

SERS sensing: biomedical applications

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ABSTRACT: Surface-enhanced Raman spectroscopy (SERS) has received increasing research interest due to its excellent resolution, high sensitivity and rapid detection of low concentration analytes, particularly in biomedicine. Herein, I will provide an overview of recent developments and applications of Raman microscopy, SERS-based nanosensors and nanoreporters developed in our laboratory for use in imaging, biochemical monitoring, medical diagnostics, and therapy. The design and fabrication of different types of plasmonics-active nanostructures, including fiber SERS sensors, will be discussed. The applications of the SERS nanosensors for protein detection, local quantification and controlled release of drugs in living cancer cells will be presented.

Short BIO: Dr. Anna Chiara obtained a master's degree in Physics (2004), followed by a PhD thesis in the field of Biophotonics at Department of Physics, University of Naples "Federico II" (2008). In 2009, she joined K. Dholakia group at University of St Andrews as post-doctoral research fellow. Since February 2012 thanks to the prestigious start-up grant from AIRC, she joined CNR and the same year she has been appointed a tenured Research Fellow by the CNR. She is currently research director at IEOS, CNR and her research activity is focused on the development of new tools enabling enhanced Raman Spectroscopy for cancer cell identification and imaging. She has published more than 50 papers in reputed journals. She has been recognized with numerous prestigious research grants, including the Grant from AIRC, Italian "future in Science" grant (FIRB), PON from Italian Ministry of Research and University, POR from Campania Region, Grant from Ministry of Health and @CNR grant.



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