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InNaSERSS: Development of Integrated Nanorray based SERS system for leukemia biomarker detection

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Partner countries: France, U.K

Project description:

The monitoring of patients suffering from acute myeloid leukemia (AML) constitutes a challenge which has yet to be adequately addressed by modern medicine. Following chemotherapy residual malignant cells, undetectable by morphologic examination, may remain in the bone marrow of AML patients. This condition is known as "minimal residual disease" (MRD) and is linked to the high rate of relapse (30%) for AML patients. Several studies have shown that the WT1 gene can serve as a biomarker to predict MRD and determine patient response to treatment. Polymerase Chain Reaction (PCR) is currently the most common method for examining WT1. In MRD patients, however, WT1 expression is extremely low and difficult to detect.

The aim of InNaSERSS is to develop a new, ultrasensitive diagnostic test based on Surface Enhanced Raman Spectroscopy for the detection of the WT1 gene. This will be possible through the use of new kind of nanostructured surfaces, like nanohole arrays, capable of significantly enhancing the spectroscopic signal emanating from the target molecule. The project will also contribute to the development and test of a new generation of high resolution, low price portable Raman spectrometers based on stationary wave integrated Fourier-transform spectrometry (SWIFTS) technology.

