

Prof. Dr. Mariaenrica Frigione, Ph.D.
Leader of the Research Group:
Materials and Technologies for Constructions and Cultural Heritage

Education:

Mariaenrica Frigione received her Master degree in Chemical Engineering at University of Naples in 1989 (thesis published on *Thermochimica Acta* and presented to International Conferences) and her Ph.D. degree in Polymer Science and Technology at Loughborough University, U.K. in 1997 (thesis published on *European Polymer Journal* (with more than 100 citations. Source: Scopus), *Journal of Applied Polymer Science*, *Advances in Polymer Technology* and presented to International Conferences).

Academic carrier:

She worked as associate researcher at University of Salerno from 1990 to 1992. Then, she joined the Institute of Polymer Technology and Materials Engineering (IPTME) of Loughborough University, U.K., working as Research Assistant from 1992 to 1996. In 1997 she joined the Department of Materials Science of University of Lecce as Lecturer, in the field of Transport Phenomena in Chemical Engineering.

2001: Associate Professor at University of Salento (former University of Lecce).

In 2014 she received the Academic Qualification of Full Professor in “Systems, Methods and Technologies of Chemical and Process Engineering” and, then, in “Materials Science and Technology”.

Didactic activity:

From 1997 she has been in charge for courses on Science and Technology of Polymers, Durability of non-Metallic Materials, Transport Phenomena in Materials, Laboratory of Chemical Engineering, Properties and Durability of Materials for Restoration and Rehabilitation Applications in both Faculties of Engineering and of Cultural Heritage of University of Salento (former University of Lecce).

For the Academic Year 2018-19, she is in charged for the following courses: “Science and Technology of Polymers” for the International Master Degree in “Materials Engineering and Nanotechnology” (taught in English); “Technologies and Materials for Conservation” and “Laboratory Technologies and Materials for Conservation” for the International Master Degree in “Diagnostic for Cultural Heritage” (taught in English).

She has been tutor of several experimental thesis in Bachelor and Master Degrees of both Faculties of Engineering and of Cultural Heritage and of several PhD thesis in PhD Courses “Materials Engineering”, “Materials and Structures Engineering”, “Materials and Structures Engineering and Nanotechnologies”. The research projects of the students are often carried out in collaboration with different (Italian or International) Academic Institutions, Research Centers or Companies (University of Minho, University Federico II Naples, University of Rome Sapienza, National Research Council (CNR) Institutes, Assorestaurio, Kimia, Sipre, Paper Restoration Center, Ceramic Museum, etc.).

She has been in charged for the organization and execution of training activities in the framework of specialization and master international courses in the fields of: High performance and self-strengthening polymeric materials (1994); Innovative materials and technologies (2000); Polymeric materials for automotive industry (2004); Durability of Polymeric materials employed in art and design (2012) in the framework of the Interdisciplinary Master Course on “The Plastic in & for Art”.

Responsibilities and Commitments at University of Salento:

- She has been in charged for the Laboratory of Transport Phenomena (2004-2014). The Laboratory

is equipped with the complete instrumentations for thermal analysis and gas/vapor transport measurements, all purchased on the funds of research projects for which she was responsible (PRIN, Network of Public Research Laboratories). Several Master and PhD projects have been performed employing these instrumentations as well they were used to support local private/public entities.

- Director of PhD programs in “Materials and Structures Engineering” (2011-14).
- Vice President of the Master degree in Materials Engineering, Faculty of Engineering (2008-12).
- Vice President of the Bachelor degree in Technologies for Conservation and Restoration and of the Master degree in Science for Conservation and Restoration, Faculty of Cultural Heritage (2006-10).
- **From 2013: Vice-Rector of University of Salento for Technical Scientific Area**
- **From 2014: Delegate of the Rector for Internationalization.**
- From 2015: Component of the Joint Committee in the framework of the General Agreement between the University del Salento and the Italian Council for Research (CNR).
- From 2016: Scientific Responsible for the Project “Invest Your Talent in Italy” for University of Salento (to support the internationalization of the Italian productive system and of the universities with the attraction of foreign talents coming from Countries strategic for Enterprises).
- **From 2017: Scientific Responsible for University of Salento of the E-RIHS.it (Italian Research Infrastructure of Heritage Science – partner of E-RIHS European Research Infrastructure of Heritage Science).**
- From 2017: Scientific Responsible for the Memorandum of Understanding with the Italian Minister for Foreign Affairs and International Cooperation (MAECI) for the implementation of the Italian School of Advanced Sciences of Kyoto.
- From 2018: Member for University of Salento of the Academic Committee for the Cooperation Agreement with the Jinan University, China

Other Responsibilities and Commitments:

From 2016 to 2017 she has been component of the Administration Council of the Technological Aerospaziale District (DTA) sited in Brindisi (Italy).

Research Activity:

She is the leader of “Materials and Technologies for Constructions and Cultural Heritage” research group. Among her research interests, with a strong interdisciplinary approach and applicative character carried on in collaboration with several Italian and International Universities, Research Institutions, Museums and Companies, there are: innovative materials (organic-inorganic hybrids, nano-composites, hyperbranched polymers, sustainable and eco-efficient mortars, protective coatings, adhesives) for Industry, Constructions and Cultural Heritage; durability of polymeric material, thermosetting adhesives, composite matrices, functional protective coatings for Industry, Constructions and Cultural Heritage; chemical-mechanical-physical and transport properties of polymeric materials, blends and composites; cure kinetics, and modeling, of thermosetting polymers and matrices for composites.

She is co-author of three international patents on organic-inorganic hybrids. The license of two of them (on a hybrid nanostructured coating for different substrates, stone, concrete, wood, glass, etc.) was sold and, then, commercialized from an Italian Company (13001868.2 – 1301, 2013, and 14001325.1 – 1301, 2014). The last international patent (granted in Italy with number 1425385, October 24, 2016) is on a hybrid nanostructured adhesive for industry and construction and Cultural Heritage applications (proposed for different substrates, such as: polymers and composites, concrete, stone, wood, glass, etc.).

She is author and co-author of more than 100 papers published on International different (more than 40) indexed Journals (**Hirsch index = 21, with about 1340 citations.** Source: Scopus) or invited book chapters. **In the last years (2015-18), she authored/co-authored 27 papers on indexed**

Journals, her papers received more than 640 citations (Source: Scopus). orcid.org/0000-0001-6183-6029.

In the Italian evaluation of research products (VQR 2004-2010), the evaluated 4 papers authored or co-authored by her were all classified in 1st class “Excellent”.

In the Italian evaluation of research products (VQR 2011-2014), the evaluated 3 papers authored or co-authored by her were all classified in 1st class “Excellent”.

She is author and co-author of papers presented in more than 60 International Conferences and more than 30 Italian Conferences. Some of the International Conferences in which she presented her scientific research are following listed: 12th International SAMPE European Conference, May 1991, Maastricht, The Netherlands; Fifth Family Meeting of the Macro Group – Aspects of Polymer Chemistry, April 1995, Loughborough, U.K.; Polymer Processing Society, 12th Annual Meeting, May 1996, Sorrento (Naples), Italy; IXth International Congress on Polymers in Concrete, ICPIC '98, September 1998, Bologna, Italy; 2nd International RILEM Symposium on Adhesion between Polymers and Concrete ISAP '99, September 1999, Dresden, Germany; 1st International Conference on Polymer Modification, Degradation and Stabilization, MoDeSt 2000, September 2000, Palermo, Italy; 6th International Symposium on the Conservation of Monuments in the Mediterranean Basin, April 2004, Lisbon, Portugal; 11th International Congress on Polymers in Concrete, ICPIC '04, June 2004, Berlin, Germany; First International Conference of Innovative Materials and Technologies for Construction and Restoration, IMTCR '04, June 2004, Lecce, Italy; International Symposium of Polymers in Concrete, ISPIC 2006, April 2006, Guimarães, Portugal; 3rd European Weathering Symposium, Natural and Artificial Aging of Polymers, September 2007, Krakow, Poland; Hybrid Materials 2009, First International Conference on Multifunctional, Hybrid and Nanomaterials, March 2009, Tours, France; 13th International Congress on Polymers in Concrete, ICPIC 2010, February 2010, Madeira, Portugal; Advances in Polymer based Materials and Related Technologies, May 2011, Capri (Naples), Italy; International Conference on Structural Adhesive Bonding, AB 2011, July 2011, Porto, Portugal; NanotechITALY 2012, International Showcase for Nanotechnologies, Cultural Heritage, November 2012, Venice, Italy; 15th International Congress on Polymers in Concrete, ICPIC 2015, October 2015, Singapore, Singapore; Fourth International Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Infrastructures, SMAR 2017, September 2017, Zurich, Switzerland.

She is/has been referee for 35 different international indexed Journals (source: Publons), mainly published by Elsevier, Wiley, ASCE, Springer. In the last 12 months, she reviewed 35 papers, achieving a score merit of 528 (source: Publons).

She is a member of the Editorial Board of the International Journals: **ASCE Journal of Composite for Constructions** (Ranking Q2, 8/25 in Material Science: Composites); *Restoration of Buildings and Monuments* (RBM, De Gruyter Publishers, Berlin, Germany), *Edorium Journal of Waste Management* (Edorium Journals); she is in the Scientific Council of “Polish Journal Materialy Budowlane”

Reviewer for Research Agencies:

- FIRB “Future in research” (2012), Italian Ministry of Education, University and Research (MIUR).
- PRIN (2012), Italian Ministry of Education, University and Research (MIUR).
- Independent expert for the internal evaluation procedure of the Collaborative Research Program for Horizon 2020 within the call MG.1.1-2014. Competitiveness of European aviation through cost efficiency and innovation (2104).

International cooperation:

- **From 2018, she is the Secretary of “ICPIC – International Congress of Polymers in Concrete” Association. (Member of the Board of Directors in the sub-committee “International Exchange” since 2013).**
- **She is a member of the international working group on “Aging of composites (FRP) for**

highways and bridges” form “U.S. Department of Transportation’s Federal Highway Administration (USDOT-FHWA)”, in collaboration with the West Virginia University-Constructed Facilities Center (WVU-CFC) (since 2013).

- She is co-tutor of PhD students and member of PhD jury of the École Polytechnique Fédérale de Lausanne (EPFL, Composite Construction Laboratory), Switzerland (since 2013).

She keeps Scientific collaborations with:

- Composite Construction Laboratory, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland (ranked 5th in the Reuters Europe's Most Innovative Universities – 2017);
- Department of Materials, Loughborough University of Technology, Loughborough, U.K (ranked 6th in the Guardian UK University Guide – 2018).
- Department of Civil Engineering, University of Minho, Portugal.
- Department of Building Materials Engineering (DBME), Warsaw University of Technology, Warsaw, Poland.

She is the institutional representative for University of Salento of the Agreement for: International Cooperation with Composite Construction Laboratory (CClab), Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland (2014); ASSORESTAURO Association (2015); Italcementi S.p.A. (2015); Dell’Anna Muia S.u.r.l. (2015); Centro Restauro Materiale Cartaceo (2015); Brno University of Technology (Czech Republic) (2016).

Conference commitments:

She took part to the Scientific Committee of the following Congresses:

- “International Symposium Polymers in Concrete, ISPIC 2006”, Guimarães, Portugal.
- “13th International Congress on Polymers in Concrete, ICPIC 2010”, Madeira, Portugal.
- “European Symposium on Polymers in Sustainable Construction, ESPSC 2011”, Warsaw, Poland.
- “14th International Congress on Polymers in Concrete, ICPIC 2013”, Shanghai, China.
- “15th International Congress on Polymers in Concrete, ICPIC 2015”, Singapore.
- “6th International Conference on “Recycling: Reduce, Reuse, Recycle” (Bench OCM), 2017, Las Vegas, USA.
- “16th International Congress on Polymers in Concrete, ICPIC 2018”, Washington DC, USA.
- “Fifth International Conference on Smart Monitoring, Assessment and Rehabilitation of Civil Infrastructures, SMAR 2019”, Postdam, Germany.
- She took part to the organizing Committee of the “First International Conference of Innovative Materials and Technologies for Construction and Restoration, IMTCR '04”, 2004, Lecce, Italy

Project responsibility:

She has been the responsible (coordinator) of University of Salento for the following competitive projects:

- Explorative Research Project financed by Apulia Regional funds (POR) “Nanocomposites hybrid adhesives with superior durability employed in restoration applications of Lecce stone” (2006-08).
- Strategic Research Project financed by Apulia Regional funds (POR) “Protection, consolidation and cleaning of stones characteristic of Apulia region: experimental analysis of environmental friendly products and monitoring of the treatments” (2009-13).
- Mobility Project “INTER-ASIA” financed by Apulia Regional funds in the framework of Transnational Actions (2017-18).

Moreover, she has been in charge for the research unit of University of Salento for the following competitive projects:

- Coordinate Project of Italian National Council for Research (CNR) “Innovative Structural

Materials and their employment in Construction Industry” (1998 and 1999).

- Research Project of Italian Ministry for University and Scientific and Technologic Research (PRIN-MURST) “Novel Thermosetting Toughened Systems for Resin Transfer Molding Processes” (2003-04).
- Research Project in the framework “Network of Public Research Laboratories” financed by Apulia Regional funds “Applied Innovation Technologies for Diagnosis and Conservation of Built Heritage – A.I.Te.C.H.” (2010-12).

Honors and Awards:

- Industria Felix Prize (May 2015). <http://www.industriafelix.it>. Motivation “*For an innovative idea proposed and purchase by a Company. Prof. Mariaenrica Frigione invented a patent aimed at protecting and preserving the Leccese Stone, a precious resource of the extractive sector of Apulia Region, already employed even abroad, patent purchased by Dell’Anna Muia Company*”.