

CURRICULUM VITAE

Name: **Narciso GAMBACORTI**
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ACADEMIC EDUCATION

Laurea di Dottore in Fisica, October 1991, University of Rome "La Sapienza", mark: 110/110.

Title of the thesis: "Hydrogen interaction with the (110) surface of the III-V semiconductors"

LANGUAGES

- Italian (mother tongue)
- English (fluent/excellent)
- French (fluent/excellent)

WORK EXPERIENCE

- **Program Manager Nano-characterization at CEA-LETI** (Sept. 2009 – Present)
As nano-characterization program manager, I am in charge to build research programs and collaborations with industrial and institutional partners in the field of in-line metrology and off-line physical/chemical characterization. As member of the European team of the CEA-LETI, I am in charge of the European activity working on the preparation of proposals and in the management of projects. As part of my activity, there is also a scientific participation in the preparation of the CEA/LETI nano-characterization roadmaps and in the valorisation and animation of the LETI patent portfolio dedicated to material analysis and test.
In my role, I am coordinating the scientific activity related to the development of new methodologies and protocols in the nano-characterization of nanomaterials and in the writing of scientific papers. During my scientific experience, I worked with many different characterization methodologies: Transmission Electron Microscopy, Secondary Ion Mass Spectrometry, X-ray Photoelectron Spectroscopy, Ellipsometry, Photoemission, High Resolution X-Ray diffraction and Auger Electron Spectroscopy. This allow me to discuss with the different experts to find the best approach (which in many case is a combination of different techniques) in the development of new material analysis protocols.
- **Senior Research Scientist and Marketing Support at KLA-Tencor** (May 2007 – Nov. 2008)
Provides high level application support to all European Thermawave accounts (STM-CR2, INFINEON, MICRON, ATMEL) and STM worldwide. Providing marketing support to the marketing team to prepare strategy and roadmaps.
- **Application Scientist and Marketing support at Thermawave** (Oct. 1997 – May 2007)
Application Scientist and Application Engineer in Europe for THERMA-WAVE Inc. (Fremont, CA). Thermawave is the market leader in thin film metrology systems (based on Variable-Angle Reflectometry, Visible and UV Reflectometry, Spectroscopy Ellipsometer and Absolute Ellipsometer). As Application Scientist, I develop recipes to measure different film stack and support the customers to characterize new processes and devices. As Application Engineer, I support the customers to use the tools in the best way and with the highest performances and I follow the installation of the new tools. As part of my position, there is also the promotion of the Company's name and the understanding of marketing opportunities. In the last two years working in this position I covered also the position of European Application Manager. As part of this role, I managed all the European Application Engineers.
- **Fellow researcher at Consiglio Nazionale delle Ricerche Italy** (January 1992 – June 1997)

Researcher at the CNR-MASPEC Institute in Parma working on TEM (Dark Field, HRTEM, defect analysis) analysis of III-V HEMT grown by MOCVD. Researcher at the Molecular Beam Epitaxy (MBE) laboratory at the CNR-ICMAT Institute in Rome. In particular, I worked on MBE grown and characterization (High Resolution X-Ray Diffraction and Photoluminescence) of InP based optoelectronic devices. Responsible for the Secondary Ions Mass Spectrometry (SIMS) laboratory at the CNR-ICMAT Institute in Rome. I worked on SIMS characterization of III-V semiconductors based P-HEMT and optoelectronic devices.

OTHERS

- Member of the scientific committee of the 13th International Workshop on Stress-Induced Phenomena in Microelectronic – October 15-17, 2014 The University of Texas, Austin, TX.
- Member of the scientific committee of the 2nd Dresden Nanoanalysis Symposium - July 2nd, 2014.
- Member of the Organization Committee of the Symposium J “High-Resolution Electrical and Chemical Characterization of Nanometer-Scale Organic and Inorganic Devices” – EMRS 2012 Fall Meeting September 17-21, 2012 Warsaw, Poland.

PUBLICATIONS

- “High-resolution and surface-sensitive Tip-Enhanced Raman Spectroscopy characterization of strained-silicon devices through cleanroom-compatible plasmonic probes” Advanced Materials Interfaces 2025
- “REFERENCE-FREE X-RAY FLUORESCENCE ANALYSIS WITH A MICROMETER-SIZED INCIDENT BEAM” Nanotechnology 2024
- “Strained Silicon Technology: Non-Destructive High Lateral Resolution Characterization through Tip-Enhanced Raman Spectroscopy” Applied Spectroscopy 2024
- “GaN/InGaN μ LEDs Study by Cathodoluminescence and Photo-Sensitive Kelvin Probe Force Microscopy” FCMN2024
- “CHALLENGES - Use of polarized Raman analysis for composition or strain measurement on ultrathin SOI and SiGeOI” eMRS eMRS 2024
- “Advanced optimization of C&O species adsorbed on highly reactive surfaces during vacuum transfer step in microelectronic” ECASIA 2024
- “Challenges” EuroNanoForum 2023 in Lund, Sweden
- “Strain characterization in SiGe epitaxial samples by Tip-Enhanced Raman Spectroscopy” VISPEC 2023 CONFERENCE – PERUGIA, JUNE 14-16TH 2023
- “The reconstruction of nanostructures from grazing incidence X-ray fluorescence measurements with a model-free parameterization and machine learning” 14th Annual Meeting Photonic Devices, 2022
- “Applying a model free parameterization for reconstruction of nanostructures from grazing incidence X-ray fluorescence measurements” Bessy User Meeting 2021
- Controlling electrical and optical properties of zinc oxide thin films grown by thermal atomic layer deposition with oxygen gas, Results in Materials 2020,
- “Magnetoelectric dual-particulate composites with wasp-waisted magnetic response for broadband energy harvesting” Journal of Alloys and Compounds 2019
- “Impact of pore anisotropy on the thermal conductivity of porous Si nanowires” Scientific Report 2018
- “Germanium out diffusion in SiGe-based HfO₂ gate stacks” Journal of Vacuum Science & Technology B 2018
- “Strain, stress, and mechanical relaxation in fin-patterned Si/SiGe multilayers for sub-7 nm nanosheet gate-all-around device technology” Applied Physics Letter 2018
- “Doping porous silicon with erbium: Pores filling as a method to limit the Er-clustering effects and increasing its light emission” Scientific Report 2017
- “Toward an accurate quantification in atom probe tomography reconstruction by correlative electron tomography approach on nanoporous materials” Ultramicroscopy 2017
- “SiGe Bandgap Tuning for High Speed Eam” ECS Transactions 2017
- “Nanoanalysis” Chapter in book: Nanoelectronics. Editors: R. Pueres, L. Baldi, M. Van de Voorde and S. E. van Nooten 2017

- “Self-adapting denoising, alignment and reconstruction in electron tomography in materials science” Ultramicroscopy 2015
- “The EMRP project Metrology for III–V materials based high efficiency multi-junction solar cells” Conference paper 2014
- “Electron Tomography for 3D Nanoscale Characterization of Semiconductor Materials and Devices” Microscopy and Microanalysis 2013
- “Selenium Segregation in Femtosecond-Laser Hyperdoped Silicon Revealed by Electron Tomography” Microscopy and Microanalysis 2013
- “High-resolution XPS spectromicroscopy study of micro-patterned gold–tin surfaces” Applied Surface Science 2012
- “Evidence of light depolarization in grazing incidence germanium attenuated total reflection prisms” Applied Spectroscopy 2011
- “Low energy Xe milling for the quantitative profiling of active dopants by off-axis electron holography” Journal of Applied Physics 2011
- “Lanthanum diffusion in the TiN/LaO_x/HfSiO₂/SiO₂/Si stack” Microelectronic Engineering 2011
- “Quantitative depth profiling of ultrathin high-k stacks with full spectrum time of flight-secondary ion mass spectrometry” Journal of Vacuum Science & Technology B Microelectronics and Nanometer Structures 2011
- “Structural properties of Zn-diffused InP layers” Journal of Applied Physics 1997
- “Micromorphology, microstructure and magnetic properties of sputtered garnet multilayers” In book: Science and Technology of Magnetic Oxides, Editors: Hundley, M. F. Nickel J. H. Ramesh R. Tokura Y. 1997
- “Investigation of Interface Abruptness in Strained InAs/In_{0.53}Ga_{0.47}As Quantum Wells”. Materials Science Forum 1996
- “Structural characterization of Zn-diffused InP layers by x-ray diffraction and standing-waves method” Applied Physics Letters 1996
- “An electrostatic Si e-gun and a high temperature elemental B source for Si heteroepitaxial growth” Applied Surface Science 1996
- “SIMS depth profiling with Cs⁺ primary ions of Si delta doped layer in Al_{0.22}Ga_{0.78}As” Conference SIMS-X 1995
- “[CsM]⁺ depth profiling of III-V heterostructures: the role of the normalization process” conference SIMS-X 1995
- “Normalized reflection spectra in GaAs/In_xGa_{1-x}As single quantum wells: Structure characterizations and excitonic properties” Physical review. B, Condensed matter 1995
- “Surface-shift low-energy photoelectron diffraction: Clean and hydrogenated GaAs(110) surface-structure relaxation” Physical review. B, Condensed matter 1995
- “Role of the substrate deoxidation process in the growth of strained InAs/InP heterostructures” Journal of Crystal Growth 1995
- “Raman studies of InAs/In_{0.53}Ga_{0.47}As single quantum wells grown on InP substrate by M.B.E” Superlattices and Microstructures 1995
- “Role of the substrate deoxidation process in the growth of strained InAs/InP heterostructures” Journal of Crystal Growth 1995
- “Depth profiling of the MBE grown InAs/InP and In_xGa_{1-x}As/InAs heterostructures” Materials Science and Engineering B 1994
- “Transmission electron microscopy and X-ray diffraction investigation of In segregation in MOVPE-grown InGaAs-based MQWs with either GaAs or AlGaAs barriers” Materials Science and Engineering B-advanced Functional Solid-state Materials 1994
- “Depth profiling of InAs/InP and In_xGa_{1-x}As/InAs heterostructures grown by molecular beam epitaxy” Materials Science and Engineering: B 1994
- “Electron energy loss and Auger spectroscopy of the YbGaP(110) interface” Applied Surface Science 1992
- “Electronic structure of H:GaP(110)” Surface Science 1992