

Different strategy for single molecule detection through nanoplasmonics

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We report novel micro and nanofabrication techniques for single molecule detection from highly diluted solutions, through the generation of Surface Plasmon Polaritons. Si micropillars would constitute the superhydrophobic surface, which has the property of confining dilute biomolecules into a bounded region of the plane [1]. Moreover, we present Self-similar Ag-nanosphere based plasmonic devices, fabricated using e-beam and electroless techniques, for characterization of complex mixtures of bio-molecules. Major novelty resides in combined use of micro and nano-structures. The common aspects between the presented devices, is the design and the good and detailed control of the fabrication of the nanostructures, whose reproducible performances allows the identification of proteins in the single molecule regime.

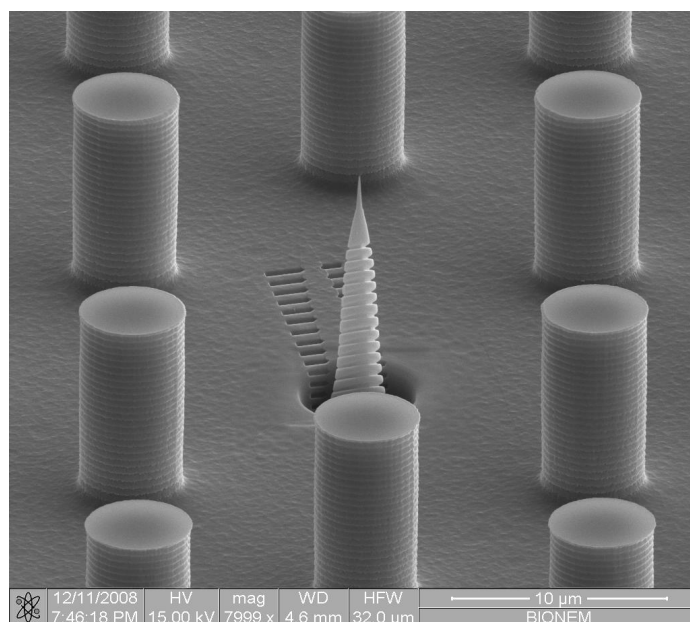


Fig. 1: SEM image of nanoplasmonic structure embedded in a superhydrophobic array

[1] Title: [Breaking the diffusion limit with super-hydrophobic delivery of molecules to plasmonic nanofocusing SERS structures](#)

De Angelis F.; Gentile F.; Mearini F.; et al., Nature Photonics, Vol. 5 (11), 683-688 DOI: 10.1038/NPHOTON.2011.222 Published: NOV 2011