

International Scientific Conference on

LASERS, OPTICS, PHOTONICS AND SENSORS

Plasmonic micro sensor for pesticides detection

Micro pollutants are substances found in trace amounts in water, air and soil. Generally toxic, they can be of all kinds: mineral, organic or biological. We will focus here on a specific class of micro pollutant: pesticides. On March 20, 2015, the World Health Organization's cancer agency classified five pesticides as "possible" or "probable" human carcinogens. Among these five pesticides is glyphosate, which is the most widely used pesticide in the world.

Furthermore, the detection of micro pollutants by new innovative systems is one of the important issues of our society. This study is dedicated to innovative pollutant micro sensors exploiting the interaction properties between light and original nanostructured materials, in order to create a real jump in performance in terms of detection limit, quantification and sensitivity. The detection of our pesticide is based on the variation of the optical properties of the materials used in the presence of the molecule to be detected. We propose two ways of investigation that are (i) the Surface Plasmon Resonance detection (SPR) in Kretschmann configuration and (ii) the use of an original functionalized nano-structured organization based on the use of functionalized gold nanoparticles.

Keywords: Plasmonics, Micro pollutant detection, Nano structured materials.

Biography

Nicolas Javahiry is an associate professor in physics at the University of Strasbourg. He did his PhD in Photonics at the same university on fiber optic sensors. After a post-doc at Harvard University on the interaction between ultra-short laser pulses and matter, he worked as a project manager and expert in the Sagem Defense group in Paris. He joined the University of Strasbourg in 2007 and is currently working on nano-optical sensors and plasmonics for various applications such as gas detection, pollutants detection and photoconversion systems for example.



Nicolas Javahiry

University of Strasbourg, France
Session Chair, LOPS 2021