

I got my MS degree in Physics at University of Salerno in 1994 discussing a thesis on the effect of the doping in the high temperature superconductor (HTS) YBaCuO. Later on, in 1998, I received my Ph.D. in Physics carrying on an experimental research on directional quasiparticle tunneling spectroscopy in HTS. At that time my scientific activity was mainly based on fabrication of high quality thin films based heterostructures of HTS materials by means of sputtering techniques.

Being interested in the symmetry of the superconducting order parameter in HTSC I extended my efforts in developing planar tunnel junctions based on c-axis epitaxial trilayer as well as in fabricating controllable break junctions and point contact junctions.

During my PhD (1997-1999) I was guest researcher at the IFF-KFA Institute of Technology of Julich (Germany) working on thin film deposition processes for different insulating oxide materials to use them as tunnel barriers and studying their chemical and structural compatibility with HTS. Later on, in 1999-2001, supported by a research grant from the Italian Ministry of Research and Education, I extended my research to manganite ferromagnetic compounds. I mainly focused on the study of the superconducting proximity effect at the ferromagnetic/superconductor (F/S) interface in manganite/HTCS multilayers.

In 2001 I was chercheur invite in the "Groupe de Physique des Solides" (GPS) CNRS Paris. I started working with cryogenic scanning tunneling microscopes (STM) to investigate superconducting materials, and in particular the MgB₂ compound. In 2002 I was employed as permanent researcher at the Physics Department of University of Salerno, charged of carry on regular yearly teaching activities but also involved in the startup of a Scanning Probe Microscopy (SPM) laboratory, equipped with a cryogenic-Ultra High Vacuum Scanning Tunneling Microscope/Atomic Force Microscope (STM/AFM). I continued my research on superconducting compounds focusing on superconducting vortex dynamics investigated through SPM. More recently, I explored experimental research on topics different from superconductivity such as the ferroelectricity in both hard matter compounds and in polymers, such as syndiotactic polystyrene hosting high polar guest molecules, as well as I carried out SPM experiments investigating field emission properties such as that from an array of aligned carbon nanotubes. From 2008 I was charged as scientific coordinator of the PRISMA-INSTM research project (Progetti di Ricerca Innovativa in Scienza dei Materiali) with the aim of investigating the electrical properties of nanostructured polymers by means of different SPM techniques.

In 2014 I became Associate Professor in physics at the Physics Department of Salerno University. During the last years I keep firing a significant scientific research in the field of superconducting vortex dynamics in F/S heterostructures. More recently, I have started performing soft matter related experiments, investigating lipid films, proteins, and polymers, by means of SPM techniques. Since 2000, I teach Physics at the University of Salerno in several undergraduate and post-graduate classes. Moreover, I have been

supervisor of several Master degree and Ph.D. theses loving to spend my time in tutoring and training young future scientists.

Research Interests

- ***Research in condensed matter physics:*** High Temperature Cuprate Superconductors (HTCS) thin film deposition; low temperature tunnelling spectroscopy, fabrication of thin film based HTCS tunnel planar junctions, electronic transport across Metal/Superconductor (M/S) interfaces, break junction and point contact junction, Andreev reflections, Schottky and MIS structures; ferromagnetic Manganites thin film deposition; ferromagnetic/superconductor (F/S) interfaces, TSC/Manganites heterostructures; Scanning Tunnelling Microscopy and Spectroscopy at low temperature (STM/STS), superconductivity in magnesium diboride (MgB₂), superconducting vortices imaging, Magnetic Force Microscopy (MFM), superconducting vortices in F/S bilayers; electrical properties in Zinc Oxides (ZnO) thin film; multiferroic properties of Co-ZnO compound; electrical characterization by Scanning Probe Microscopy (SPM).
- ***Research in soft matter physics:*** Lipid bilayers, cell membrane in Extremophiles, amyloid fibrils growth in lipid bilayers, fat acid and lipid bilayers, crystalline syndiotactic polystyrene, ferroelectric polymers, dendritic polymers