Roberto Piazza - Curriculum Vitae

PERSONAL INFORMATION

Name: Piazza, Roberto
Research ID: A-9710-2010
ORCID: 0000-0001-7398-0335
Nationality: Italian

EDUCATION AND CAREER

1981	Laurea (Master Degree) *cum laude* in Physics, University of Milano
1986	PhD in Electronics and Computer Science Engineering (curriculum in Quantum Electronics), University of Pavia (Advisor: Prof. Vittorio Degiorgio)
1987 – 1987	Postdoctoral fellow, Dept. of Physics and Astronomy, University of Pittsburgh/ PA, USA (Research Associate in the group of Prof. Walter Goldburg)
1989 – 1999	Lecturer, Faculty of Engineering, Department of Electronics, University of Pavia
1999 – 2005	Associate Professor, Department of Nuclear Engineering, Politecnico di Milano
2005 –	Full Professor in Condensed Matter Physics, Department of Chemistry, Materials Science and Chemical Engineering, Politecnico di Milano

POSITIONS AS VISITING PROFESSOR

2010	Laboratoire des Colloïdes, Verres et Nanomatériaux, Université de Montpellier II/France (CNRS 'Chercheur Invit' Program),
2011	ENS Lyon/France ('Point de vue' course in Soft Matter Physics)
2013	Cavendish Laboratory, University of Cambridge/United Kingdom
2015	Van 't Hoff Laboratory, University of Utrecht/Netherlands
2016	CNRS Visiting Professor, ILM, Université Claude Bernarde, Lyon/ France

FELLOWSHIPS AND AWARDS

1987	Nato Advanced Studies Fellowship
2013	Leverhulme Trust Fellowship
2013	Appointed as Visiting Fellow of the Corpus Christi College, University of Cambridge
2015	Debye Professorship (awarded by Debye Institute for Nanomaterials Science)

TEACHING ACTIVITY

2000-2001	Introduction to quantum mechanics and nuclear physics (BA Nuclear Engineering)
2001-2005	Atomic Physics II (MD in Nuclear and Material Science Engineering).
2001-2005	Plasma Physics and Engineering (MD in Nuclear Engineering).
2001-2006	Applications of Scattering (PhD in Radiation Science and Technology).
2007-2009	Advanced Electromagnetism (All PhD courses in Engineering)
2010-2016	Soft Matter Physics (MD in Chemical and Materials Science Engineering)
2005-	Statistical Physics (MD in Nuclear, Physical, and Materials Science Engineering).
2018-	Soft Matter: the Structure and Rheology of Complex Fluids (MD in Chemical and Materials Science Engineering)

INSTITUTIONAL RESPONSIBILITIES (in Milano Politecnico)

2007-2009	Coordinator of the PhD Course in 'Radiation Science and Technology'
2009-2012	Assistant Dean and member of the Steering Committee of the III Faculty of Engineering

COMMISSIONS OF TRUST AND EDITORIAL ACTIVITY

1999 – 2005	Elected member of the Liquid Board of the European Physical Society
2003 – 2010	Associate Editor of Current Opinion in Colloid and Interface Science
2003 – 2011	Member of the Editorial Board of the European Physical Journal E
2013 –2017	Section Editor of J. Phys. Cond. Matt. for liquids, soft matter, and biophysics
2017 - 2018	Editor-in-Chief of the Italian Physical Society
2019	Principal Investigator of the NASA ACE (Advanced Colloids Experiments) T10 Mission on board of the International Space Station
Since 2004	Coordinator of ESA *Topical Team* 'Application of Colloids in microgravity' and Principal Investigator of the ESA project 'Colloidal Solids'
Since 2005	Member of the Scientific Council of CISIA, the National Consortium for the Admission to the Italian Universities and, since 2019, National Coordinator for the admission to the Schools of Engineering
Since 2013	Series Editor of the Springer book collection in Soft and Biological Matter
Since 2015	Member of the European Space Sciences Committee (ESSC)
Since 2016	Reviewer within the College of Experts of the European Science Foundation

ORGANISATION OF SCIENTIFIC MEETINGS

2002	Member of the International Program Committee (IPC) of the 5th Liquid Matter Conference (LMC5), Konstanz
2004	Co-organizer with M. Giglio of the 6th International Meeting on Thermodiffusion, Varenna, Italy
2005	Member of the IPC of LMC6, Utrecht
2013	Member of the National Organizing Committee of the 3rd International Soft Matter Conference, Rome
2014	Member of the IPC of the LMC9, Lisbon

MAIN INVITED TALKS AND LECTURES (in the past 10 years)

2009	*Driven microfluidic systems*, CECAM Workshop, Dublin
2010	*Complex Depletion Forces*, DPG Spring Meeting, Regensburg
2011	*The Unbearable Heaviness of Colloids*, Plenary Lect., 8th Liquid Matter Conf., Vienna
2012	*Physics of Complex Colloids*, 'E. Fermi' school, 184th course, Varenna (5 lectures)
2013	*Heat transfer at small scales*, CECAM Workshop, Zaragoza
2014	*Settled and unsettled issues in particle settling*, 13th Swiss Soft Days, ETH Zurich (Opening Plenary Lecture)
2015	*Soft Matter in external fields and in non-equilibrium conditions*, Debye Institute for Nanomaterials Science, Utrecht (10 h. lectures)
	Blending imaging with scattering, 18th Dutch Soft Matter Meeting, Eindhoven (Opening Plenary Lecture)
2018	*Thermal Forces*, CECAM workshop on 'Phoretic Effects at the Nanoscale', Lausanne
	Sedimentation & Thermophoresis, CISM, Intern. Centre for Mechanical Sciences, Course 1802 on 'Transport Phenomena in Complex Fluids' , Udine (8h. lectures)

In the past decade, I have also been invited to give about 20 international seminars.

SCIENTIFIC PRODUCTION

Field of research and general bibliometric data. My research activity has mostly been devoted to the experimental study of the physics of soft matter and complex fluids, covering a rather wide range of topics. So far, I have published approx. 120 peer reviewed papers that have obtained more than 4500 citations, corresponding to a Hirsch index h=35, on the following main topics:

a) Electric birefringence (Kerr effect) in complex fluids;
b) Sedimentation and equation of state of colloidal suspensions;
c) Translational and rotational Brownian dynamics of particle dispersions;
d) Depletion forces in colloidal suspensions;
e) Association and crystallization processes in protein solutions;
f) Thermophoresis (diffusion driven by thermal gradients) in colloidal and biological fluids;
g) Pickering (solid-stabilized) emulsions;
h) Colloidal aggregation and gelation in normal and micro-gravity conditions;
i) Novel optical correlation and particle velocimetry methods.
j) Restructuring and ageing in colloidal and biopolymer gels.

10 selected recent publications

1. **R. Piazza**, S. Buzzaccaro, E. Secchi, A. Parola, *What buoyancy really is. A generalized Archimedes' principle for sedimentation and ultracentrifugation* Soft Matter **8**, 7112-7115 (2012)
2. E. Secchi, T. Roversi, S. Buzzaccaro, L. Piazza, and **R. Piazza**, *Biopolymer gels with "physical" cross-links: gelation kinetics, aging, heterogeneous dynamics, and macroscopic mechanical properties*, Soft Matter **9**, 3931 (2013)
3. S. Buzzaccaro, E. Secchi, and **R. Piazza**, *Ghost Particle Velocimetry: Accurate 3D Flow Visualization Using Standard Lab Equipment* Phys. Rev. Lett. **111**, 048101 (2013)
4. **R. Piazza**, *Settled and unsettled issues in particle settling*, Rep. Progr. Phys. **77**, 056602 (2014)
5. E. Secchi, S. Buzzaccaro, and **R. Piazza**, *Time-evolution scenarios for short-range depletion gels subjected to the gravitational stress*, Soft Matter **10**, 5296-5310 (2014)
6. A. Parola, R. Piazza, and V. Degiorgio, *Optical extinction, refractive index, and multiple scattering for suspensions of interacting colloidal particles* J. Chem. Phys. **141**, 124902 (2014)
7. E. Lattuada, S. Buzzaccaro, and **R. Piazza**, *Colloidal Swarms Can Settle Faster than Isolated Particles: Enhanced Sedimentation near Phase Separation*, Phys. Rev. Lett. **116**, 038301 (2016)
8. E. Secchi, R. Rusconi, S. Buzzaccaro, M. M. Salek, S. Smriga, **R. Piazza**, and R. Stocker, *Intermittent turbulence in flowing bacterial suspensions*, J. Roy. Soc. Interf. **13**, 20160175 (2016)
9. E. Lattuada, S. Buzzaccaro, and **R. Piazza,** *Thermophoresis in self-associating systems: Probing poloxamer micellization by opto-thermal excitation*, Soft Matter **15**, 2140 (2019)
10. Z. Filiberti, **R. Piazza**, and S. Buzzaccaro, *Multiscale relaxation in aging colloidal gels: From localized plastic events to system-spanning quakes*, Phys. Rev. E **100**, 042607 (2019)

C) Books and book chapters (in English)

2011 **R. Piazza**, *Soft Matter: that stuff that dreams are made of*, Springer-Verlag, Dordrech, (*reviewed on Physics Today, December 2011*).

2014 **R. Piazza**, *Optical Correlation Techniques for the Investigation of Colloidal Systems*, in 'Colloidal Foundations of Nanoscience', D. Berti and G. Palazzo edit., Chap. 10, Elsevier, Amsterdam.

2017 **R. Piazza**, *Statistical Physics: A Prelude and Fugue for Engineers*, Springer Int. Publ. *(reviewed on Physics Today, October 2017)*