

LUCIANO COLOMBO – curriculum vitae (short version - ENGLISH)

last update: May 30, 2018

1. Name, status, contact details, and public profile

- Name: Luciano Colombo
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2. Current position

- Tenured full professor of Condensed Matter Physics (SSD FIS/03 – SC 02B2) , since December 2002
- Fellow of the “Istituto Lombardo – Accademia di Scienze e Lettere”

3. Education

- 1984: master degree (cum laude) in Physics at the University of Pavia, Italy (Alumnus Almo Collegio Borromeo)
- 1985: stage at the “GaAs-based new information technologies laboratory” of Telettra SpA, Milano, Italy
- 1986-1988: visiting summer student at the “SuperComputing Research Institute” (SCRI) of the Florida State University, Tallahassee FL, USA
- 1986-1989: visiting student at the “Instituto de Ciencia de Materiales” (ICMM) of the “Consejo Superior de Investigaciones Científicas” (CSIC), Madrid, Spain
- 1989: Ph.D. in Physics at the University of Pavia, Italy
- 1989: post-doc research associate at “Institut Romande de Recherche Numérique en Physique des Matériaux” (IRRMA), Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland
- 1990: junior research associate at International School for Advanced Studies (ISAS-SISSA), Trieste, Italy

4. Employment and international academic appointments

- 1990-1996: assistant professor (tenured) at the Department of Physics of the University of Milano, Italy
- 1991-1996: visiting scientist at the Swiss National Supercomputing Center (CSCS), Manno, Switzerland 1992-1993: visiting scientist at the “Centre Européen de Calcul Atomique et Moléculaire” (CECAM), Paris, France
- 1994-1996: visiting scientist at the “Chemistry and Materials Science Division” of the Lawrence Livermore National Laboratory (LLNL), Livermore CA, USA
- 1996-1999: assistant professor (tenured) at the Department of Materials Science of the University of Milano-Bicocca, Italy
- 1999-2002: associate professor (tenured) at the Department of Physics of the University of Cagliari, Italy
- 2002-present: full professor (tenured) at the Department of Physics of the University of Cagliari, Italy
- 2010-2011: visiting professor at the School of Physics of the University College Dublin, Ireland
- 2015-2016: sabbatical year as visiting professor at the Catalan Institute for Nanoscience and Nanotechnology, Barcelona (Spain)

5. Main research interests and activity

My research is mainly focussed on novel (nano)materials and addressed to improve our fundamental understanding of their properties for energy production & harvesting, biomedical applications, advanced functional and structural applications, information technology (phononics) and metrology. I am also interested in developing/applying new theoretical and computational methods and algorithms for large-scale atomistic simulations.

- Nanoscale thermal transport in nanostructured semiconductors (SiGe nanocomposites and porous/nanocrystalline silicon) for thermoelectric applications and thermal devices
- Thermal properties of 2dimensional atomic sheets (graphene, BN, and transition-metal dichalcogenides)

- Dielectric elastomers (metal-polymer nanocomposites) for stretchable electronics and biomedical applications
- Multiscale modeling of the micro/nano-mechanics of complex materials
- Hybrid organic/metal-oxide interfaces for efficient solar energy harvesting
- Mechanical, elastic, and defect properties of novel carbon-based nanomaterials (graphene and fullerenes)
- Structural, electronic, optical, and defect properties of silicon for microelectronics, photovoltaics, and optoelectronics
- Methods and algorithms for large-scale atomistic simulations in materials physics

6. Most relevant research funding as project leader

- 1995-1998: NATO-CRG project "Molecular dynamics studies of defect properties and dopant diffusion in silicon" – role: project leader
- 1998-1999: MiUR-PRIN project "Ion-induced microstructural evolution: a computational approach" – role: leader of a research unit
- 2000-2002: MiUR-PRIN project "Multiscale approach to the unification of micro- and macro-mechanics of linear and nonlinear materials" – role: leader of a research unit
- 2000-2002: INFN project "An hybrid classical/quantum simulation scheme for modeling silicon bulk processing" – role: project leader
- 2002-2004: MiUR-PRIN project "Bridging molecular dynamics to continuum mechanics: a multiscale description of mechanical properties of materials" – role: leader of a research unit
- 2002-2006: MiUR-FIST project "Design, processing, and modeling of novel ceramic composites and coatings" – role: leader of a research unit
- 2003-2006: MiUR-FIRB project "Modeling and structural characterization of ion radiation induced defects in crystalline silicon" – role: leader of a research unit
- 2004-2008: EU-STREP FP-6 project "Nanocrystalline silicon for photovoltaic and optoelectronic applications" – role: leader of a research unit
- 2005-2009: EU-PON project "A cyberinfrastructure for science and technology" – leader of the activity "Computational hard- and soft-matter physics"
- 2010-2013: RAS project "Multiscale Modeling of Mechanical properties of Materials" – role: project leader
- 2012-2013: ISCRA project "Understanding Cluster Implantation in Polymers" – role: project leader
- 2012-2014: RAS-LOMB project "Stretchable electronics for biomedical applications" – role: leader of a research unit
- 2012-2015: MiUR-PRIN project "Frontiers in Graphene Research: understanding and controlling Advanced Functionalities" – role: leader of a research unit
- 2014-2015: ISCRA project "Thermal transport in nanostructures silicon" – role: project leader
- 2015-present: RAS project "Porous silicon for energy applications" – role: project leader
- 2015-present: ISCRA project "Thermal Rectification Without Interfaces: a proof-of-concept computer experiment" – role: project leader

7. Scientific production

- Total scientific production: 254 papers on refereed journals (source: ISI WoS), including 2 "famous papers" (with 250-499 quotes) and 3 "well-known papers" (with 100-249 quotes)
- Books (authored): 3
- Edited volumes: 4
- Invited presentations:
 - 60+ invited talks at international events
 - 12+ invited lectures at international schools

8. Citation metrics

Source: ISI WoS – ResearcherID: <http://www.researcherid.com/rid/D-9013-2013>

- h-index: 31
- total number of citations: 4492
- average citations per paper: 18.26

[other data-base sources provide higher citation indexes]

9. History of mentoring and supervision

- Mentoring:
 - 20 Bachelor theses (in physics and electronic engineering)
 - 45 Master theses (in physics, materials science, electronic engineering, and mechanical engineering)
- Supervision:
 - 10 Ph.D. theses (in physics)

- 3 Ph.D. theses (in engineering)
- 5 post-graduate students
- 11 post-doctoral research associates
- 1 research assistant at IOM-CNR
- 1 research assistant at the Department Physics of the University Cagliari

10. Teaching

I have been teaching introductory general physics courses in B.Sc. programs in Physics, Materials Science, Informatics, Mathematics, Biology, Electronic Engineering, and Mechanical Engineering. Furthermore, I have been teaching the following "condensed matter physics" (SSD FIS/03) courses in both B.S. and M.Sc. programs in Physics, Materials Science, and Electronic Engineering:

- Introduction to condensed matter physics
- Semiconductor physics (*present academic year*)
- Computational materials physics
- Materials mechanics
- Nanoelectronics
- Advanced condensed matter physics
- Thermal and statistical physics
- Thermodynamics (*present academic year*)

11. Managing responsibilities

- 1996-1999: Member of the "Semiconductor and Insulator" Steering Committee of the Italian National Institute for the Physics of Matter (INFM)
- 2002-2004: Head of the Steering and Scientific Committee for high-performance computing of the Italian National Institute for the Physics of Matter (INFM)
- 2003-2007: Coordinator of the Ph.D. program in Physics at the University of Cagliari, Italy
- 2005-2010: Member of the Scientific Board of the CASPUR supercomputing center, Rome, Italy
- 2006-present: Member of the Scientific Board of the CYBERSAR supercomputing center, Cagliari, Italy
- 2008-2011: Coordinator of the "Physics and Mathematics Section" of the Faculty of Engineering at the University of Cagliari, Italy
- 2008-2012: Editor-in-Chief of the "European Physical Journal B – Condensed matter physics and complex systems" (EPJ-B) of the European Physical Society (EPS)
- 2009-2010: Director of the "Sardinian Laboratory for Computational Materials Science" (CNR-SLACS) 2009-2011: Head of the "Panel for Physical Sciences" (Area Fisica) of the University of Cagliari
- 2010-present: Member of the Advisory Board of the European Theoretical Spectroscopy Facility
- 2011-2015: Head of the Department of Physics at the University of Cagliari
- 2012-2015: Colloquia&Reviews Editor of the "European Physical Journal B – Condensed matter physics and complex systems" (EPJ-B) of the European Physical Society (EPS)

12. Honours

- 1995: "Advanced Research Grant" awarded by NATO
- 1994 Gordon-Bell prize of the IEEE Computer Society (co-recipient with S. Goedecker of the Cornell Theory Center) with the motivation: "In recognition of their effort in practical parallel processing research" [See paper: S. Goedecker, L. Colombo, Efficient linear scaling algorithm for tight-binding molecular dynamics, Phys. Rev. Lett. 73, 122 (1994)]
- 2013: "Excellent Researcher Grant (REG)" awarded by the European Metrology Research Project (EMRP-kNOW) under the initiative "Towards a new definition of the kilogram"
- 2015: Fellow of the Istituto Lombardo, Accademia di Scienza e Lettere (Italian: socio corrispondente)