



**Appunti di Fisica '17
&
Dottorato di Ricerca in Fisica**

**9 novembre ore 15:00
Sala seminari, CNR-IPCFC**

**Non-invasive contactless identification and
characterization of microorganisms by Raman
spectroscopy and optical micromanipulation**

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Raman spectroscopy is widely used for the identification of unknown specimens on the basis of the so-called fingerprint area - a spectral area of Raman spectra ranging from 400 to 2000 cm^{-1} which is unique for each and every biomolecule and microorganism. It seems that a combination of Raman spectroscopy and optical manipulation techniques is very advantageous, it allows 3D relocation of the investigated object using a focussed laser beam (Raman tweezers). This tool allows contactless and sterile entrapment and manipulation of mesoscopic specimen (ranging from hundreds of nm to tens of μm) and, at the same time, it makes it possible to analyse the trapped object. Raman spectra of trapped object were used to distinguish between individual samples, their content and features or to monitor the response of the investigated specimen to external stimuli.

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