

# **Gino Mariotto: Curriculum Vitae**

Birthdate: July 27<sup>th</sup>, 1950.

Birthplace: Arcole (Verona) Italy.

## **Education**

Università degli Studi di Padova, Padova, Italy

Degree awarded: Laurea in Fisica, July 19<sup>th</sup>, 1974.

## **Academic position**

Full professor of Experimental Physics (2006 – present) at the Faculty of Mathematical, Physical and Natural Sciences/Department of Computer Science of the University of Verona.

## **Academic positions held at the University of Trento**

Full Professor of Experimental Physics (2000 – 2006) at the Engineering Faculty;

Associate Professor of General Physics (1995 – 2000) at the Engineering Faculty;

Associate Professor of Solid State Physics (1990 – 1995) at the Faculty of Sciences;

Associate Professor of Solid State Spectroscopy (1985 – 1990) at the Faculty of Sciences;

Assistant Professor (1978 – 1985) at the Faculty of Sciences;

Research fellow (1974 – 1978).

## **Positions held abroad**

- Pontificia Universidade Católica do Rio de Janeiro (PUC-RIO)  
Department of Physics, Rio De Janeiro, Brazil  
Special Visiting Researcher within the Brazilian mobility scientific program “Science without borders” (2013, 2014, 2015 and 2016).
- Pontificia Universidade Católica do Rio de Janeiro (PUC-RIO)  
Department of Physics, Rio De Janeiro, Brazil  
Visiting Scientist within the CNR-CNPQ exchange program (1994, 1996, 1997, 1999, 2001).
- University of Pennsylvania,  
Department of Materials Science and Engineering, Philadelphia, Pennsylvania (USA)  
Visiting scientist (1984, 1986).
- Université Paris XIII , Faculté des Séances, Villetaneuse, France  
Professeur invité (1985).

## **Academic and scientific commitments**

### **Teaching activities**

Starting from the academic year 1975-76 continuous teaching activity at the University of Trento, until October 2006, and at the University of Verona, starting from November 2006.

Member, with the functions of chairman too, of exams and graduation exams commissions.

Tutor and thesis supervisor of students of the degree course (Master) in Physics and of the PhD in Physics.

Also counter-thesis supervisor of students of the degree and PhD in Physics and, also, in Materials Science, presented at Italian and foreign universities.

Member of local and national commissions for the final PhD examinations.

Monographic courses on vibrational (Raman) spectroscopy offered to PhD students in Physics and Materials Science of Italian universities (Padua / Trento, Modena, Verona) and abroad (PUC-Rio de Janeiro, Campinas), and, also, held in the occasion of international schools and "workshops" (Riga, Kyoto, Hannover, and Dakar).

Moreover, by invitation of the Organizing Committee of the "Winter College on Spectroscopy and Applications", a course held on "Raman spectroscopy in nanostructured systems", at the International Centre for Theoretical Physics "Abdus Salam" of Trieste, in January 1999.

### **Institutional and organizing activities**

Member of several Commissions of the Department, of the Faculty and of the University:

Board member of the Physics Department of the Trento University, and deputy Director of the same Department between 1996 and 2000.

Delegate of the Engineering Faculty Dean to the Students Orienting between 1997 and 2004.

Member of the evaluation commissions in the occasion of university competitions for new academic positions of assistant professor, associate professor and full professor on 1992, 1993, 1994, 2004, 2010, 2011, 2014, 2015, 2016, 2017 and 2018.

Board member of the Informatics Department and of the Faculty of Sciences of the University of Verona, since November 2006,

Council member of the research PhD in:

- “Physics” of the University of Trento between 1987 and 2006;
- “Nanotechnologies and Nanomaterials for bio-medical applications” of the University of Verona between 2008 and 2013;
- “Nanosciences and Advanced Technologies” of the University of Verona starting from 2014.

Member of the evaluation commissions in the occasion of admission exam to the 12th and 16th cycles of PhD in Physics at the University of Trento.

Member or Chair of the evaluation commissions in the occasion of PhD admission exam to the 25<sup>th</sup>, 26<sup>th</sup>, 27<sup>th</sup>, 28<sup>th</sup>, 29, 30<sup>th</sup>, 31<sup>th</sup>, and 32<sup>th</sup> cycles at the University of Verona.

Chair of the Committee of the “Area CIVR 02 – Physical Sciences”, between 2008 and 2011.

Group leader and chief of the Micro-Raman Spectroscopy Laboratory at the Department of Informatics, since 2007.

Delegate of the Rector of the University of Verona regarding the health and the safety in the workplaces, since February 2014.

### **Participation in Scientific/Organizing Committees of National and International Conferences**

- Chairman of the international Workshop on "Beta alumina: the next decade. New directions in science and technology" in September 1987.
- Co-organizer of the N.A.T.O. Advanced Research Workshop on "Fast Ion Transport in Solids. Belgirate 2", held in Belgirate (Novara, Italy) in September 1992;
- co-organizer of the “First Italian Meeting on Light Emitting Silicon (INSEL 1993)”, held on March 1993 in Trento.
- Co-organizer of the “First International Meeting on Electrochromism (IME-1)” held on April 1994 in Murano (Venice).
- Co-organizer of the annual meeting of the “Semiconductors and Insulators” group of the National Institute of the Condensed Matter Physics, held on January 1997 in Trento.
- Co-organizer of the International Conference on the “Applications of Conducting Polymers: Batteries, Electrochromics, Supercapacitors and Other Devices”, held on April 1997 in Rome.

During the recent years:

- Member of the Scientific Committee of Symposium O “Synthesis, processing and characterization of nanoscale multi-functional oxide films IV”, E-MRS 2013 - Spring meeting held on May 27<sup>th</sup>-31<sup>th</sup>, 2013 in Strasbourg, France.
- Member of the Scientific Committee of Symposium P “Advances on functional doped glasses: technologies, properties and applications”, E-MRS 2014- Fall meeting held on September 15-19, 2014 in Warsaw, Poland.
- Symposium N “Synthesis, processing and characterization of nanoscale multifunctional oxide films V”, E-MRS 2015 - Spring meeting held on May 11<sup>th</sup>-15<sup>th</sup>, 2015 in Lille, France.
- Member of the Scientific Committee of the XIV Brazil MRS Meeting held on September 27 – October 1<sup>st</sup>, 2015 in Rio de Janeiro, Brazil.

## **Participation in Technical and Scientific Committees**

Member of the Scientific Committee of the “National discussion group for Raman Spectroscopy and non-linear effects” (GNSR) during the first half of the nineties.

Member of the Scientific Committee of the “Institute of Inorganic Advanced Methodologies” of the National Council of Research (IMAI-CNR) in Montelibretti (Roma), between April 1996 and January 2001.

Member of the scientific committee of Veneto Innovazione, representing the University of Verona, starting from November 2007.

Member of the Technical and Scientific Committee of Veneto Nanotech SCPA, representing the University of Verona, starting from December 2007.

Member of the “Assemblea dei Soci di CIVEN, representing the University of Verona, starting from June 2009.

Member del Technical and Scientific Committee of CIVEN, representing the University of Verona, starting from November 2009.

Member of the monitoring and evaluation commission of Veneto Region, starting from 2012.

Member of the Technical and Scientific Committee of the experimental facility, named “Centro di Coordinamento Grandi Attrezzature”, at University of Verona, between January 2012 and September 2015.

## **Participation in national and international research projects**

### **A) Projects funded by the European Union (EU)**

– BRITE-EURAM (B/E 2154/92) project entitled "Development of nano-structured functional ceramic/metal composites", funded by the EU Commission with a contract (EU-Contract No. BRE2-CT92-0252) of ECU 713,500.00.

The Trento University share has been ECU 225,000.00.

– “STRING” – Contract NMP3-CT-2006-032636, project entitled " Structured Scintillators for Medical Imaging ", funded by the EU Commission with a contract (EU-Contract n° 032636) of € 2,300,000.00.

The Verona University share has been € 142,800.00.

– “SOLSA” – SC5-11c-11d-11e-2015, project (code 689868) entitled “Sonic Drilling, with Mineralogy and Chemistry On-Line-On-Mine-Real-Time” ([www.solsa-mining.eu](http://www.solsa-mining.eu)), funded by the European Commission through Horizon 2020 research and innovation programme (grant agreement No 689868) of € 9,775,488.00.

The Verona University share is € 972,695.00 €.

### **B) Projects funded by the Italian Ministry of University and Research (MIUR)**

– Project of Relevant National Interest (PRIN) entitled: “Nanostructures induced by ion bombardment” funded within the program PRIN-COFIN 98.

The research program of the Trento University unit was focused on the “Study by means of positron, vibrational and optical spectroscopies of nanostructures induced by ion bombardment”, and its share has been € 64,537.00.

– PRIN entitled “NATI - Nano areas transfer by ions ", PRIN-COFIN 2000.

The research program of the Trento University unit was focused on the "Study by means of spectroscopic techniques of the exfoliation mechanisms and of the nano areas direct bonding by ions", and its share has been € 67,139.00.

– PRIN entitled “Nanostructured amorphous ternary systems", PRIN-COFIN 2002.

The research program of the Trento University unit was focused on the topic entitled "Nanostructured amorphous ternary systems: study of microstructural properties by means of vibrational and positron spectroscopies” and its share has been € 65,500.00.

– PRIN entitled “Advanced nanocomposite membranes and innovative electrocatalysts for durable polymer electrolyte membrane fuel cells, NAMED-PEM”, PRIN-COFIN 2010-11.

The research program of the Verona University unit was focused on the “Structural and vibrational spectroscopy characterization of advanced nanocomposite membranes and innovative electrocatalysts for durable polymer electrolyte membrane fuel cells”, and its share has been € 98,093.00.

## Short research profile

Experimental physicist with more than 40 years of experience on vibrational (Raman, micro-Raman and FT-IR) and optical (absorption and photoluminescence) spectroscopies, extensively exploited to investigate solid state systems either crystalline or amorphous (or glassy form).

The research activity is documented by 265 publications in international, peer-reviewed scientific journals of Physics and of Chemical Physics. The experimental activities have been focused mainly of basic topics of the Solid State Physics with specific regard to structural and dynamical properties of disordered solids and nanostructured materials. At first it has been addressed to the study of the vibrational dynamics of ionic compounds characterized by a high disorder degree of structural/compositional properties and, later on, to the investigation of the optical properties of transition metal ions, present as impurities in the same compounds. In carrying out his research activity he extensively used the vibrational (i.e.: Raman scattering and IR absorption) and optical (time resolved luminescence) spectroscopy techniques. In carrying out his experimental research activity he never neglected to consider the potential impact on the applications. This is proven by his prolonged activity in the field of superionic conductors, also known as solid electrolytes, due to their use in solid-state electrochemical (like solid state batteries, ranging from the accumulators for vehicles to pacemakers; gas sensor; solid oxide fuel cells; electrochromic displays; super-capacitors, etc.). This interest for the possible applications of his research results progressively forced him to deal more and more intensively with the study of materials with functional properties of interest for technological applications. In this contest, his later research activity was mainly addressed to the study of nanostructured or dimensionally confined systems, which are characterized by physical properties (mechanical, electrical and optical) such to make them candidates for specific technological applications in the field of micro- and opto-electronics as well as of photonics. In order to carry out his research activities, he has made systematic use of the techniques of micro-optical and vibrational spectroscopy, especially exploited for the study of the nano/micro-structural properties of composite materials and the effects related to them, dedicating himself to the implementation and modification of the measurement equipments. However, the primary interest went to the study of basic aspects of the phenomenology related to the disorder in condensed matter. Beyond the always possible distinctions, all investigations are strictly related to each other, and have as unifying theme of the study of the role that the structural disorder, compositional and dynamic role in defining the physical properties (mechanical, electrical and optical properties) of the solid state systems.

## Main areas of interest

- Structure and vibrational dynamics of ionic materials, crystals and glasses, and ceramic materials.
- Structural and optical properties of transition metal and rare earth doped of beta-alumina crystals.
- Electronic and vibrational properties of metal and semiconductor nano-aggregates in transparent dielectric matrices.
- Vibrational spectroscopy analysis of functional composite materials, based on Si and C, in form of thin films and bulk.
- Quantum confinement effects in nanostructured systems, in particular in zero-dimensional, one-dimensional and two-dimensional structures.

## Publications

Articles in peer reviewed journals about **265** (5 book chapters), with more than **4100** citation and H-index of **33** (ISI source).

Google scholar report (September 13<sup>th</sup> 2018, keyword: Gino Mariotto): total number of citations = **5174**, H index = **38**, i-10 index = **123**.

Verona, September 24<sup>th</sup>, 2018.