PERSONAL INFORMATION

Adolfo Speghini



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NANOMATERIALS RESEARCH GROUP

ACTUAL POSITION

Full Professor, General and Inorganic Chemistry
Nanomaterials Research Group
Strada Le Grazie 15, Verona, Italy

PERSONAL WEB SITES

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EDUCATION

1990 - 1992	PhD degree in Chemistry, University of Padova, Padova, Italy
1982 - 1988	Master's degree in Chemistry (Summa cum Laude), University of Padova, Italy

PROFESSIONAL EXPERIENCE

2019 – 2025	Chairman of the Academic Board of the PhD Course "Nanosciences and Advanced Technologies", Doctoral School of the University of Verona, Italy.
2019 – today:	Full Professor, Inorganic Chemistry, University of Verona, Italy
2012 – today	Research Associate to the Institute of Applied Physics "Nello Carrara" (IFAC), Italian National Research Council, Research Area of Florence, Sesto Fiorentino, Florence, Italy.
2006 – 2019	Associate Professor, General and Inorganic Chemistry, University of Verona, Italy
1997 – 2006	University Researcher, Inorganic Chemistry, University of Verona, Italy
1994 – 1996	Postdoctoral fellowship, Chemical Sciences, University of Verona, Italy
2001 – 2004	Member of the Board of Directors, University of Verona, Italy.
2017 – 2021	Member of the Quality Assurance Group (AQ) for the three-year degree in Biotechnology, University of Verona, Italy
2013 – 2018	Departmental Responsible for Student Orientation, University of Verona, Italy
2012 – 2020	Member of the Board of Directors of the Science and Technology of Materials Italian Consortium, Florence, Italy.
2013 – 2016	Chairman of the Academic Board of the PhD Course "Nanotechnology and Nanomaterials for Biomedical Applications", University of Verona, Italy.
2012 – 2013	Member of the Board of Directors, Veneto Inter-University Consortium for Nanotechnology, Venezia, Italy.

PERSONAL SKILLS

Mother tongue: Italian

Other language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
English C2	C2	C2	C2	C2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Languages

TEACHING ACTIVITIES

Lectures in University Degree Courses

2020 - today: *Nanomaterials for Biotechnology and Green Chemistry*, Master's degree in Biotechnology for bioresources and sustainable development, University of Verona (Verona, Italy)

2023- today: *Elements of Physical Chemistry*, Bachelor's degree in Biotechnology, University of Verona (Verona, Italy)

2017- 2023: *Physical Chemistry*, Bachelor's degree in Biotechnology, University of Verona (Verona, Italy)

2014 – 2018: *Nanomaterials Chemistry and Laboratory*, Master's Degree in Science and Technology of Bio and Nanomaterials, University of Verona (Verona, Italy) and Ca' Foscari University of Venice (Venice, Italy)

2001 – today: *General and Inorganic Chemistry*, Bachelor's Degree in Viticultural and Oenological Science and Technology, University of Verona (Verona, Italy)

Seminars to PhD students (last 5 years)

2024, June: Seminar to PhD students in Chemical Sciences, University of Ferrara (Italy) with a presentation on "Luminescent nanomaterials for optical thermometry".

2020 - today: Many Seminars to the students of the Doctoral School of Natural and Engineering Sciences, University of Verona, on topics about "Nanomaterials for bioimaging and theranostics".

International Schools, seminars and teachings at National and International Universities

2018: "Teaching Staff Mobility" program, at Humboldt-Universitat zu Berlin, Berlin, Germany. Topic: Luminescent nanostructured materials.

2017: Seminars at the course "Functional nanostructures: from microelectronics to biomedicine", Catania High School, University of Catania, Italy (9 hours).

2017: "Teaching Staff Mobility" program, at Humboldt-Universitat zu Berlin, Berlin, Germany. Topic: Multifunctional nanostructured materials based on lanthanide ions: possible applications in NanoMedicine ".

2016: "Teaching Staff Mobility" program, at Humboldt-Universitat zu Berlin, Berlin, Germany. Thematic: Luminescent nanostructured materials for Nanomedicine.

2015: "Teaching Staff Mobility" program, at Humboldt-Universitat zu Berlin, Berlin, Germany. Thematic: Multifunctional nanosized materials.

2014: "Teaching Staff Mobility" program, at Humboldt-Universitat zu Berlin, Berlin, Germany. Thematic: "Luminescent nanomaterials for modern applications".

2013: Seminars at the "XIIIth International Krutyn Summer School 2013 - Advanced photo- and electrically active molecular and nano-materials at the interface with living systems: challenges and promises for the future bio-medicine", organized by Prof. Marek Pietraszkiewicz (Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland), Krutyn, Poland.

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2013 "Teaching Staff Mobility" program, at Humboldt-Universitat zu Berlin, Berlin, Germany. Topic: "Nanostructured materials for biomedical applications".

2012 Seminars at the Doctoral School "Modeling, computational simulation and multiscale characterization for materials and life sciences", within the "Course 4: Experimental techniques for Materials and Bio-molecules characterization. 5: Thermal and optical properties", University of Modena and Reggio Emilia, Italy.

Committee Member for PhD award

2019 Member of the Selection Committee for the award of the title of Ph.D. in Chemical Sciences and Technologies, University of Cagliari, Italy.

2012, 2017 Member of the Commission for the awarding of the title of Ph.D. in Chemical Sciences, Ca' Foscari University of Venice, Italy.

2014 Member of the Selection Committee for the awarding of the title of PhD in Materials Science and Technology, University of Catania, Italy

2013 Member of the Selection Committee for the awarding of the title of Ph.D. in Chemical Sciences and Technologies, University of Cagliari, Italy.

2013 Member of the Commission for the awarding of the PhD title for a thesis titled: "Lanthanide-based dielectric nanoparticles for upconversion luminescence", supervised by Dr. Cinta Pujol (URV) and Prof. Dr. Concepción Cascales (ICMM-CSIC), Departamento d'Enginyeria Electrònica, Elèctrica i Automàtica, Universitat Rovira i Virgili, Tarragona, Spain.

RESEARCH ACTIVITIES

Research activity (in brief)

The research activity was mainly focused on the preparation and study of structural, vibrational and spectroscopic properties of various types of inorganic materials. Materials in glassy form, of single crystal and nanocrystalline, were considered activated with lanthanide ions and luminescent transition metals. Attention was paid both to the structural, vibrational and spectroscopic aspects typical of basic research and to those aimed at possible technological applications. In particular, luminescent materials have been investigated for laser applications, such as phosphors or optical contrast agents for applications in biomedicine, such as optical imaging.

Many works have been aimed at the development and optimization of nanocrystalline luminescent material synthesis methods. These methods have been oriented towards obtaining desired properties for the materials, such as for example a desired size of the crystallites (for example less than 100 nm) or morphological properties, such as a spherical or elongated shape. For this purpose, mainly wet preparative methods have been studied, such as for example the co-precipitation, the sol-gel technique and the solvothermal method. These methods have allowed to suitably guide the synthesis in order to obtain the desired crystalline phase, correctly activated with luminescent metal ions, both in the form of powders and in colloidal dispersion in the case of preparations for the synthesis of inorganic nanoparticles. Using organic coating materials, inorganic nanoparticles in dispersions with high colloidal stability were obtained in an aqueous environment. These colloidal dispersions have proven to be effectively usable as luminescent probes for nanomedicine applications, both in-vitro and in-vivo.

Many investigations have been aimed at the study and development of luminescent materials with emission in the ultraviolet, visible and near infrared spectral regions. For this purpose, the absorption and emission properties of crystals of germanates, borates, phosphates, vanadates, titanates and niobates activated with luminescent lanthanide ions, such as Yb^{3+}, Er^{3+} and Nd^{3+}, were investigated. With the same experimental investigation techniques, the spectroscopic properties in the optical region of glassy systems doped with luminescent lanthanide ions, such as for example Er^{3+}, Dy^{3+}, Tm^{3+}, Eu^{3+}, were also investigated. Spectroscopic investigations have yielded interesting information regarding the local surroundings of the metal ion. In particular, chemical-physical details have been obtained

concerning electronic transitions characteristic of optically active ions accommodated in host matrices, of considerable utility for considering these materials in technological applications in the field of photonics.
Some investigations have been directed to the study of the vibrational properties of materials, both crystalline and of a glassy nature, with experimental methods such as infrared or Raman spectroscopy. This information has proved invaluable both from the point of view of the knowledge of the vibrational states of the investigated system and for an investigation into the dynamics of decay of the excited states of luminescent metal ions by multi-ring decay.
Particular attention was paid to the study of the so-called upconversion process concerning the generation of light emission (usually in an ultraviolet region, visible or near infrared) following excitation with lower energy radiation (usually in the near infrared) in systems nanocrystalline oxides or fluorides. Yttria, Lutetium or Gadolinium oxide nanoparticles activated with Yb^{3+}, Er^{3+} or Tm^{3+} demonstrated an efficient upconversion emission following excitation with laser at 980 nm. Other crystalline structures, such as garnets, activated with luminescent lanthanide ions showed an excellent emission of upconversion. Alkaline earth metal fluoride nanoparticles, such as CaF_2 or SrF_2 activated with lanthanide ions, have proved to be particularly promising due to their excellent emission properties in the optical field and the ease in which they can be prepared in stable colloidal dispersion. These nanomaterials proved to be excellent contrast media in the spectral region of the first biological window (from 650 to 1000 nm), thus ensuring good penetration of both the excitatory and the emitted radiation in the case they were incorporated into biological tissues. These materials also showed a particularly intense emission in the ultraviolet region following laser excitation in the near infrared range at 980 nm.

In recent years, research has focused particularly on the development of multi-functional inorganic nanomaterials with possible biomedical applications, exploiting the peculiar luminescent properties of some lanthanide ions. These materials, such as CaF_2 and SrF_2 activated with Gd^{3+}, Yb^{3+}, Tm^{3+} or Er^{3+}, have proved to be interesting not only as luminescent probes but also as contrast agents for the Nuclear Magnetic Resonance (MRI) technique and have also been considered for some studies in-vivo on mice. The luminescence properties of these nanoparticles proved to be useful for detecting the local temperature, with non-invasive methods, for relevant intervals in the biological field, i.e. around body temperature. The usefulness of these nanomaterials to measure temperature by optical thermometry in the first biological window has in fact been demonstrated. The properties of optical thermometry were investigated in CaF_2 or SrF_2 nanoparticles activated with Yb^{3+}, Er^{3+}, Tm^{3+} or Nd^{3+}, using appropriate integrated intensity ratios of emission bands, located in different spectral regions, as thermometric parameters. A suitable architecture of the nanoparticle structure according to a multi-layer system suitably activated with lanthanide ions allows to improve both the emission efficiency and, consequently, the thermometric sensitivity.

Bibliometric indexes (Scopus)

Total number of publications: 354
Number of total citations: > 15500
h-index (Scopus): 64

Research activity at International Research Centers

2019, July-August: Research activity as part of the research project “Upconversion activated photoresponsive nanocomposites” within the Internationalization Program of the University of Verona (Cooperint, outgoing mobility), at the laboratory of prof. Russel J. Compound, Materials Science and Engineering Department, University of Pennsylvania, Philadelphia, USA. The research activity focused on the incorporation of nanoparticles activated with luminescent lanthanide ions in photoresponsive polymers (1 month, visiting scholar).

2018, September: Research activity at the laboratory of prof. Nicola Pinna, Humboldt-Universität zu Berlin, Berlin, Germany. The research activity focused on nanoparticles activated with luminescent lanthanide ions (3 days).

2017, October: Research activity at the laboratory of prof. Fiorenzo Vetrone, Université du Québec, Institut National de la Recherche Scientifique – Énergie, Matériaux et Télécommunications (INRS-EMT) (Varennes, QC, Canada). The experience involved a survey of nanothermometers based on the Raman effect using metal nanoparticles (10 days).

2017, September: Research activity at the laboratory of prof. Nicola Pinna, Humboldt-Universität zu Berlin, Berlin, Germany. The research was carried out on nanocrystalline materials for nanothermometry applications (3 days).

2017, August: Research activity as part of the research project “New Materials for Nanothermometry” as part of the University Internationalization Program, University of Verona, 2016 edition, Staff Mobility Program, carried out at the International Institute Université du Québec, Institut National de la Recherche Scientifique – Energy, Matériaux et Télécommunications (INRS-EMT) (Varennes, QC, Canada). Collaboration with prof. Fiorenzo Vetrone (1 month).

2017, April: Research activity at the group of prof. José Garcia Solé, Departamento de Fisica de Materials, Universidad Autonoma de Madrid, Madrid, Spain, concerning an investigation of the spectroscopic properties of rare earth fluoride nanoparticles (3 days)

2016, August: Research activity at the laboratory of prof. Nicola Pinna, Humboldt-Universität zu Berlin, Berlin, Germany. The research activity involved a survey on multi-functional luminescent nanomaterials (3 days).

2016, May: Research activity at the laboratory of prof. Fiorenzo Vetrone, Université du Québec, Institut National de la Recherche Scientifique – Énergie, Matériaux et Télécommunications (INRS-EMT) (Varennes, QC, Canada). The experience involved the development of nanothermometers for technological applications (10 days).

2015, August: Research activity at the laboratory of prof. Nicola Pinna, Humboldt-Universität zu Berlin, Berlin, Germany. The research activity involved a study of multifunctional nanomaterials for biomedicine applications (5 days).

2015, October: Research activity titled “Lanthanide doped alkaline-earth fluoride nanoparticles for multimodal imaging and nanothermometry”, in the context of the University Call, University of Verona, “Cooperint” 2014 edition, type B: Staff Mobility Program. The project involved a collaboration with prof. Fiorenzo Vetrone, Institut National de la Recherche Scientifique, Université du Québec, Canada (10 days).

2014, August: Research activity at the group of prof. Ulises, Caldino, Departamento de Fisica de la Universidad Autonoma Metropolitana – Iztapalapa, Mexico City, Mexico. The research activity involved luminescence experiments on glassy materials activated with lanthanide ions (12 days).

2014, July: Research activity at the laboratory of prof. Nicola Pinna, Humboldt-Universität zu Berlin, Berlin, Germany. Experience has focused on the characterization of oxide and fluoride materials with luminescence properties (5 days).

2013, October-November: Research activity at the group of prof. Fiorenzo Vetrone, Université du Québec, Institut National de la Recherche Scientifique – Énergie, Matériaux et Télécommunications (INRS-EMT) (Varennes, QC, Canada). The experience involved optical spectroscopy experiments of nanomedicine multi-functional nanostructures (8 days).

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2013, September: Research activity at the laboratory of prof. Nicola Pinna, Humboldt-Universität zu Berlin, Berlin, Germany. The experience focused on morphological investigations of nanoparticles based on oxides and fluorides, activated with lanthanide ions (5 days).

2013, March: Research activity at the laboratory of prof. José Garcia Solé, Departamento de Fisica de Materials, Universidad Autonoma de Madrid, Madrid, Spain, concerning an investigation of the spectroscopic properties of rare earth fluoride nanoparticles (3 days)

2012, November: Research activity at the laboratory of prof. Fiorenzo Vetrone, Université du Québec, Institut National de la Recherche Scientifique – Énergie, Matériaux et Télécommunications (INRS-EMT) (Varennes, QC, Canada). The experience involved investigations on fluoride-based nanoparticles for upconversion processes (10 days).

2011, October: Research activity at the group of prof. Ulises, Caldino, Departamento de Fisica de la Universidad Autonoma Metropolitana - Iztapalapa, Mexico City, Mexico, as part of the research project in the Scientific Cooperation agreement between the Italian CNR and the Mexican National Research Council (CONACYT) - Three-year program 2009/2011, titled "White light generation in nanocrystalline oxides activated with metallic ions". Experience has focused on the study of the luminescent properties of oxide materials activated with luminescent lanthanide ions (8 days).

2010, September: Research activity at the group of Dr. Hreniak Dariusz, Institute of Low Temperature and Structure Research of the Polish Academy of Sciences, Wroclaw, Poland, as part of the research project in the Scientific Cooperation Agreement between the Italian CNR and the Polish Academy of Sciences (PAN 132.05.2), titled "Thin films of rare-earth compounds as luminescent concentrators for the improvement of the conversion efficiency of solar cells" (9 days).

2010, April: Research activity at the group of prof. Ulises, Caldino, Departamento de Fisica de la Universidad Autonoma Metropolitana - Iztapalapa, Mexico City, Mexico, as part of the research project in the Scientific Cooperation agreement between the Italian CNR and the Mexican National Research Council (CONACYT) - Three-year program 2009/2011, titled "White light generation in nanocrystalline oxides activated with metallic ions". The activity involved luminescence experiments on oxide materials in the form of thin layers activated with rare earths (7 days).

2009, September: Research activity at the group of Dr. Hreniak Dariusz, Institute of Low Temperature and Structure Research of the Polish Academy of Sciences, Wroclaw, Poland, as part of the research project in the Scientific Cooperation Agreement between the Italian CNR and the Polish Academy of Sciences (PAN 132.05.2), titled "Preparation and luminescence studies of doped nanostructures of non-linear optical materials" (12 days).

2009, May-June: Research activity at the laboratory of prof. John Capobianco, Concordia University, Montreal, Canada. The experience concerned the optimization of the spectroscopic properties of inorganic materials for applications in biomedicine (10 days).

2008, November: Research activity at the laboratory of prof. John Capobianco, Concordia University, Montreal, Canada. The experience involved luminescence experiments for investigation of spectroscopic mechanisms on compounds activated with lanthanides (10 days).

2008, September: Research activity at the laboratory of prof. Wieslaw Strek, Institute of Low Temperature and Structure Research of the Polish Academy of Sciences, Wroclaw, Poland, as part of the Research Project in the Scientific Cooperation Agreement between the Italian CNR and the Polish Academy of Sciences (PAN 132.05.2), titled "Preparation and luminescence studies of doped nanostructures of non-linear optical materials" (14 days).

2007, October: Research activity at the laboratory of prof. John Capobianco, Concordia University, Montreal, Canada. The experience involved a development of fluorescent nanocrystalline luminescent systems, with particular regard to the spectroscopic properties in the visible and near-infrared region (10 days).

2007, September: Research activity at the laboratory of prof. Wieslaw Strek, Institute of Low Temperature and Structure Research of the Polish Academy of Sciences, Wroclaw, Poland, as part of the Research Project in the Scientific Cooperation Agreement between the Italian CNR and the Polish Academy of Sciences (PAN 132.05.2), titled "Preparation and luminescence studies of doped nanostructures of non-linear optical materials" (10 days).

2007, June: Research activity at the group of prof. José Garcia Solé, Departamento de Fisica de Materials, Universidad Autonoma de Madrid, with a project concerning the study of the spectroscopic properties of nanoparticles of oxides activated with rare earth (6 days)

2007, May: Research activity at the laboratory of prof. John Capobianco, Concordia University, Montreal, Canada. The experience involved a study on the spectroscopic properties of nanoparticles of binary and ternary oxides activated with lanthanides (10 days).

2006, September: Research activity at the group of prof. Wieslaw Strek, Institute of Low Temperature and Structure Research of the Polish Academy of Sciences, Wroclaw, Poland, as part of the project No. 12CH titled "Synthesis and investigations of physicochemical properties of ferroelectric nanostructures doped with rare-earth ions", in the area of the Executive Program of Scientific and Technological Collaboration Italy/Poland of the Ministry of Foreign Affairs (6 days).

2005, September: Research activity at the group of prof. José Garcia Solé, Departamento de Fisica de Materials, Universidad Autonoma de Madrid, Madrid, Spain, concerning an investigation of the spectroscopic properties of oxide crystals activated with rare earths or transition metals (9 days).

2005, May: Research activity at the group of prof. Wieslaw Strek, Institute of Low Temperature and Structure Research of the Polish Academy of Sciences, Wroclaw, Poland, as part of the project No. 12CH titled "Synthesis and investigations of physicochemical properties of ferroelectric nanostructures doped with rare-earth ions", in the area of the Executive Program of Scientific and Technological Collaboration Italy/Poland of the Ministry of Foreign Affairs of the Italian Republic (5 days).

2004, September: Research activity at the group of prof. José Garcia Solé, Departamento de Fisica de Materials, Universidad Autonoma de Madrid, Madrid, Spain, concerning an investigation of the spectroscopic properties of oxide crystals activated with rare earths or transition metals (5 days).

Visiting Professor

2012 (November) Université du Québec, Institut National de la Recherche Scientifique – Énergie, Matériaux et Télécommunications (INRS-EMT) (Varennes, QC, Canada). Host: Prof. Fiorenzo Vetrone.

Scientific responsibility of research projects

2023 -2026: "Optical NanoThermometry using Luminescence and Raman Spectroscopies", PRIN-PNRR, Ministry of the University and Research, Italy.

2021–2024: scientific coordinator of a project on the “Programma Operativo Nazionale”, Italian Ministery of University and Research, titled: “Innovative and ecocompatibile inorganic based nanomaterials for production of sustainable energy”.

2020 – 2021: scientific coordinator of a project on the European Social Fund, Veneto Region, Italy, titled: "High performance photovoltaic cells functionalized with luminescent Quantum Dots”.

2020 – 2021: scientific coordinator of a project on the European Social Fund, Veneto Region, Italy, titled: "Smart fabrics: integrated fabrics with flexible piezolector nanocomposites for the production of electrical energy from mechanical energy".

2020 – 2021: scientific coordinator of a project on the European Social Fund, Veneto Region, Italy, titled: "Flexible polymeric fabrics activated with metal-based nanostructures for shielding from electromagnetic radiation".

2019, August: scientific coordinator of a research project titled "Upconversion activated photoresponsive nanocomposites" as part of the Internationalization Program 2018 of the University of Verona (Cooperint, outgoing mobility). The project involved a collaboration with prof. Russel J. Composto, Materials Science and Engineering Department, University of Pennsylvania, Philadelphia, USA.

2019 – 2022: scientific coordinator of a project titled: "High efficiency photovoltaic panels activated with Carbon Dots", within the framework of the "Joint Projects 2018", joint project between the University of Verona and the "TEA Energie" Company, Verona, Italy.

2018 – 2019: scientific coordinator of a project on the European Social Fund, Veneto Region, Italy, titled: "Piezoelectric polymer nanocomposites for the generation of electrical energy from movement".

2018 – 2019: scientific coordinator of a project on the European Social Fund, Veneto Region, Italy, titled: "Polymeric fabrics shielding for low-frequency electromagnetic radiation".

2017 – 2018: scientific coordinator of a project on the European Social Fund, Veneto Region, Italy, titled: "High efficiency innovative panels activated with Quantum Dots".

2017 – 2018: scientific coordinator of a project on the European Social Fund, Veneto Region, Italy, titled: "Innovative thermal insulating panels for thermoelectric energy generation".

2016 – 2017: scientific coordinator of a project titled: "Innovative fabrics for CEM shielding (Electro-Magnetic Fields) at low frequencies", Research grants, Development of human potential in research and innovation, Veneto Region, Italy.

2017 – 2019: scientific coordinator of the "Ricerca di Base 2015" Project, funded by the University of Verona, Italy, titled: "New Materials for Thermometry".

2016 – 2018: Italian scientific coordinator of the three-year project of the Ministry of Foreign Affairs and International Cooperation selected in the context of the Executive Program of Scientific and Technological Collaboration between the Italian Republic and the Polish Republic, titled "Development of fluoride based nanoparticles doped with Nd3 + ions and co-doped with Nd3 +, Yb3 + in colloidal form as noncontact luminescence nanothermometers ".

2017 - 2019: scientific coordinator of a research project titled "New Materials for Nanothermometry", as part of the 2016 Internationalization Program of the University of Verona (Cooperint, Action 4, type B: Staff Mobility Program). The project involved a collaboration with prof. Fiorenzo Vetrone, Institut National de la Recherche Scientifique, Université du Québec, Canada.

2015, January-February: scientific coordinator of the Short Term Mobility Project as part of the "COST Action CM1006 European F-Element Network (EUFEN)" action titled "New Rare Earth doped Nanoparticles for real 3D manipulation", concerning research activities carried out by a

student of the Departamento de Fisica de Materials, Universidad Autonoma de Madrid, Spain, at the Department of Biotechnology, University of Verona.

2014 – 2016: scientific responsible of Work Package 1 (WP leader), concerning the preparation and chemical-physical analysis of the materials involved in the project, of the "Joint Project", announced by the University of Verona, for a joint University of Verona project and the "Perfosfati Cerea Cooperative Factory", Cerea, Verona, Italy, titled: "Nanostructured material as fertilizers: effect of iron phosphates and carbon dots on plant growth and nutrition".

2014 – 2015: Project coordinator titled "Lanthanide doped alkaline-earth fluoride nanoparticles for multimodal imaging and nanothermometry", in the context of the University Call, University of Verona, "Cooperint" 2014 edition, type B: Staff Mobility Program. The project involved a collaboration with prof. Fiorenzo Vetrone, Institut National de la Recherche Scientifique, University of Québec, Canada.

2012 - today: Responsible for scientific research in the area of Chemistry and Physics of luminescent materials, as Associate at the Institute of Physics "Nello Carrara", National Research Council, University of Sesto Fiorentino, Florence, in scope of projects concerning the synthesis and characterization of materials activated with rare earth ions or transition metals, in collaboration with Dr. Giancarlo Righini and Dr. Stefano Pelli. The research activity concerns:

- the development of rare earth doped luminescent glassy systems for the manufacture of devices such as optical fibers or waveguides, generating white light following excitation in the ultraviolet or blue, also under the Italian CNR agreement - Mexican National Research Council (CONACYT);

- metal sulphides activated with rare earths for the generation of white light and energy conversion, also as part of the bilateral joint agreement between the Italian CNR and the National Academy of Sciences of Azerbaijan (two-year program 2016-2017).

2012 – 2014: Scientific Responsible (Coordinator) for a joint project of University of Verona and the Company "Performance in Lighting srl", Colognola ai Colli, Verona, titled "Development of luminescent nanocomposites activated with lanthanide ions for multicolor light emission upon excitation with Light Emitting Diodes (LED) in the UV or blue region " in the framework of the "Joint Project 2011", University of Verona, Italy.

2010: Scientific Responsible (Coordinator) of a project titled "New luminescent nanocrystalline materials for biomedical applications", F.S.E. 2007-2013 - "Human Capital" axis. Project Type: "Research Grants", Veneto Region.

2009 – 2010: Scientific coordinator of the project titled "Nanocrystalline compounds for multimodal imaging (optical and magnetic) in medicine", as part of the University Call, University of Verona, "Cooperint" 2008 edition, type B: Staff Mobility Program. The project involved a collaboration with prof. John Capobianco, Concordia University, Montreal, Canada.

2008: Scientific coordinator of a research grant for young Indian researchers, Ministry of Education, "Nano-science and nano-technology" technology sector (n. BRI0740EAH).

Participation to research projects

2023–2026: scientific participation (Unit Leader) of the Project PE_0000006 "MNESYS" of the European Union - NextGenerationEU through the Italian Ministry of University and Research under PNRR - M4C2-I1.3.

2023–2026: scientific participation (Unit Leader) of the Project PE_00000019 "HEAL ITALIA" of the European Union - NextGenerationEU through the Italian Ministry of University and Research under PNRR - M4C2-I1.3.

2020 – 2021: scientific participation (Unit Leader) of a project on the European Social Fund, Veneto Region, Italy, titled: "Development and engineering of “Smart” magnetic materials".

2020 – 2021: scientific participation (Unit Leader) of a project on the European Social Fund, Veneto Region, Italy, titled: " Building integrated spray coated solar cells: BISPRASOL ".

2016 – 2020: Scientific participation in the European Project, Horizon 2020, titled: "SOLSA - Sonic Drilling coupled with Automated Mineralogy and chemistry On-Line-On-Mine-Real-Time". The activity mainly concerns the study of physico-chemical properties, in particular from the vibrational point of view, of materials that are relevant from a mineralogical point of view. Local coordinator of the University of Verona, Italy: prof. Gino Mariotto.

2016 – 2017: Scientific participation in a research project within the joint bilateral agreement between the Italian CNR and the National Academy of Sciences of Azerbaijan. The project is titled: "Rare earth doped sulphide materials for white light generation and energy conversion". Italian scientific coordinator: dr. Stefano Pelli, Institute of Applied Physics Nello Carrara (IFAC), CNR, Scientific Center of Sesto Fiorentino, Florence, Italy.

2012 – 2014: Scientific participation in a three-year project within the scientific agreement between the Italian National Research Council and the Mexican National Research Council (CONACYT), titled: "Frequency conversion into oxide glasses and amorphous materials doped with rare earths" . Italian coordinator: dr. Massimo Brenci, Institute of Applied Physics Nello Carrara (IFAC), CNR, Scientific Center of Sesto Fiorentino, Florence, Italy.

2011 – 2014: Scientific participation in the "Verona Nanomedicine Initiative" research project, funded by the Cariverona Foundation, Verona, Italy. The activity specifically concerned the development and analysis from a chemical-physical point of view of nanostructured materials useful for possible applications in nanomedicine. Scientific coordinator: prof. Guido Francesco Fumagalli, University of Verona, Italy.

2010 – 2012: Scientific participation in the research project in the scientific cooperation agreement between the Italian CNR and the Polish Academy of Sciences, titled "Thin films of rare-earth compounds as luminescent concentrators for the improvement of the conversion efficiency of solar cells ". Italian manager: prof. Marco Bettinelli, University of Verona, Italy.

2010 – 2011: Scientific participation in a joint research project within the executive cooperation program in the field of Science and Technology between Japan and Italy, Italian Ministry of Foreign Affairs. The project is titled: "Nano-scale chemistry and mechanics in advanced inorganic materials". Italian scientific coordinator: prof. Marco Bettinelli, University of Verona, Italy.

2009 – 2011: Scientific participation in the research project in the framework of the scientific cooperation agreement between the Italian CNR and the CONACYT (Mexican National Science and Technology Council), titled "White light generation in nanocrystalline oxides activated with metallic ions", coordinated on the Italian side by Dr. Giancarlo Righini, IFAC, CNR, Sesto Fiorentino Science Center, Florence, Italy.

2007 – 2010: Scientific participation in the European FP6 research project NMP3-CT-2006-032636, titled "STRING - Structured Scintillators for Medical Imaging", WP coordinator of the University of Verona: Prof. Marco Bettinelli, University of Verona, Italy.

2007 – 2009: Scientific participation in the research project in the Scientific Cooperation Agreement between the Italian CNR and the Polish Academy of Sciences, titled "Preparation and luminescence studies of doped nanostructures of non-linear optical materials". Italian Manager: prof. Marco Bettinelli, University of Verona, Italy.

2005 – 2006: Scientific participation in the research project titled "Synthesis and investigations of physicochemical properties of ferroelectric nanostructures doped with rare-earth ions (12 CH)" realized within the Executive Protocol of Scientific Collaboration and Technology between the Italian Republic and the Republic of Poland. Italian Coordinator: prof. Marco Bettinelli, University of Verona, Italy.

2003 – 2005: Scientific participation in the PRIN 2003 project, titled "Synthesis, characterization and visible luminescence of nanopowders and nanocomposites activated with lanthanide ions", scientific coordinator prof. Marco Bettinelli, University of Verona, Italy.

2002 – 2004: Scientific participation in the PRIN 2002 project, titled "Relationship between properties and structure in sintered nanostructured materials", scientific coordinator prof. Giorgio Spinolo, University of Pavia.
2001 - 2003 Scientific participation in the PRIN 2001 project, titled "Synthesis and luminescence in the visible of nanocrystalline oxides", scientific coordinator prof. Marco Bettinelli, University of Verona, Italy.

1999 – 2001: Scientific participation in the PRIN 1999 project, titled "Preparation, characterization and spectroscopic study of nanocrystalline oxides doped with lanthanide ions", scientific coordinator prof. Giorgio Flor, University of Pavia, Italy.

1998 – 2000: Scientific participation in the 1997 PRIN project, titled "Preparation, characterization and spectroscopic study of oxide glasses doped with lanthanide ions", scientific coordinator prof. Giorgio Flor, University of Pavia, Italy.

International collaborations

Prof. Miriam Herrera Collado, Facultad de Ciencias/Escuela Superior de Ingeniería, Universidad de Cádiz, Spain.

Prof. Fiorenzo Vetrone, Institut National de la Recherche Scientifique, Université du Québec, Varennes, Quebec, Canada.

Prof. Dr. Dariusz Hreniak, Institute of Low Temperatures and Structure Research, Polish Academy of Sciences, Wroclaw, Poland.

Prof. Eva Hemmer, Department of Chemistry and Biomolecular Sciences, University of Ottawa, Ontario, Canada.

Prof. Marta Quintanilla, Prof. Daniel Jaque, Departamento Fisica de Materiales, Universidad Autonoma de Madrid, Madrid, Spain.

Prof. Nicola Pinna, Humboldt-Universität zu Berlin, Institut für Chemie & IRIS Adlershof, Berlin, Germany.

Prof. Ulises Caldino, Universidad Autonoma Metropolitana, Mexico City, Mexico.

Prof. Francisco Diaz, Universitat Rovira i Virgilii, Tarragona, Spain.

Prof. C. K. Jayasankar, Department of Physics, Sri Venkateswara University, Tirupati, India.

Supervision of Research Scholars from international scientific institutions

2023, January-February: Supervision of a PhD student coming from Faculty of Chemistry, University of Wrocław, Poland (supervisor Prof. Paula Gawryszewska-Wilczyńska). Research project at NRG, Department of Biotechnology, University of Verona: “Lanthanide doped nanomaterials for optical thermometry".

2023, May-September: Supervision of a Bachelor student coming from Clermont Auvergne NIP, Campus des Cézeaux, Aubiere Cedex, France. Research project at NRG, Department of Biotechnology, University of Verona: "Preparation, chemico-physical characterization and functional investigation on luminescent nanomaterials".

2021, October - January 2022: Supervision of a PhD student coming from Adam Mickiewicz University in Poznań, Faculty of Chemistry and NanoBioMedical Centre, Poznań, Poland (Polish supervisor Prof. Tomasz Grzyb). Research project at NRG, Department of Biotechnology, University of Verona: "Investigation on the upconversion properties of lanthanide doped fluoride based nanomaterials".

2019, September: Supervision of a Bachelor student coming from Advanced Materials Engineering and Modelling Group, Department of Chemistry, Wroclaw, Poland (supervisor Dr. Olesiak-Banska). Research project at NRG, Department of Biotechnology, University of Verona: "Upconverting fluoride-based nanoparticles for biomedical applications".

2019, May-July: Supervision of a PhD student coming from Laboratory of Biobased Chemistry and Technology and Laboratory of BioNano Technology, Wageningen University & Research, Wageningen, The Netherlands (supervisor Prof. A. Velders). Research project at NRG, Department of Biotechnology, University of Verona: "Lipoprotein-based nanocarriers of upconverting nanoparticles (UCNPs)" in the framework of the Internationalization Project of the University of Verona, 2018 (Cooperint, incoming mobility).

2018, September-October: Supervision of a post-doc, Institut National de la Recherche Scientifique, Quebec, Canada. Research project at NRG, Department of Biotechnology, University of Verona: "Investigation on the thermometric properties of lanthanide doped fluoride nanoparticles".

2017, April-July: Supervision of a PhD Student, Institute of Low Temperatures and Structure Research, Polish Academy of Sciences, Wroclaw, Poland, as part of the 2016 Internationalization Project, University of Verona, research project: "Investigation on the luminescence properties of lanthanide doped fluoride nanoparticles as a function of the particle size".

2017, April – August: Supervision of a Master student in “Molecular Life Sciences”, Waveningen University, The Netherlands. Research project at NRG, Department of Biotechnology, University of Verona titled: "Visible upconversion luminescence from lanthanide-based metal-organic frameworks".

2015, January-February: Supervision of a student of the Departamento de Fisica de Materials, Universidad Autonoma de Madrid, Madrid, Spain, Short Term Mobility project as part of the action "COST Action CM1006 European F-Element Network (EUFEN)" from title "New Rare Earth doped Nanoparticles for real 3D manipulation".

Visiting Scientists from International Scientific Institutions

2025, May-June: Prof. Dariusz Hreniak, Institute of Low Temperatures and Structure Research, Polish Academy of Sciences, Wroclaw, Poland, International Mobility Programme, University of Verona, in the framework of a project titled: "Nanomaterials activated with lanthanide ions with persistent upconversion for applications in nanomedicine”.

2025, May-June: Prof. Eva Hemmer, University of Ottawa, Canada, International Mobility Programme of the University of Verona, in the framework of a project titled: " Lanthanide activated nanomaterials for diagnostics and sensing”.

2023, March-April: Dr. Vitalii Boiko, Institute of Low Temperatures and Structure Research, Polish Academy of Sciences, Wroclaw, Poland, International Mobility Programme of the University of Verona, in the framework of a project titled: "Persistent luminescence nanoparticles (PersL NPs) activated with lanthanide ions for biomedical applications”.

2020, Ottobre: Prof. Nicola Pinna, Humboldt-Universität zu Berlin, Institut für Chemie & IRIS Adlershof, Berlin, Germany, as part of a project on the European Social Fund, Veneto Region, titled “Smart fabrics: flexible fabrics integrated with piezoelectric nanocomposites for the production of electrical energy from mechanical energy”.

2019, September-October: Dr. Dariusz Hreniak, Institute of Low Temperatures and Structure Research, Polish Academy of Sciences, Wroclaw, Poland, as part of a project on the European Social Fund, Veneto Region, titled: "Shielding polymeric fabrics for low frequency electromagnetic radiation ".

2019, May: Prof. Nicola Pinna, Humboldt University of Berlin, Institut für Chemie & IRIS Adlershof, Berlin, Germany, as part of a project on the European Social Fund, Veneto Region, titled: "Piezoelectric polymer nanocomposites per generation of electricity from the movement ".

2019, February, July: Dr. Dariusz Hreniak, Institute of Low Temperatures and Structure Research, Polish Academy of Sciences, Wroclaw, Poland, as part of a project on the European Social Fund, Veneto Region, titled: "Shielding polymeric fabrics for low frequency electromagnetic radiation".

2018, December, 2017, September, 2016, December: Dr. Dariusz Hreniak, Polish Scientific Manager (Polish Coordinator) of the three-year Project of the Ministry of Foreign Affairs and International Cooperation selected within the Executive Program of Scientific and Technological Collaboration between the Republic Italian and the Polish Republic, titled "Development of fluoride based nanoparticles doped with Nd^{3+} ions and co-doped with Nd^{3+}, Yb^{3+} in colloidal form as noncontact luminescence nanothermometers".

Organization of international conferences

2023, June: “Nano23@UniVR” Workshop, Verona, Italy (co-chair).

2015, August “XXIII International Materials Research Congress, Symposium 6E. Luminescent Materials: Basic Phenomena and Applications (in Celebration of the International Year of Light)”, held in Cancun, Mexico (co-chair).

2012, August "8th International Conference on f-Elements (ICFE8)", held in Udine, Italy (member of the organizing committee).

2006, August “Fourth Italian-Korean Joint Meeting on Inorganic Chemistry (KIMIC IV)”, held in Malcesine, Verona, Italy (member of the organizing committee).

COST Action Management

2014-2018: Participation to the Management Committee del CMST COST Action CM1403 - The European upconversion network - from the design of photon-upconverting nanomaterials to biomedical applications.
http://www.cost.eu/COST_Actions/cmst/CM1403?management

Supervision of Bachelor's and Master's degree students

AY 2024/2025

Supervisor of the thesis: “Generation of polymeric structures guided by upconversion emission exploiting nanomaterials activated with lanthanide ions”, Bachelor’s degree in Biotechnology, University of Verona, Italy.

AY 2023/2024

Cosupervisor of the thesis: “Mesoporous silica nanoparticles for Piperine delivery”, Bachelor’s degree in Biotechnology, University of Ferrara, Italy.

Supervisor of the thesis: “ZnO microrods decorated with Fe_3O_4 nanoparticles as catalysts for the degradation of emerging contaminants”, Master’s degree in Biotechnology for bioresources and sustainable development, University of Verona, Italy.

AY 2022/2023

Supervisor of the thesis: “Nanocrystalline ceria for photodynamic therapy”, Bachelor’s degree in Biotechnology, University of Verona, Italy.

Supervisor of the thesis: “Nanostructured biomorphic titania decorated by gold nanoparticles for the photodegradation of pollutants”, Master’s degree in Biotechnology for bioresources and sustainable development, University of Verona, Italy.

Cosupervisor of the thesis: “Spatiotemporal manipulation of tumoral cell death through engineered nanoparticles”, Master’s degree in Molecular and Medical Biotechnology, University of Verona, Italy.

Cosupervisor of the thesis: “Inorganic Nanostructured Systems for Applications in photothermal and photodynamic therapy”, Master’s degree in Chemistry, University of Padova, Italy.

AY 2021/2022

Cosupervisor of the thesis: “Functionalized gold nanobipyramids: synthesis, characterization and SERS applications”, Master’s degree in Chemistry, University of Roma “La Sapienza”, Italy.

Supervisor of the thesis: “Preparation of nanocellulose from cotton and encapsulation with molecules of biological”, Bachelor’s degree in Biotechnology, University of Verona, Italy.

Supervisor of the thesis: “Nd^{3+} activated CaF_2 Nanoparticles for optical imaging in the Near Infrared Region”, Bachelor’s degree in Biotechnology, University of Verona, Italy.

Supervisor of the thesis: “Study on the interaction and aggregation between luminescent nanoparticles and α-synuclein, Bachelor’s degree in Biotechnology, University of Verona, Italy.

AY 2020/2021

Supervisor of the thesis: “Organic-inorganic hybrid nanogels for temperature controlled magnetothermia”, Master’s Degree in Molecular and Medical Biotechnology, University of Verona, Italy.

Supervisor of the thesis: “Study on the interaction between CaF2@SiO2 nanoparticles and α-synuclein, Bachelor’s degree in Biotechnology, University of Verona, Italy.

Supervisor of the thesis: “Study on the interaction and aggregation between luminescent nanoparticles and α-synuclein, Bachelor’s degree in Biotechnology, University of Verona, Italy.

Supervisor of the thesis: “Copper and Indium based Luminescent Quantum Dots: synthesis and dispersion in aqueous environment”, Bachelor’s degree in Biotechnology, University of Verona, Italy.

AY 2019/2020

Supervisor of the thesis: “Microwave Assisted Preparation of Luminescent Quantum Dots for Bioimaging”, Master’s Degree in Molecular and Medical Biotechnology, University of Verona, Italy.

Supervisor of the thesis: “Upconverting Strontium Fluoride nanoparticles functionalized with porphyrin for theranostic applications”, Bachelor’s degree in Biotechnology, University of Verona, Italy.

AY 2018/2019

Supervisor of the thesis: “Synthesis and chemical-physics characterization of gold bipyramids of nanometric size”, Bachelor’s degree in Bioinformatics, University of Verona, Italy.

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Supervisor of the thesis: “Preparation of gold nanoprisms and Raman scattering study for nanothermometry”, Bachelor’s degree in Bioinformatics, University of Verona, Italy.

Supervisor of the thesis: “Investigation of hyperthermia and MRI properties of colloidal dispersions of magnetite”, Bachelor’s degree in Bioinformatics, University of Verona, Italy.

Supervisor of the thesis: “Synthesis and characterization of fluorescent core(fluoride)-shell(oxide) nanoparticles”, Bachelor’s degree in Bioinformatics, University of Verona, Italy.

Supervisor of the thesis: “Functionalization of inorganic nanoparticles with biocompatible polymers”, Bachelor’s degree in Bioinformatics, University of Verona, Italy.

Supervisor of the thesis: “Modified Nanostructured Bismuth Ferrite Thin Films for Application in Photoelectrocatalysis”, Master's degree in Science and Technology of Bio and Nanomaterials, University of Verona and Ca’ Foscari University of Venice, Venice, Italy.

Supervisor of the thesis: “Development of inorganic RNA binding nanostructures for gene silencing”, Bachelor’s degree in Biotechnology, University of Verona, Italy.

AY 2017/2018

Supervisor of the thesis: “Influence of reaction conditions on the colloidal and luminescent properties of nanocrystalline ZnO”, Bachelor’s degree in Bioinformatics, University of Verona, Italy.

Supervisor of the thesis: “Layered hydroxide nanostructures (nanoLDH): synthesis, characterization and molecular adsorption”, Bachelor's degree in Viticultural and Oenological Science and Technology, University of Verona, Italy.

Supervisor of the thesis: “Synthesis and characterization of nanoparticles activated with lanthanide ions”, Bachelor’s degree in Biotechnology, University of Verona, Italy.

Co-supervisor of the thesis: “Preliminary investigation on the activation of a DASA (Donor-Acceptor Stenhouse Adducts) compound using NIR-to-VIS upconversion of inorganic nanoparticles”, Master’s degree in Industrial Biotechnology, University of Milano Bicocca, Milan, Italy.

AY 2016/2017

Supervisor of the thesis: “Photoactivable organic-inorganic nanoparticles for nanomedicine applications”, Bachelor’s degree in Biotechnology, University of Verona, Italy.

Supervisor of the thesis: “Preparation and characterization of Quantum Dots based on $CuInS_2$”, Bachelor’s degree in Biotechnology, University of Verona, Italy.

Supervisor of the thesis: “Development of ZnO nanoparticles for nanomedicine applications”, Master's degree in Bioinformatics and Medical Biotechnology, University of Verona, Italy.

Supervisor of the thesis: “Potassium and ytterbium fluoride nanoparticles activated with luminescent lanthanide ions for applications in biomedical diagnostics”, Master's degree in Bioinformatics and Medical Biotechnology, University of Verona, Italy.

Supervisor of the thesis: “Micellar systems for biomedical diagnostics and drug delivery”, Master's degree in Science and Technology of Bio and Nanomaterials, University of Verona and Ca’ Foscari University of Venice, Venice, Italy.

Supervisor of the thesis (co-supervisor): “Structural and spectroscopic investigation of sodium and calcium fluoride nanostructures activated with lanthanide ions”, Master's degree in Chemistry, University of Bologna, Italy.

AY 2015/2016

Supervisor of the thesis: “Use of cerium oxide nanoparticles for the colorimetric determination of polyphenolic molecules”, Bachelor's degree in Viticultural and Oenological Science and Technology, University of Verona, Italy.

Supervisor of the thesis: Luminescent nanoparticles activated with lanthanide ions for photodynamic therapy and their conjugation with GFP“, Master's degree in Science and

Technology of Bio and Nanomaterials, University of Verona and Ca' Foscari University of Venice, Venice, Italy.

Supervisor of the thesis: "Investigation on the interaction between Nanoparticles and Green Fluorescent Protein (GFP) using Spectroscopic and Calorimetric techniques", Master's degree in Science and Technology of Bio and Nanomaterials, University of Verona and Ca' Foscari University of Venice, Venice, Italy.

AY 2014/2015

Supervisor of the thesis: "Development of lanthanide doped alkaline-earth fluorides core-shell nanoparticles for nanothermometry and drug delivery", Master's degree in Science and Technology of Bio and Nanomaterials, University of Verona and Ca' Foscari University of Venice, Venice, Italy.

AY 2013/2014

Supervisor of the thesis: "Nanostructured systems for drug delivery that can be activated with light: preliminary studies", Bachelor's degree in Biotechnology, University of Verona, Italy.

Supervisor of the thesis: "CaF_2 inorganic nanoparticles functionalized for imaging, tumor targeting and interaction with nucleic acids", Bachelor's degree in Biotechnology, University of Verona, Italy.

Supervisor of the thesis: "Study on the interaction of calcium fluoride nanoparticles with DNA", Bachelor's degree in Biotechnology, University of Verona, Italy

AA 2012/2013

Supervisor of the thesis: "Preparation of CaF_2 NPs with Upconversion properties and their functionalization with folic acid for tumor targeting", Bachelor's degree in Chemistry and Materials Chemistry, University of Bologna, Italy.

Supervision of PhD students

XXXVII Cycle: Supervisor of the thesis: "Development of novel lanthanide-doped Nanomaterials for biomedical application", PhD in Nanoscience and Advanced Technologies, PhD in Nanoscience and Advanced Technologies, Graduate School of Natural and Engineering Sciences, University of Verona, Italy.

XXXV Cycle: Supervisor of the thesis: "At the cutting edge of bioimaging: Multifunctional luminescent nanomaterials for biomedicine", PhD in Nanoscience and Advanced Technologies, PhD in Nanoscience and Advanced Technologies, Graduate School of Natural and Engineering Sciences, University of Verona, Italy.

XXXV Cycle: Cosupervisor of the thesis: "Novel Chiral Luminescent Nanomaterials: Synthesis, Characterization and Application in Enantioselective Chemosensing", PhD in Nanoscience and Advanced Technologies, Ca' Foscari University, Venice, Italy.

XXXI Cycle: Supervisor of the thesis: "Exploiting transition metal and lanthanide ions as dopants in oxide and fluoride nanoparticles for nanothermometry and broad band optical sensitization", PhD in Nanoscience and Advanced Technologies, Graduate School of Natural and Engineering Sciences, University of Verona, Italy.

XXIX Cycle: Supervisor of the thesis: "Lanthanide doped alkaline-earth fluoride nanoparticles as biomedical probes", PhD Course in Nanoscience and Advanced Technologies, School of Natural and Engineering Sciences, University of Verona, Italy.

XXVIII Cycle: Supervisor of the thesis: "Nanocrystalline materials for photovoltaic and nanomedicine applications", PhD in Nanotechnology and Nanostructured Materials for Biomedical Applications, School of Science, Engineering and Medicine, University of Verona, Italy.

XXVII Cycle: Supervisor of the thesis: "Multifunctional Inorganic Nanoparticles for Biomedical Diagnostics", PhD in Nanotechnology and Nanostructured Materials for Biomedical Applications, School of Science, Engineering and Medicine, University of Verona, Italy.

XXIV Cycle: Supervisor of the thesis: “Lanthanide ion activated nanoparticles for multimodal imaging”, PhD in Nanotechnology and Nanostructured Materials for Biomedical Applications, School of Science, Engineering and Medicine, University of Verona, Italy.

XXIII Cycle: Supervisor of the thesis: “Synthesis, structural and morphological characterization and spectroscopic investigation of gadolinium oxyfluoride nanoparticles and gadolinium fluoride activated with luminescent lanthanide ions”, PhD in Biotechnology, School of Science, Engineering and Medicine, University of Verona, Italy.

Supervision of scholarship holders or research fellows for research projects:

2025-today: “Inorganic based nanomaterials activated with lanthanide ions for optical thermometry and biomedical diagnostic” (research fellowship).

2024–2025: "Polymer Nanocomposites based on luminescent Quantum Dots for High-efficiency photovoltaic panels: preparation of nanomaterials and incorporation in polymers", European Social Fund, Verona, Italy (research fellowship).

2023–2024: "Microfibrillated cellulose for the improvement of recycled paper", in collaboration with SACI company, Verona, Italy (research fellowship).

2023: "Magnetic nanomaterials for hyperthermia-systemic treatment applications", (research fellowship).

2020-2022: "Smart fabrics: integrated fabrics with flexible piezoelectric nanocomposites for the production of electrical energy from mechanical energy: synthesis and chemical characterization of piezoelectric nanomaterials and incorporation into polymers" (research fellowship).

2020–2021: "Flexible polymeric fabrics activated with metal-based nanostructures for shielding from electromagnetic radiation" (research fellowship).

2020–2021: "Coating of magnetic nanoparticles with water-soluble organic molecules" (research fellowship).

2020–2021: "Synthesis of colloidal nanoparticles in solution for photovoltaic applications" (research fellowship).

2019–2020: "Nanomaterials for hyperthermia" (research fellowship).

2018–2019: "Development of nanomaterials for thermometry" (post-doc fellowships).

2018– 2019: "Synthesis of piezoelectric polymer nanocomposites for generation of electrical energy from movement" (research fellowship).

2018–2019: "Polymeric fabrics shielding low-frequency electromagnetic radiation: synthesis of materials and incorporation into polymeric fabrics" (research fellowship).

2017-2018: "Innovative thermal insulation panels for thermoelectric energy generation" (research fellowship).

2017–2018: "New nanomaterials for optical thermometry" (post-doc fellowships).

2017-2018: "Innovative photovoltaic panels activated with Quantum Dots" (research fellowship).

2016-2017: "Development of nanostructured systems for nanomedicine" (research fellowship).

2016-2017: “Development of innovative fabrics for screening C. E.M. (Electro Magnetic Fields) at low frequencies" (research fellowship).

2015-2016: “Nanostructured materials as fertilizers: effect of iron phosphates and carbon dots on plant growth and nutrition” (post-doc fellowship).

2012-2015: "Development of nanocomposites activated with lanthanide ions by multi-color emission following excitation with light-emitting diodes (LEDs) in UV or blue" (post-doc fellowships).

2013: "Preparation and characterization of multi-functional nano-structural systems for nanomedicine applications" (research fellowship).

2010-2011: "New luminescent nanocrystalline materials for biomedical applications" (research fellowship).

2009: "Synthesis, structural and spectroscopic characterization of nanocrystalline and massive oxides doped with transition metals or lanthanides for biomedical applications" (research fellowship).

AWARDS/HONORS

FFABR2017 - **Funding for basic research activities (FFABR), established by Italian Law n. 232/2016:** admitted for individual financing of basic research activities (Associate Professors).
ANVUR - Research Quality Assessment (VQR) 2011-2014
6 scientific publications as co-author submitted to the VQR by various Italian Research Institutes. Results: 5 publications with excellent evaluation (score 1.0) and 1 publication with high evaluation (score 0.7).
ANVUR - Research Quality Assessment (VQR) 2015-2019
6 scientific publications as co-author submitted to the VQR by various Italian Research Institutes. Results: 4 publications in A Class (excellent and extremely relevant) and 2 publication in B Class (excellent).

SCIENTIFIC REVISION ACTIVITY

National and International research projects

2024, 2025 - Evaluation as a scientific reviewer of research projects, National Science Centre, Krakow, Poland.

2024, 2026 - Evaluation as a scientific reviewer of research projects, LE STUDIUM Loire Valley Institute for Advanced Studies, Orléans, France.

2023 - Evaluation as a scientific reviewer of research projects, Israel Science Foundation, Jerusalem, Israel.

2023 - Evaluation as a scientific reviewer of research projects, Israel Science Foundation, Jerusalem, Israel.

2023, 2026 - Evaluation as a scientific reviewer of research projects, Latvian Council of Science (LCS), Republic of Latvia.

2023 - Evaluation as a scientific reviewer of research projects, National Science Centre, Krakow, Poland.

2023 - Evaluation as a scientific reviewer and panel member of research projects for UEFISCDI Evaluation Process, Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding, Bucharest, Romania.

2022 - Evaluation as a scientific reviewer of research projects, Executive Government Agency of National Science Centre, Krakow, Poland.

2022 - Evaluation as a scientific reviewer of research projects for UEFISCDI Evaluation Process, Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding, Bucharest, Romania.

2021 - Evaluation as a scientific reviewer of research projects and participation to Expert Panel evaluation (OPUS, Diagnostic tools, therapies and public health), National Science Centre (NCN), Krakow, Poland.

2021 - Evaluation as a scientific reviewer of research projects, Israel Science Foundation, Jerusalem, Israel.

2020 - Evaluation as a scientific reviewer of research projects for Lazio Innova, Research projects - POR FESR Lazio 2014-2020.

2020 - Evaluation as a scientific reviewer of research projects for Natural Sciences and Engineering Research Council of Canada (NSERC), Ottawa, Canada

2020 - Evaluation as a scientific reviewer of research projects, Executive Government Agency of National Science Centre, Krakow, Poland.

2020 - Evaluation as a scientific reviewer of research projects for the Czech Science Foundation, Prague, Czech Republic.

2020, 2021 Evaluation as a scientific reviewer of research projects “Exploratory Research Projects", UEFISCDI Evaluation Process, Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding, Bucharest, Romania.

2019 Evaluation as a scientific reviewer of research projects, Executive Government Agency of National Science Centre, Krakow, Poland.

2018 Evaluation as a scientific reviewer of research projects, ERC Advanced Grant 2017, European Research Council (ERC), EU.

2018 Evaluation as a scientific reviewer of research projects, Executive Government Agency of National Science Centre, Krakow, Poland.

2016 Evaluation Panel Member (Engineering and Technology) of research projects, Fundação para a Ciência e a Tecnologia, I. P. (FCT), Portuguese Ministry of Science and Education, Lisbon, Portugal.

2016 Evaluation as a scientific reviewer of research projects “Exploratory Research Projects", UEFISCDI Evaluation Process, Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding, Bucharest, Romania.

2015 Evaluation as a scientific reviewer of research projects, Canada Foundation for Innovation - Fondation Canadienne pour l'Innovation, Ottawa, Canada.

2015 Evaluation as a scientific reviewer of research projects, Executive Government Agency of National Science Centre, Krakow, Poland.

2014 Evaluation as a scientific reviewer of research projects (FIR2014), Università di Catania, Italy.

2014 Evaluation as a scientific reviewer of research projects “Exploratory Research Projects", UEFISCDI Evaluation Process, Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding, Bucharest, Romania.

2013 Evaluation as a scientific reviewer of research projects, Research Grants Council, Hong Kong, China.

2013 Evaluation as a scientific reviewer of research projects FIRB “Futuro in Ricerca 2013”, Italian Ministry of Instruction, University and Research, Italy.

2012 Evaluation as a scientific reviewer of research projects and Evaluation Panel Member (Physics), Executive Agency for Higher Education, Research, Development and Innovation Funding, Bucarest, Romania.

2010 Evaluation as a scientific reviewer of research projects FIRB (Futuro in Ricerca), Ministero Italiano dell’Istruzione, Università e Ricerca.

2010 Evaluation as a scientific reviewer of a post-doc research project, Estonian Science Foundation, Estonia.

International Scientific Journals

American Chemical Society:
ACS Nano, ACS Applied Materials & Interfaces, ACS Biomaterials Science & Engineering, ACS Photonics, ACS Applied Electronic Materials, ACS Applied Nano Materials, ACS Omega, Biomacromolecules, Chemical Reviews, Chemistry of Materials, Crystal Growth & Design, Inorganic Chemistry, Journal of Physical Chemistry, Journal of the American Chemical Society, Langmuir, ACS Omega.

Royal Society of Chemistry:
Chemistry Communications, CrystEngComm, Dalton Transactions, Inorganic Chemistry Frontiers, Journal of Materials Chemistry, Nanoscale, Materials Advances, Physical Chemistry Chemical Physics, RSC Advances, Materials Horizons.

Elsevier:
Advances in Colloid and Interface Science, Applied Surface Science, Biomaterials, Biosensors and Bioelectronics, Catalysis Today, Ceramics International, NanoToday, Journal of Luminescence, Journal of Solid State Chemistry, Optical Materials, Materials Chemistry and Physics, Sensors & Actuators: B. Chemical.

Springer:
Light: Science & Applications, Applied Nanoscience, Applied Physics A: Materials Science & Processing, Applied Physics B: Lasers and Optics, Nanoscale Research Letters.

Wiley – ChemPubSoc:
Advanced Functional Materials, Advanced Materials, Chemistry–A European Journal, Chemistry - An Asian Journal, ChemNanoMat, ChemPhysChem, ChemistrySelect, European Journal of Inorganic Chemistry

Frontiers:
Frontiers in Chemistry

American Association for the Advancement of Science:
Science Advances

Nature research:
Nature Communication, Scientific Report

Editorial Boards

2022 - today: Frontiers in Chemistry, Switzerland (Associate Editor)

2013 - today: Journal of Nanoparticle Research, Springer Science (Associate Editor)

Covers of scientific journals

1- Cover of Dalton Transaction (Royal Society of Chemistry, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK) for the article: "Sodium niobate based hierarchical 3D perovskite nanoparticle clusters", *Dalton Transactions*, 2020, **49**, 15195 – 15203.
https://pubs.rsc.org/en/content/articlelanding/2020/dt/d0dt90208j#!divAbstract

2- Cover of Biomaterials Science (Royal Society of Chemistry, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK) for the article: "Multifunctional nanoprobes based on upconverting lanthanide doped CaF2: towards biocompatible materials for biomedical imaging", *Biomater. Sci.,* 2014, **2**, 1158-1171.
http://pubs.rsc.org/en/Content/ArticleLanding/2014/BM/C4BM00119B#!divAbstract

3- Cover of Journal of Materials Chemistry (Royal Society of Chemistry, Royal Society of Chemistry, Thomas Graham House, Science Park, Milton Road, Cambridge, CB4 0WF, UK) per l'articolo: "Structural and optical investigation of colloidal Ln3+/Yb3+ co-doped KY3F10 nanocrystals", *J. Mater. Chem.,* 2009, **19**, 3149–3152.
http://pubs.rsc.org/en/content/articlepdf/2009/jm/b900300b

4- Cover of Advanced Materials (WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim) for article: "Lanthanide Nanocrystals: Colloidal Tm3+/Yb3+-Doped LiYF4 Nanocrystals: Multiple Luminescence Spanning the UV to NIR Regions via Low-Energy Excitation", *Adv. Mater.*, **21**, 2009, 4025–4028. http://onlinelibrary.wiley.com/doi/10.1002/adma.200901174/full

Top Italian Scientists, Via Academy

N. 43 of the list "Top Italian Scientists – Material and Nanoscience", https://www.topitalianscientists.org/TIS_HTML/Top_Italian_Scientists_Material_Nano_Sciences.htm

Patents

- G. Ciuffreda, D. Sega, Z. Varanini, A. Zamboni, A. Speghini, (2018) "Processo, e relativo impianto, per l'ottenimento di nanoparticelle di fosfati contenenti nutrienti minerali essenziali per la nutrizione delle piante", P2850IT00
- C. Cressoni, A. Speghini, A. Antonelli, (2023) "HYDROGEL-BASED INJECTABLE NANOCOMPOSITE FOR SURGICAL IMAGING", Application N. WO2023/238060.

Oral communications at Conferences and Seminars (invited)

2026, September - Oral Communication (Invited Speaker) at "E-MRS Fall Meeting", Warsaw, Poland, with a presentation titled: "Lanthanide-based Metal-Organic Frameworks: Interesting phosphors for modern photonics applications".

2026, May - Oral Communication (Invited Speaker) at "E-MRS Spring Meeting", Strasbourg, France with a presentation titled: "Evaluation of local temperature using optical probes".

2026, April - Oral Communication (Invited Speaker) at "UPCON2026", Brno, Czech Republic with a presentation titled: "Lanthanide-based upconverting metal-organic frameworks".

2025, December – Oral communication (Invited Speaker) at "3d-ICOMAS - 3-day International Conference on Materials Science" Verona, with a presentation titled: "Fluoride-based nanocomposites for photodynamic therapy exploiting near infrared radiation".

2025, October - Oral Communication (Invited Speaker) at "SHIFT25 - SHINING A LIGHT ON BIOMEDICAL AND ENERGY APPLICATIONS" Tenerife, Spain with a presentation titled: "NanoLDHs for biomedical applications".

2025, July - Oral Communication (Invited Speaker) at "FisMat 2025, Advanced Materials for Optics and Photonics thematic workshop" Venezia, Italy, with a presentation titled: "Lanthanide-doped molybdates as optical thermometers".

2025, May - Oral Communication (Invited Speaker) at "E-MRS Spring Meeting", Strasbourg, France with a presentation titled: "Nanostructures and upconversion: exploiting NIR lasers for photodegradation".

2024, October - Oral Communication (Invited Speaker) at "MS&T24: Materials Science and Technology, Symposium: Solid-state Optical Materials and Luminescence Properties", Pittsburgh, Pennsylvania, USA, with a presentation titled: "Ternary lanthanide activated fluoride nanoparticles as optical probes for thermometry in the biological windows".

2024, October - Oral Communication (Invited Speaker) at "MS&T24: Materials Science and Technology, Symposium: Solid-state Optical Materials and Luminescence Properties", Pittsburgh, Pennsylvania, USA, with a presentation titled: "Ternary lanthanide activated fluoride nanoparticles as optical probes for thermometry in the biological windows".

2023, September - Oral Communication (Invited Speaker) at "International Conference on Excited States of Transition Elements (ESTE'23), Świeradów-Zdrój, Poland, with a presentation titled: "Lanthanide activated potassium yttrium fluoride nanostructures as probes for biomedical applications"

2023, August - Oral Communication (Invited Speaker) at the "International Conference on Crystal Growth and Epitaxy-ICCGE-20, Napoli, Italy, with a presentation titled: "Lanthanide activated fluoride nanoparticles as luminescent probes and optical thermometers".

2022, September - Oral Communication (Invited Speaker) at "International Conference on Dynamical Processes in Excited States of Solids (DPC'22), Wroclaw, Poland, with a presentation titled: "Lanthanide activated KY_3F_{10} nanoparticles for nanothermometry".

2021, October Oral Communication (Invited Speaker, virtual participation) at "MS&T21: Materials Science & Technology, Symposium: Solid-state Optical Materials and Luminescence Properties", Columbus, Ohio, USA, with a presentation titled: "A Green Chemistry Approach for the Preparation of Lanthanide Doped Alkaline-earth Fluoride Nanoparticles".

2019, September Oral Communication (Invited Speaker) at "8th International Workshop on Photoluminescence in Rare-Earths: Photonic Materials and Devices (PRE'19), Nice, France, with a presentation titled: "Lanthanide ions activated optical nanothermometers".

2019, June Invited Talk "Lanthanide activated nanomaterials: light in action" at the "Institute of Advanced Materials (INAM) - Department of Inorganic and Organic Chemistry", Universitat Jaume I, Castellón (Spain). Host: Prof. Beatriz Julián López.

2018, October Oral Communication (Keynote Speaker) at "Asian Conference on Nanoscience and Nanotechnology (AsiaNANO2018)", Quingdao, China, with a presentation titled: "Luminescent nanofluorides as nanothermometers and blood coagulation factors: an investigation on their interaction".

2018, July Oral Communication (Invited Speaker) at "International Conference on Energy, Materials and Photonics, EMP18", Montreal, Canada, with a presentation titled: "Nd^{3+} activated fluoride nanoparticles for nanothermometry in the biological windows".

2017, October Invited Talk "Lanthanide activated alkaline-earth fluoride nanoparticles: biocompatible and multifunctional materials for nanomedicine", at National Institute of Scientific Research (INRS), University of Quebec, Varennes, Canada. Host: Prof. Fiorenzo Vetrone.

2017, August Oral Communication (Keynote Speaker) at "7th International Conference on Nanoscience and Technology (ChinaNANO 2017)", Beijing, China, with a presentation titled: "Lanthanide activated alkaline-earth fluoride nanoparticles: biocompatible and multifunctional materials for nanomedicine".

2016, October Oral Communication (Invited Speaker) at "Materials Science & Technology 2016 (MS&T16) Conference, Symposium on "Nanomaterials Working in the Near-Infrared: Biomedical Applications", Salt Lake City, Utah, USA, with a presentation titled: "Optical nanothermometers based on core@shell alkaline-earth nanoparticles activated with lanthanide ions".

2016, June Invited Talk "Lanthanide activated multifunctional nanostructures for biomedical applications", Department of Chemistry, State University of New York at Stony Brook, NY, USA. Host: Prof. Stanislaus Wong.

2016, June Oral Communication (Invited Speaker) at "6th International Workshop on Photoluminescence in Rare-Earths: Photonic Materials and Devices (PRE'16), Greenville, South Carolina, USA, with a presentation titled: "Lanthanide activated alkaline-earth fluoride nanoparticles: multifunctional probes for biomedical applications".

2016, May Oral Communication (Invited Speaker) at "Emerging Technologies: Communications, Microsystems, Optoelectronics, Sensors (ETCMOS)", Montreal, Canada, with a presentation titled: "Lanthanide activated core@shell alkaline-earth fluoride nanostructures as optical nanothermometers".

2014, August Oral Communication (Invited Speaker) at ""XXIII International Materials Research Congress (IMRC), Symposium on Lanthanide-Doped Materials", Cancun, Mexico with a presentation titled: "Lanthanide doped alkaline-earth fluoride nanoparticles: biocompatible, multifunctional materials for biomedical imaging".

2014, June Oral Communication (Invited Speaker) at "1st International Conference on Fluorescent Up-converting Nanoparticles: a Platform for Energy and Biological Applications" (FUN-BIOENERGY)", Torremolinos, Spain, with a presentation titled: "Lanthanide doped core-shell alkaline-earth fluoride colloids: interesting optical probes for biomedical applications".

2013, October Oral Communication (Invited Speaker) at "Materials Science & Technology 2013 (MS&T13) Conference, Symposium on "Optical Nanomaterials for Photonics/Biophotonics", with a presentation titled: "Alkaline-earth based colloids for biomedical applications", Montreal, Canada.

2013, May Seminars at XIIIth International Krutyn Summer School 2013 - "Advanced photo- and electrically active molecular and nano-materials at the interface with living systems: challenges and promises for the future bio-medicine", Krutyn, Poland.

2011, October Invited Talk "Lanthanide doped nanocrystalline alkaline earth fluorides: synthesis, structural, morphological and spectroscopic investigation", Centro de Investigaciones en Optica (CIO), A. C., Leon, Gto., Messico. Host: Prof. Elder De la Rosa.

Oral communications at Conferences

2024, May - Oral Communication at " PRE24 - Photoluminescence in Rare Earths: Photonic Materials and Devices", Trento, Italy, with a presentation titled: "Luminescence properties of lanthanide-doped molybdates for optical thermometry".

2024, May - Oral Communication at " 2024 SPRING MEETING E-MRS ", Strasbourg, France, with a presentation titled: "Multifunctional hybrid nanocomposite films: assembling inorganic nanoparticles using α-synuclein as molecular linker".

2023, January - Oral Communication at "30 years of INSTM: past, present and future of the Consortium", Bressanone (BZ), Italy, with a presentation titled: "Temperature measurements by exploiting the luminescence of lanthanides as dopants in fluoride based nanomaterials".

2022, October - Oral Communication at "SHIFT22 (Spectral sHapIng For biomedical and energy applicaTions)", Tenerife, Spain, with a presentation titled: "Nanocomposite films of α-synuclein with inorganic nanoparticles"

2021, September - Oral Communication at "XXVII Congresso Nazionale della Società Chimica Italiana", Virtual Conference, with a presentation titled: " Fine-tuning of the size of luminescent CaF_2 nanoparticles".

2021, September - Oral Communication at " 2021 FALL MEETING E-MRS ", Virtual Conference, with a presentation titled: Multifunctional organic-inorganic nanogels for nanomedicine: upconverting and MRI properties".

2019, May - Oral Communication at " 2019 SPRING MEETING E-MRS ", Nice, France, with a presentation titled: "Lanthanide ions activated nanofluorides as optical nanothermometers in the biological window".

2018, September - Oral Communication at "Advanced inorganic materials: green and unconventional synthesis approaches and functional assessment workshop", Department of Chemical Sciences, University of Padova, Italy, with a presentation titled: "Luminescent nanomaterials prepared by microwave-assisted hydrothermal synthesis: two interesting cases".

2018, September - Oral Communication at "XLVI Congresso Nazionale di Chimica Inorganica", Bologna, Italy, with a presentation titled: "Luminescent nanofluorides (SrF_2) as nanothermometers in the optical biological windows".

2017, November - Oral Communication at "SHIFT 2017 (Spectral sHapIng For biomedical and energy applicaTions)", Tenerife, Spain, with a presentation titled: "NIR to Visible Upconversion of composite polymeric aerogels"

2017, September - Oral Communication at "XXVI Congresso della Società Chimica Italiana", Pestum, Salerno, Italy, with a presentation titled: "Upconverting polymeric aerogels".

2016, September - Oral Communication at "6th EuCheMS Chemistry Congress", Seville, Spagna, with a presentation titled: "Multi-shell approach: engineering lanthanide activated alkaline-earth fluorides towards more sensitive all-optical nanothermometers".

2016, September - Oral Communication at "XLIV Congresso Nazionale di Chimica Inorganica", Padova, Italia, with a presentation titled: "Engineering lanthanide activated nanostructures towards efficient optical nanothermometers".

2015, June - Oral Communication at "X Convegno INSTM sulla Scienza e Tecnologia dei Materiali", Favignana, Trapani, Italy, with a presentation titled: "Upconversion emission of Tm^{3+}/Yb^{3+} doped alkaline-earth fluoride nanoparticles as water colloids for light activated nanostructured systems".

2015, May - Oral Communication at alla Conferenza "E-MRS 2015 SPRING MEETING", Lille, France, with a presentation titled: "Core-shell alkaline earth fluoride nanoparticles activated with Gd and Nd ions for multimodal bioimaging".

2014, July - Oral Communication at Conferenza "17th International Conference on Luminescence and Optical Spectroscopy of Condensed Matter (ICL'14)", Wroclaw, Poland, with a presentation titled: "Lanthanide doped CaF_2 nanoparticles: biocompatible, multifunctional materials for biomedical imaging".

2014, May - Oral Communication at "E-MRS 2014 SPRING MEETING", Lille, France, with a presentation titled: "Lanthanide doped core-shell alkaline-earth fluoride colloids: interesting optical probes for biomedical applications".

2013, May - Oral Communication at “E-MRS 2013 SPRING MEETING”, Strasburg, France, with a presentation titled: "Co-encapsulation of $CuInS_2$@ZnS Quantum Dots and Fe_3O_4 Nanoparticles for multimodal imaging applications".

2013, April - Oral Communication at "2013 MRS SPRING MEETING", San Francisco, California, USA, with a presentation titled: "Lanthanide Doped Alkaline Earth Fluoride Nanoparticles for Multimodal Optical and Magnetic Resonance Imaging".

2013, April - Oral Communication at “EUFEN 2 f-Block”, COST Action CM1006, Dublin, Ireland, with a presentation titled: "Upconverting gadolinium fluoride nanoparticles for multimodal imaging".

2012, August - Oral Communication at “8th International Conference on f-Elements (ICFE-8)", Udine, Italy, with a presentation titled: "Lanthanide doped alkaline earth fluorides: a joint optical spectroscopy and EXAFS investigation".

2011, September - Oral Communication at “X Convegno Nazionale Materiali Nanofasici”, Bologna, Italy, with a presentation titled: "Upconverting lanthanide doped alkaline earth fluoride nanoparticles".

2008, September - Oral Communication at “RARE EARTH MATERIALS (REMAT) - Advances in Synthesis, Studies and Applications”, Karpacz, Poland, with a presentation titled: "Synthesis, characterization and optical spectroscopy of lanthanide doped nanocrystalline alkali niobates”.

Verona, October 12th, 2026

SIGNATURE
Prof. Adolfo Speghini

