SHORT CURRICULUM VITAE

Gaetano Scamarcio | Updated August 2026

Current positions

Director of the Institute of Nanoscience of the National Research Council of Italy (CNR-NANO) and Full Professor of Experimental Condensed Matter Physics at the University of Bari Aldo Moro, currently on leave.

Scientific profile

His research spans condensed matter physics, quantum optoelectronics, terahertz photonics, sensing and biosensing. His current work focuses on single-molecule transistor and graphene-based sensors and on cooperative electrostatic and dipolar phenomena in soft biofunctional interfaces. He previously held full-time research positions at Bell Laboratories, Murray Hill, USA (24 months), and at the Max Planck Institute for Solid State Research, Stuttgart, Germany (12 months), and carried out visiting research at the Walter Schottky Institute in Munich, Bell Laboratories and Universite Paris Diderot.

Major contributions

He is co-inventor of the superlattice quantum cascade laser and pioneered detectorless, self-mixing terahertz nanoscopy for phase-resolved studies of nanostructures. More recently, he contributed to demonstrating single-molecule and zeptomolar detection in millimetre-scale electrolyte-gated transistor and graphene-based optoelectronic platforms, and to identifying collective responses and polarization instabilities in physisorbed protein layers.

Research output and leadership

He has authored more than 335 publications, including papers in Science, Nature Communications, PNAS, Chemical Reviews and Advanced Materials, with over 10,300 citations and a Scopus h-index of 50. He is co-inventor of 10 patents, including patents on single-molecule transistor biosensors and quantum cascade lasers. He has coordinated major European, national, regional and industrial research programmes, served as President of the MEDIS Mechatronics Cluster, and received an Award of the Italian Physical Society.