Francesco Montalenti's CV

Personal data

Montalenti Francesco (Cimbro Mattia)

Born in Torino, June 22nd 1970.

Nationality: italian

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Prof. Francesco Montalenti, Phd

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Formation/career

1995: Laurea in Physics, University of Milano. Thesis' title: He and Ne interaction with simple metals: ab initio results. Grade: 110/110 cum laude.

1999: PHD in Physics, University of Genova. Thesis' title: Diffusion on channeled metal surfaces. Advisor: Prof. R. Ferrando.

2000-2001: Directoral-funded POST-DOC, Los Alamos National Laboratory, Theoretical Division.

2002-2012: University Researcher in Physics of Matter, Materials Science Department, University of Milano-Bicocca.

2012: Associate Professor of Physics of Matter, Materials Science Department, University of Milano-Bicocca

2013: Full-professor habilitation in Theoretical Pyysics of Matter

2020-present: Full professor of Physics of Matter, Materials Science Department, University of Milano-Bicocca.

Affiliations and duties

Since 2023: Coordinator of the PHD program in Materials Science and Nanotechnology, University of Milano-Bicocca.

Since 2022: Member of the Board of the Materials Science Department, University of Milano-Bicocca.

Since more than 10 years: Member of the Scientific Board of L-NESS, Laboratory for Epitaxial Nanostructures Nanostrutture on Silicon and for Spintronics, a inter-university center Politecnico di Milano and Università di Milano-Bicocca.

Research interests

Theoretical/Computational modeling of epitaxial growth: surface diffusion, growth modeling, investigation of elastic and plastic misfit-strain relaxation. Expertise in several synergic techniques, ranging from continuum models (Phase-field approach, Finite Element Methods, Dislocation Dynamics) to atomistic ones (classical MD, ab initio calculations), and including recent approaches based on Machine Learning (Recurrent, Convolutional Neural Networks, Generative Adversarial Networks).

International collaborations

Prof. A. Voigt, TU Dresden. Development of codes for continuum simulations of growth.

Dr. R. Gatti. ONERA/CNRS, Châtillon, France. Dislocation dynamics simulations based on the MicroMegas code; code development.

Dr. G. Capellini, IHP Frankfurt (Oder). Design, growth, and modeling of Ge/Si nanostructures for optics and microelectronics.

Prof. G. Henkelman (University of Texas at Austin) and Prof. Penghao Xiao (Dalhousie University, Canada). Development of methods to investigate rare events.

Prof. Lei Li (Southern University of Science and Technology, China). Development of machine-learning potentials.

Dr. Olivier Pierre-Louis (CNRS, Lyon, France). Development of Machine-Learning methods for the investigation of temporal evolution.

Publications

ORCID-ID 0000-0001-7854-8269; ResearcherID: A-7738-2010; Scopus Author ID: 7003456432

Some 170 publications on international peer-reviewed journals (14 on Physical Review Letters), 4000+ citations. h-index: 34.

Around 50 invited talks and seminars, more recent (2024):

Plenary invited talk, "International Conference on Metal Organic Vapor Phase Epitaxy" (Las Vegas, NV, USA); invited talk, "International Confence on Molecular Beam Epitaxy" (Shimane, Japan, September 2024). Subject of both invitations: Machine Learning applied to thin-film modeling.

Conference organization

Organizer of a dozen conferences including the symposim "Growth of Heteroepitaxial islands in group IV and III/V semiconductors" (with Prof. F. Schäffler) , 26th ECOSS Conference (Parma, Italy, 2009), the symposium "Integration of novel materials and devices on silicon for future technologies" (with I. Fischer, C. Merkling, and D. Landru); E-MRS Fall Meeting (Warsaw, 2016), the symposium

"Material and device integration on silicon for advanced applications" (with I. Fischer, C. Merkling, and D. Landru); E-MRS Fall Meeting (Warsaw, 2017), and the symposium "Monolithic and heterogeneous integration of advanced materials & devices on silicon"; E-MRS Fall Meeting (Warsaw, 2018).

Member of several International Program/Scientific Committees, including the recent Gadest-19 (Austria, 2022) and the upcoming Gadest-20 (Germany) and "FAME" (Second International Workshop on Fundamentals and Advances of MOVPE processes; Eindhoven, NL, Luglio 2024).

Funded projects and research contracts

Ended

Member of research unit in 4 different EU projects, in 3 Fondazione Cariplo Projects, in 1 Regione Lombardia project, in 1 national PRIN project. PI of research contracts with Siltronic AG (Burghausen, Germany) for a total time exceeding 4 years. Not listed: several successful applications for parallel-computing facilities.

Running

Member of research unit within Spoke 7, National HPC Centre (PNRR)

Local PI of the NANOSEES (NANOscale nondestructive spectroscopic mapping of defectS in

heterojunction dEvicES) project (PRIN-PNRR)

Referee

Referee, on a regular basis, for the journals Phys. Rev. Lett., Phys. Rev. B, Phys. Rev. Mat., Nano Lett., Appl. Phys. Lett., Science Advances, and others.

Teaching at the University of Milano-Bicocca.

2002-present: Several courses taught for Physics and Materials Science students at both Bachelor and Master level. Currently in charge of the Courses "Struttura della Materia" (Structure of Matter) for the Bachelor Program in Physics, and "Statistical Thermodynamics of Materials" for both Physics and Materials Science master students.

Students: Thesis supervisor

Supervisor of 20 Master students in Physics or Materials Science, and of several bachelor ones.

Supervisor of the following PhD students in Materials Science: Silvia Cereda, Roberto Bergamaschini, Fabrizio Rovaris, Luca Barbisan, Daniele Lanzoni, Andrea Fantasia, Veronica Regazzoni.