



Antonio Terrasi short bio.

1. Full professor of experimental physics of matter at the University of Catania (Italy).
2. Past visiting scientist at the Synchrotron Radiation Center of the University of Wisconsin-Madison (U.S.).
3. Past scientific officer at the École Polytechnique Fédérale de Lausanne.
4. Past coordinator and present member of the scientific board of the Ph.D. Course on Material Science and Nanotechnology
5. Past member of the Academic Senate of the University of Catania
6. Past Delegated Director of the CNR-Institute of Microelectronics and Microsystems.
7. Founder and Director of the permanent International School on *Materials for Sustainable Development and Energy* at the “Ettore Majorana Foundation and Centre for Scientific Culture” (Italy).
8. Rector’s Delegate for Technology Transfer and Relations with Enterprises.

Research activity and expertise

- Absorption spectroscopies (EXAFS) and photoemission (XPS) with synchrotron radiation and laboratory X-ray sources;
- Electronic and structural analysis of semiconductor and insulating materials through electrical measurements, optical and electronic microscopies, Rutherford backscattering of light ions (RBS);
- Use of low-energy ion beams for assisted film modification and surface oxidation processes;
- Thin film growth by evaporation in ultra high vacuum systems.
- Formation of ion implantation clusters, low energy ion bombardment and ultra high vacuum evaporation;
- Studies of the electronic structure of metal / semiconductor interfaces and heterojunctions (photoelectron spectroscopies);
- Electronic structure of superconductors at a high critical temperature (photoelectron spectroscopy);
- Electronic structure of low-dimensional compounds and study of Charge Density Waves transitions (photoelectronic spectroscopy);
- Silicide formation and silicon film deposition with ion beam-assisted evaporation processes (CoSi₂, -FeSi₂, Al / Si) (electron microscopies, photoemission spectroscopies, RBS);
- Formation of ultra-thin SiO₂ films by high temperature thermal processes or at room temperature processes assisted by ion beams (electrical measurements, electron microscopes, photoelectron spectroscopies);
- Er-O-doped growth for ion implantation and for MBE epitaxial deposition (electrical measurements, optical measurements, microscopy, EXFAS spectroscopy, RBS);
- MBE epitaxial growth of Si doped with B for diffusion studies;
- MBE epitaxial growth of Si, Si (1-x) Ge (x) and Si (1-x) C (x) (structural and electrical measurements) and of Ge and SiGe nanostructures;
- Synthesis and structural-electrical-optical characterization of Si and Ge nanocrystals in oxide, nitride and Si carbide for applications in photodetectors and third generation photovoltaic cells.
- Synthesis and characterization of Ge nanocrystals by colloidal route for photodetector applications.
- Synthesis and characterization of thin films of Transparent Oxides Conductors (TCO) and Transparent Conductor Materials (TCM) based on TCO /Ag /TCO nanometric multilayers, also with Ag nanogrids, for photovoltaic applications.

More than 110 scientific publications on international journals.