

PERSONAL DATA

- Place of birth: Messina
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SCIENTIFIC PROFILE

- She graduated in Physics on 03.22.1991 at the Department of Physics, University of Messina with a score of 110/110 cum academic laude, discussing a thesis entitled "Dynamical properties and relaxation processes in viscoelastic gels".
- PhD in Physics, VII cycle at the Physics Department of Messina University, passing the final exam on 02/11/1995 discussing an experimental thesis entitled "Dynamical properties in associated liquids."
- From 01/01/1995 to 31/12/1995, scholarship from the National Institute for the Physics of Matter (INFM) n. ESF 15 05/95-1 for graduates in Physics, in the field of liquids and amorphous materials, at the Department of Physics of Messina University.
- From 01/03/1996 to 02/28/1997, scholarship of the Regional Committee for Nuclear Research and the Structure of Matter (CRRNSM) for young graduates in Physics on the following topic: Vibrational Dynamics in complex liquids studied by Raman spectroscopy, at the Department of Physics of Messina University.
- From 01/04/1997 to 31/03/1998, post-doctoral scholarship from the National Institute for the Physics of Matter (INFM) (contract no. 47 - C1 on August 7, 1996) at the INFM Research Unit of Messina.
- From 01-04-1998 to 31-03-1999, research contract of Scientific Research of the National Institute for the Physics of Matter (INFM) on the research topic: calorimetry at very low temperatures of glasses and amorphous systems" at the INFM Research Unit of Messina.
- From 01-12-1999 to 30-10-2001, university research contract (DR n. 126 of 19.07.99) scientific area: Physics Sciences (02), scientific-disciplinary B01A and B03X, research title: Spectroscopic studies of the structural and dynamical properties in macromolecular systems confined in nanotubes ", at the Department of Physics, Messina University (passing the comparative evaluation procedure, with the maximum score of 100/100).
- From 02/11/2001 until 28/12/2006, she served as University Researcher, SSD FIS/01 - Experimental Physics) at the Department of Physics, University of Messina.
- In the three academic years 2001/2002, 2002/2003 and 2003/2004 she was representative of the researchers within the Board of the Department of Physics, Faculty of Science Messina University.
- From 29/12/2006 to 30/10/2014 she served as Associate Professor (SSD FIS/01 - Experimental Physics) at the Department of Physics and Earth Science, University of Messina.
- From 01/11/2014 to 18/01/2019 she served as Full Professor (SSD FIS/01 - Experimental Physics, SC 02/B1) at the Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences (MIFT) of the University of Messina.
- From 19/01/2019 to 07/02/2022, she served as Full Professor (SSD FIS/01 - Experimental Physics, SC 02/B1) at the Department of Chemical, Biological, Pharmaceutical and Environmental Sciences (CHIBIOFARAM) of the University of Messina.
- From 08/02/2022 until today, she is serving as Full Professor (SSD FIS/01 - Experimental Physics, SC 02/B1) at the Department Mathematical and Computer Sciences, Physical Sciences and Earth Sciences (MIFT) of the University of Messina
- From 01/10/2015 to 30/09/2018, Deputy Director of the Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences (MIFT) of the University of Messina.
- Member of the National Commission for National Scientific Qualification (ASN) for the functions of university professor of the first and second level of the Competition Sector 02 / B2 - Theoretical physics of matter, appointed with Directorial Decree no. 2372 of 31/10/2016.
- From 01/10/2019 to date, she is Coordinator of the PhD in Physics (D.R. of 08/05/2019) - University of Messina.

Prof. V. Crupi has carried out the following activities for the organization, direction and coordination of research groups and initiatives in the field of education and science:

- Component of Research Programs of the University (PRA) annually launched at the University of Messina (Financial Years 2001-2002-2003-2004).
- Member of the Scientific Research Program of Relevant National Interest (PRIN) entitled "Confined Water: structure and dynamics" at the research unit of Messina in "Spectroscopic studies of the dynamic properties of water confined in restricted geometries" (COFIN 2003 financial years 2003-2004).
- Part of the Area Committee for the Physical Sciences (02) for the evaluation of research programs of the University (Financial Year 2005-2006) at the University of Messina (DR 07/02/2005).
- Scientific Coordinator of the Interdisciplinary Research Program of the University 2006/2007 (PRA-interdisciplinary) entitled "Investigation of the physical-chemical, structural and dynamic properties of carriers systems for drug delivery."
- Responsible of the Scientific research unit of Messina (Cofin 2007) in the Programme of Scientific Research of National Relevant Interest (PRIN) entitled: "Identification of fields of application of innovative non-destructive and microdistruittive methods in the analysis of ceramic finds of historical and archaeological interest through systematic comparison with traditional methods."
- Reviewer for the evaluation of research projects of neutron spectroscopy NCNR-NIST (National Institute of Standards and Technology - Centre for Neutron Research - U.S. Department of Commerce)
- Reviewer of several international journals of Elsevier Science (NL), Institute of Physics (UK), American Chemical Society (USA), American Institute of Physics (USA), Taylor & Francis Group (UK), of Hindawi Publishing Corp. (USA), of Wiley (UK).
- Participation in editorial committees of journals, editorial series, encyclopaedias and treatises of recognized prestige: Journal of Spectroscopy (Hindawi Publishing Corporation); Coatings (MDPI).
- Member of the Scientific Committee of the "Euro-Mediterranean Hydrogen Technology Conference (EmHyTeC 2012)" (11-14 September 2012, Hammamet (Tunisia)).
- Member of the Scientific Committee of the international summer school: "Environment-Material Interaction (ENVIMAT 2014)" (14-18 July 2014, University of Calabria, Cosenza).
- Member of the Scientific Committee of the congress "International Green Energy Conference (InGEC2016 & EmHyTeC2016)" (11-12 May 2016, Tunis (Tunisia)).
- Member of the Organizing Committee of the IX National Congress of Archaeometry A.I.Ar. (Italian Association of Archaeometry) "A bridge between art and science: past, present and future perspectives", Arcavacata di Rende, 9-11 March 2016.
- Chairperson of the "Characterization and diagnostics" session of the IX National Congress of Archaeometry A.I.Ar. (Italian Association of Archaeometry) "A bridge between art and science: past, present and future perspectives", Arcavacata di Rende, 9-11 March 2016.
- Management, Member of the Scientific Committee and Member of the Organizing Committee of the National School "Science and Cultural Heritage - from Non-Invasive Analysis to 3D Reconstruction", organized by the Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences (MIFT), Messina - Valle D'Agrò, 19-23 September 2016.
- Organizer and chairperson of the Special Session "The " Spatial evolution "of" Metrology for Archaeology "": From Large Facilites to handheld equipments" for the IMEKO TC4 International Conference on Metrology for Archeology and Cultural Heritage, Turin, 19-21 October 2016.
- Management, Member of the Scientific Committee and Member of the Organizing Committee of the National School "Science and Cultural Heritage - from Non-Invasive Analysis to 3D Reconstruction", Messina - Valle D'Agrò, 19-23 September 2016.
- Member of the Scientific Committee of the International Conference YOCOCU 2018 - Dialogues in Cultural Heritage, Matera, 23-25 May 2018.

- Organizer and chairperson of the Special Session "Special Session on Pigments and palettes through the Ages: science of painting techniques" for the IMEKO TC4 International Conference on Metrology for Archaeology and Cultural Heritage, Florence, 4-6 December 2019.
- Section Editor of the book *Handbook of Cultural Heritage Analysis Vol I*, 2022.
- Ordinary Member and Secretary of the "Accademia Peloritana dei Pericolanti"- Class I of Physical, Mathematical and Natural Sciences, University of Messina.

TEACHING ACTIVITY

Prof. Crupi holds the following teachings in Bachelor's and Master's degree in Physics at the Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences (MIFT) - University of Messina. As part of "Percorsi Abilitanti Speciali (PAS)", she held the teaching of "Laboratorio di didattica della Fisica (IV modulo): Metodologie di insegnamento del Laboratorio di Fisica Moderna (40 hours - 4 CFU) Qualification class C290 - LABORATORY OF PHYSICS AND APPLIED PHYSICS.

As part of the PhD committee in Physics, Messina University, Prof. Vincenza Crupi holds the following teaching: Structural and dynamic characterization of complex systems by means of spectroscopic techniques (1CFU).

Prof. Vincenza Crupi is currently a member of numerous boards of exams in undergraduate courses of MIFT Department of Messina University. She is also supervisor of experimental thesis of Bachelor's and Master's degree in Physics and of PhD in Physics.

Prof. Vincenza Crupi was part of the examination board (DR n. 1733/2012, 2 July 2012) of Tirocinio Formativo Attivo (TFA) - Class A038 (Physics), Bando AA 2011-2012 D.R. 1159/2012 03/05/2012 25426 Prot. integrato DR 1218/2012 prot. 27523, 10/05/2012.

SCIENTIFIC ACTIVITY

The research activity of Prof. V. Crupi was mainly aimed at the knowledge of the structural properties, dynamics and ultrafast relaxation processes in liquid hydrogen bonding (isomeric alcohols and their isomorphs, carboxylic acids and their esters, linear and star polymers and their solutions, water), and at the study of the peculiar behaviour that on nanoscale confinement (silicate glasses and natural and synthetic zeolites) induces on such systems as a result of a competitive balance between interfacial effects and reduced dimensionality. In addition, more recently, the research has been focused in the study of the chemical and physical structural and dynamic properties of biological systems, particularly with regard to the systems drug / carriers having suitable characteristics of solubility and stability for their application in the pharmaceutical field. The attention was mainly paid to the inclusion complexes with both native and modified cyclodextrins, which can encapsulate different active principles and able to control the release of them. The interpretation and correlation of the experimental data has provided comprehensive survey of the system investigated, from which it is possible to formulate hypotheses about the nature of the complex, to define the geometry and clarify the nature of involved intermolecular interactions.

The simultaneous use of multiple experimental methods, such as Rayleigh and Raman light scattering, the Fourier transform infrared absorption (FT-IR), neutron scattering (elastic, quasi-elastic and inelastic) proved particularly valuable for understanding the complex phenomena inherent in these issues, due to the different regions of the involved plane (k , ω).

The scientific activity of Prof. Crupi was also paid to the development and application of several physical methods of experimental investigation, such as Raman spectroscopy, Fourier transform Raman (FT-Raman), Fourier transform infrared absorption (FT-IR) and X-ray fluorescence, small angle neutron scattering (SANS), neutron diffraction (ND) and absorption spectroscopy with synchrotron radiation (SR-XAS) in the field of Cultural Heritage. The study was intended mainly for chemical-physical and technological survey of various types of archaeological samples in order to identify the proper historical and geographical context.

In particular, the main themes characterizing the research activity are listed below:

- 1) Study of cooperative phenomena in hydrogen bond systems.
- 2) Study of hydration processes in polymers.
- 3) Dynamic and structural properties of confined systems (host/guest).
- 4) Spectroscopic investigations in the field of cultural heritage and medical physics.

As main proposer and /or user of experiments, Prof.ssa V. Crupi has carried out part of her research activity at highly qualified international facilities: Rutherford Appleton Laboratory (RAL), Oxford (UK), Institut Max Von Laue-Paul-Langevin (ILL), Grenoble (F), at the European Synchrotron Radiation Facility (ESRF), Grenoble (F), Laboratoire Léon Brillouin (LLB), Saclay (F), Helmholtz-Zentrum Berlin für Materialsen und Energie (BENSC), Budapest Neutron Center (BNC), ELETTRA Sincrotrone - Trieste.

Prof. V. Crupi has produced more than 200 publications in international scientific journals surveyed by the Science Citation Index ISI. She also produced over 200 full contributions in national and international conference proceedings, oral contributions and communications at national and international conferences. TOTAL bibliometric indicators (SCOPUS international database): h-index: 31, number of total citations > 3000.