

Claudia Riccardi, Milano 

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CURRENT POSITION

Full Professor, Department of Physics, Milano-Bicocca University.

POSITIONS

- [1992-2001] University Researcher in General Physics, Milano University (since 1998 Milano-Bicocca University)
- [1997- 2002] Associate Professor II: Position Adjunct Senior lectureship in Physics II -Plasma Physics, Faculty of Science, University of Trømsø (Norway)
- [2001 - 2018] Associate Professor, Physics Department, Milano-Bicocca University
- [2003] Eligibility for Full Professor in Norway
- [2005 - 2007] II Professor, Adjunct Position lectureship in Physics II -Plasma Physics, Dept of Physics, University of Trømsø (Norway)
- [2004 - present] Director, Center of Excellence PLASMAPROMETEO, Milano-Bicocca University
- [2014 - present] Rector Delegate in the National Smart Factory Cluster, a national network between Industries and Universities on new emerging technologies for the Manufacturing Industry
- [2015 - 2021] Board Member, Pirelli CORIMAV Consortium for the Industrial Doctorate in Material Science
- [2015 - 2018] Deputy director, Physics Department, Milano-Bicocca University
- [2016 - present] Company promoter and active partner in PLUME SRL Start-Up company, Milano-Bicocca University Spin-Off for the Technological Transfer of University patents on plasma physics (www.plumetec.it).
- [2019 – present] Full Professor at the University of Milano-Bicocca.
- [2019 – present] Rector Delegate for the Prevention and Safety

EDUCATION

- Laurea in Physics cum Laude (honours), Milano University, 1989
- PhD in Physics, Milano University, 1993.

RESEARCH INTEREST IN BRIEF

1. Linear and nonlinear plasma-wave interactions
2. Turbulence in laboratory plasmas
3. Plasma sources and processes for industrial applications.

RESEARCH ACTIVITY

CR authored more than 190 publications that illustrate the diversity of her scientific interests, in the field of plasma physics also oriented towards applications to materials within sectors such as energy, environment and manufacturing. CR started to work on the basic plasma physics research in the field of plasma wave-interactions (1989-1996) and later in the field of the plasma turbulence (1996-up today). Since 1998 CR has been also working on plasma applications for industry, carrying out a large number of cooperations (in a multidisciplinary context. CR was involved in the development of plasma sources, diagnostics and processing, which expanded the understanding of plasma-material interaction and plasma applications.

Between 1997-2004 she developed instrumentation and analysis techniques collaborating with Laben in the aerospace sector, and she worked developing plasma processing and sources for textiles with several Italian SME. Between 2004 and 2006 she founded the PlasmaPrometeo Center at the University of Milano-Bicocca dedicated to the research and development of plasma applications and to the technological transfer to industry. She collaborated with Pirelli Group working on the development of high gas barrier films by plasma deposition for OLED (co-author of the patent by Pirelli and Telecom). She proposed and exploited the use of atmospheric plasmas

for textiles and for packaging plastics, promoting methods and plasma equipments within the industrial production. She collaborated with Aermacchi-Laben in the development of plasma actuators in the aerospace sector, developing methods for the analysis and the understanding of the phenomena. She is working on plasma functionalisation in the field of biomedicine, to control the biocompatibility of materials with bio-macromolecules and human tissues. She promoted a new patented source for the deposition of nanostructured films by PA-JSD and worked with Istituto Italiano di Tecnologia on industrial applications for energy and environment. Since 2006, she has been, and currently is director of the PlasmaPrometeo Centre including 12 researchers. She is currently member of industrial associations (Smart Factory, Pirelli CORIMAV, InnovHub Council). The major breakthroughs achieved during her career are summarized as follow:

- pioneering industrial applications based on Plasma Assisted - Jet Supersonic Deposition for nanostructured materials;
- promoting and contributing to exploit atmospheric plasma processing for materials (two patents) in industry;
- founding Plasma Prometeo, Center of Excellence at the University of Milano Bicocca, dedicated to the research and development of plasma processing and to the technological transfer to industry
- founding and promoting the start up PLUME SRL , spin-off of the University of Milano Bicocca, exploiting the patented plasma source and processing for nanostructured materials of the same University.
- promoting and encouraging multidisciplinary activities, and sinergies between plasma physics and the fields of material science, chemistry and biotechnology.

(www.plasmaprometeo.unimib.it).

PATENTS AND PUBLICATIONS

- 17 international patents (of which 16 PCT as co-author with Milano-Bicocca Univ. as holder, one patent with Pirelli as co-author)
- 190 publications on international journals
- "Plasma Physics" entry, Treccani Encyclopedia for the physical sciences
- 75 international conference proceedings with referee
- 93 international conference abstracts
- 7 monographies
- popularization articles, press and TV interviews
- 40 invited talks (International)
- 32 invited talks (national)
- H INDEX = 35, TOTAL CITATIONS = 3270.

AWARDS

INFM Best Poster Presentation Prize, Congress of the National Institute of Physics of Materials [1995].

Special mention, Environment Friendly Innovation Award, for the project "Development of processes with low environmental impact in the production of technical fabrics industrial plasma technologies" together with Saatiprint spa [2004].

Second Prize, Start Cup Udine Award for Innovation [2006]

Seal of Excellence to PLUME SRLEU- SME Instruments project: PLASMAFIL "Efficient and cost-effective PLASMA surface treatment method for flexible FILtration materials used in the separation of immiscible liquids" [2019]

FELLOW International Association of Advanced Materials IAAM 2022.

RESEARCH RELATED APPOINTMENTS

- [2006 -2012] Member of the Commission for Patents and Spin-Off at Milano-Bicocca University

- [2007-2008] Delegate for the Lombardy region on scientific cooperation between Germany and Lombardy for emerging technologies
- [2010] Reviewer for the INFN project "HEART surface treatments" with Chiggiato (CERN), Torrisi (University of Messina, INFN-LNS)
- [2010-2012] Board Member, Ministry of Education refereed projects FIRB and PRIN
- [2012 - 2018] Member of INNOVUB srl Scientific Committee, Camera di Commercio Milano Monza Brianza
- [2012 - 2018] Reviewer for ANVUR GEV 02 peer review evaluation process of Italian Universities
- Referee for international scientific journals including Physics of Plasmas, Physics Letters A, Journal of Physics D: Applied Physics, The European Physical Journal D, Plasma Processing and Polymers, Surface and Coating Technology, Advance Materials, Nanotechnology
- Scientific Leader at Milano-Bicocca University of three European projects, many international scientific collaborations, five national projects, five regional projects supported by CARIPLO Foundation, and > 30 agreements and research collaborations with private industries.

SERVICES IN NATIONAL AND INTERNATIONAL PANELS AND ADVISORY COMMITTEES

- Member of International Advisory and Program Committee of the Conference on Interaction Particle Beams and Plasma Materials and Ion and Plasma Surface Finishing, 25-27 november 2004, Chiang Mai, Thailand [2004]
- Chairperson of Nanoforum, Textile session, 18-19 September 2007, Milan Polytechnic Headquarters Bovisa, [2007]
- Member of the International Scientific Committee of the 10th Biennial European Plasma Conference http10, 7-11 july 2008, Patras, Greece [2008].
- Member of the International Scientific Committee of Toulouse 2018
- Member of the International Scientific Committee of
- Editor with E.H. Roman of the Book "Anomalous Fluctuation Phenomena in Complex Systems: Fluids and Financial Markets", 2012, Research Signpost Kerala India, ISBN: 978-81-308-0255-8.
- Special Issue Editor of "Surface Plasma Treatments", Open Access Coatings MDPI 2020
- Editor with E.H. Roman of the Book "Plasma Applications in Gases, Liquids and Solids", 2023 World Scientific Publishing.

TEACHING

- [2001 - present] Plasma Physics Courses for the Degree in Physics and the Master Degree in Physics at Milano-Bicocca University, including PLASMA PHYSICS I and PLASMA PHYSICS LABORATORY I, LABORATORY FOR PHYSICS
- Supervision of about three Master students and two Ph.D students per year in the field of Plasma Physics.

ADMINISTRATIVE EXPERIENCE

- [1999 - 2001, 2003 - 2005, 2006 - 2009, 2012 - present] Department Board Member, Physics Department, Milano-Bicocca University
- [2002 - present] Board Member, PhD Council in Physics and Astronomy, Milano-Bicocca University
- [2005-2007] Rector delegate, Assembly of Temporary joint venture established on 2.2.2005 for the regional project "Nobilitas Corii" under "Metadistretti for Excellence Lombarda"
- [2006 - 2012] Coordinator for the Degree Course in Physics, Milano-Bicocca University
- [2006 - 2012] Member of the Committee for undergraduate courses in physics, Milano-Bicocca University
- [2007- 2012] Chairperson, Committee on Thesis Degrees in Physics and Astrophysics, Milano-Bicocca University
- [2008- 2012] Member of the Committee for the admission to the Master of Science in Physics and Master of Science in Astrophysics, Milano-Bicocca University
- [2010 - present] Member of the Technical Committee for New Materials and Capital Equipment program TECNOScouting promoted by the Lombardy Region, the Chamber of Commerce and Milano Innovhub, Unioncamere Lombardia
- [2012 -2015] Member of the Board of the School of Science, Milano-Bicocca University
- [2012- present] Member of the Education Committee for the degree courses in physics, Milano-Bicocca University
- [2018-present] President of the Education Committee for the courses in physics (Bachelor and Master), Milano-Bicocca University

MAIN RESEARCH PROJECT OF THE 5 LAST YEARS

- [2022-present] ANTHEM - AdvaNced Technologies for Human-centrEd Medicine - EU-NRRP Complementary Investments, Scientific Responsible of the pilot: 2.4 “Wide spectrum light and devices to sanitize surfaces and air”
- [2022 -present] MUSA – Multilayered Urban Sustainability Action – EU-NRRP, in Spoke 5 SUSTAINABLE FASHION, LUXURY, AND DESIGN, Collaboration in the “Innov. Retail & Spazi fisici di interazione” 5.4
- [2019-2021] FONDAZIONE CARIPLO: POLISTE “Advanced POLymeric materials based on LIgnin for Sustainable TEchnologies” Politecnico di Milano e Università di Milano Bicocca. Scientific Responsible for the University of Milano Bicocca
- [2018-2019] EU-SME – Instruments , PI of FILTEX PLASMAFIL “Efficient and cost-effective PLASMA surface treatment method for flexible FILtration materials used in the separation of immiscible liquids” (PLUME SRL), PI
- 3 CONTRACTS WITH INDUSTRIES on plasma applications to environemnt, energy and biomedicine.

INVITED TALK OF THE LAST 5 YEARS

- [2023] *Plasma Etching Techniques for New Nanostructured Fractal Surfaces*, C. Riccardi and H.E.Roman, Nano Science & Technology 2023, The 10th Annual World Congress, May 17-19, 2023 Osaka, Japan
- [2023] *Non-Thermal plasmas for air sanitation: a study using a Surface Dielectric Barrier Discharge* , C. Riccardi, 10th International Conference on FRONTIERS OF PLASMA PHYSICS AND TECHNOLOGY (FPPT-10), 13-17, March 2023, Kathmandu, Nepal
- [2022] *Non-Thermal plasmas for air purification and sanitation*, International conference on One World, One Health, 6th - 7th Dec, 2022, Chandigarh, India-PREVENT.IT co-funded by Erasums+ EU.
- [2022] *Plasma Etching Techniques for Super-hydrophilic Nanostructured Fractal Surfaces*, C. Riccardi, Advanced NanoMaterials Congress, AMC 10, August 27-29, 2022 Stockolm.
- [2019] *Plasma Jets for Nanostructured Oxides*, Nanotechnology & Nanomaterials, November 14-15, 2019 Osaka, Japan
- [2019] *Plasma Techniques for Nanostructured Materials*,C. Riccardi, Plenary Lecture, EPS Plasma Physics and Controlled Fusion, Milano, July 12th 2019

Milano, 1 luglio 2023

