faster reaction kinetics and lower sample and reagents consumption. Recent devices integrate on a single substrate several functional modules that allow all the functions of a human-scale test laboratory including transferring samples, drawing off a precise volume of a chemical product, reagent mixing, detection and quantification of biomolecules.

Within this framework, this lecture focuses on the work done at the Department of Information Engineering, Electronics and Telecommunications of University of Rome "La Sapienza" in developing a multifunctional optoelectronic platform which includes on a single glass substrate several thin film devices. In particular, the platform integrates amorphous silicon photo-sensors for on-chip detection and temperature control and optical filters for selection of specified wavelength.

By coupling this platform with a microfluidic network application in the field of mycotoxin detection and DNA amplification will be presented.

### **More about Domenico Caputo:**

Domenico Caputo is Associate Professor with tenure at DIET at the University of Rome "La Sapienza".

His main research fields concerned the development of amorphous silicon photodetectors for detection of radiation from the UV to the near infrared range and of innovative electronic devices based on amorphous silicon. The present research interest is focused on the development of thin film photodetector and Lab-on-Chip device for DNA and mycotoxin detection. He is coauthor of about 200 papers on international journals and papers on proceedings of international conferences. He is referee of several scientific journals in the field of both electronic and biomedical devices and has been chairman of several international conferences.

Domenico has been the Scientific Responsible of several European and National Projects and is currently Italian PI of a bilateral project Italy-China on DNA separation and amplification.