

#### Work Experience

2016–present Temporary researcher, CNR-NANOTEC, UOS-Rome.

2014–2016 Post Doc, Sapienza University of Rome, Rome.

#### Education

2011–2014 Ph.D. in Physics, Sapienza University of Rome, Rome.

2005–2007 Master's degree in Physics, Sapienza University of Rome, Rome, 110/110.

2001–2005 Bachelor's degree in Physics, Sapienza University of Rome, Rome, 110/110.

1996–2001 Secondary School certificate, Scientific Lyceum "A. Meucci", Ronciglione (VT), Italy, 98/100.

#### Ph.D. Thesis

"Holographic Techniques for High Pressure Applications"

Supervisor: Professor Roberto Di Leonardo

We demonstrate holographic micromanipulation and holographic imaging for colloidal samples held at extremely high pressures inside diamond anvil cells. Through these tools we propose new methods for high pressure viscosity and high pressure bulk modulus measurements. We also introduce a novel holographic coloured microscopy specifically fit for fast 3D-imaging of motile bacteria.

#### Current research activity

Study of bacterial motility with holographic techniques for 3D manipulation and visualization and low Reynolds hydrodynamics. Development of novel holographic microscopy tools for improved resolution designed for measuring the full 3D motion of E. coli cell bodies, and integration with fluorescence microscopy for sub-wavelength resolution imaging. Growth and preparation of bacterial samples, including E. coli strains modifications through the introduction of plasmids.