

POSITIVE

Photonic sensing of food allergens

Food allergens

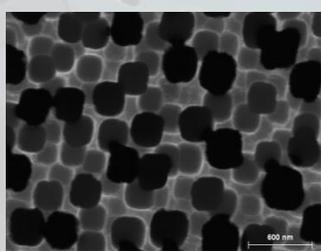
Food allergies can provoke clinical reactions whose most severe is anaphylaxis, with respiratory and/or cardiovascular problems that might result in death. They are common in 1-2% of adults and up to 8% of children, corresponding to a serious public health problem that affects over **15 million people in Europe** from infants to the elderly and its prevalence is increasing.

Lab on a chip

POSITIVE is developing a state-of-the-art diagnostics Lab-on-a-Chip platform via an integrated microfluidic sample preparation technique capable of serum preparation from whole blood of volumes, $<100\mu\text{l}$. A final prototype consisting of a packaged biochip and reader will be used on clinical samples in order to determine sensitization to allergens such as that for hen's eggs, cow's milk, peanuts, wheat, tree nuts, fish, sesame, and shrimp ingestion.

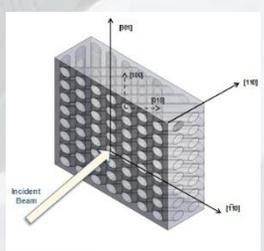
Photonic sensing

Recently, high optical quality porous silicon, an almost ideal material as a signal transducer for *label free optical biological sensing*, has become available. This has permitted us to propose two different types of biosensing optical elements in this project for inexpensive multiple optical biosensors compatible with a present-day on-chip microelectronics and nanophotonics production. Due to their small size, many sensors can be put next to each other on a single photonic chip. Their limit of detection and selectivity will approach the state of the art for highly integrated label-free lab on a chip devices.

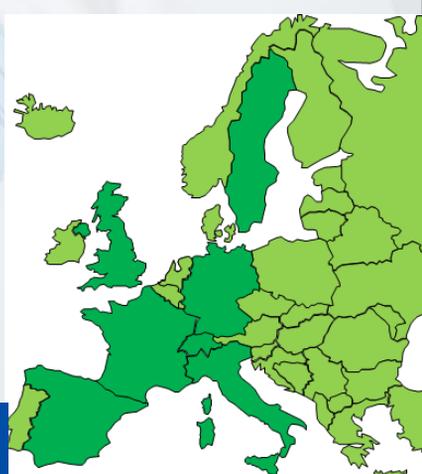


Porous silicon sample made at UNITN, electron microscope image courtesy of University of Valencia

Polarimetry schematic, courtesy of University of Valencia



The POSITIVE Consortium
www.fp7positive.eu



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