Application of nanotechnology-based photonics sensors in environment, agriculture, medicine, and food control

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Today, we are witnessing an increased interest in the market demand for high-quality, low-cost, and safe sensing devices. It is caused by the fact that traditional methods applied in may take days to weeks to obtain results and often require investment in capital costs as well as time for sample preparation. Therefore, we observe a large increase of applications of various types of sensors, including a significant increase of micro- & nano-sensors. Micro- & nano-sensors provide real-time monitoring compared to traditional detection methods such as chromatography, mass spectrometry and different spectroscopic methods.

A breakthrough "PickMol™ tailored/personalized nanotechnology" designed for the selective and highly sensitive detection of trace amounts of organic molecules in various matrixes (agriculture, environment, pharmaceutical, food industry and medicine) will be presented. The uniqueness of "PickMol™ nanotechnology" lies in its selectivity, sensitivity (comparable to classical detection methods such as mass spectrometry (MS) and/or chromatography), analysis speed (minutes compared to hours for MS), and the possibility of performing the analysis directly in the field/industrial environment without sample preparation.

Different possibilities of the PickMol™ technology applications in mentioned fields will be presented and discussed with the aim to bring a high-quality added value to products and processes into agriculture and food control, while helping to improve the environment in which we live.

The goal of SAFTRA Photonics Ltd. is to understand in detail the needs and requirements of our customers and to design the most effective and tailored solution for them.

PickMol™ application fields: Sub-ppb detection of molecules of interest in the environment, food, pharmacy, industry and biological systems (POPs, PFAS, micro- & nano-plastics, viruses, glyphosate, drugs, peptides, volatile organic compounds): water and food/beverages quality control, voltaic organic compounds, production process control, industrial wastewater analysis, industrial cleaning processes etc.

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