

CURRICULUM VITAE

FORMATO EUROPEO/EUROPEAN FORMAT

PERSONAL INFORMATION

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| Name, Surname | Mara, Camaiti |
| Address | CNR - Institute of Geosciences and Earth Resources - Section of Florence |
| House number, street name, postcode, city, country | Via G. La Pira, 4, 50121, Firenze, Italy |
| Telephone | +39-055-2757558 |
| Fax | +39-055-290312 |
| E-mail | mara.camaiti@igg.cnr.it |
| Website | http://www.igg.cnr.it |
| Nationality | Italiana |
| Place and Date of birth | Anghiari (AR), 23 September 1958 |

WORK EXPERIENCE

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| From 1989 to present 2018: | CNR Researcher Researcher at Institute for Conservation and Enhancement of Cultural Heritage (Sesto Fiorentino – Florence) (from 1989 to 2012) Researcher at Institute for Geosciences and Earth Resources (IGG), section of Florence (from 2012 to present) |
| From – to | 2018 -to 2020 |
| Name and address of employer | CNR - Institute of Geosciences and Earth Resources (IGG)- Section of Florence |
| Type of business or sector | Research |
| Occupation or position held | Researcher |
| Main activities and responsibilities | Scientific leader of the Project " Nanomaterials and nanocomposites for an innovative and sustainable conservation of stone artifacts" in the framework of the "Joint higher education project" CUP "B56J17001330004", co-financed by Regione Toscana |
| From – to | 2016 -to 2018 |
| Name and address of employer | CNR - Institute of Geosciences and Earth Resources (IGG)- Section of Florence |
| Type of business or sector | Research |
| Occupation or position held | Researcher |
| Main activities and responsibilities | Scientific leader of the CNR-IGG Research Project "geomaterials and cultural heritage" with activity in the field of stone conservation and archaeometric studies on artworks |
| From – to | 2017 - 2019 |
| Name and address of employer | Ministry of Foreign Affairs and International Cooperation - Italian Republic |
| Type of business or sector | Research - Indo-Italian Bilateral Project |
| Occupation or position held | Project leader |

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| Main activities and responsibilities | Identification of improved materials and techniques that will be proved effective under tropical climatic conditions for restoration of historical residential buildings in Shajahanabad (Old Delhi - India) |
| From – to | 2016 - 2018 |
| Name and address of employer | Provincia Veneta dei Carmelitani Scalzi, Verona (Italy) |
| Type of business or sector | Research |
| Occupation or position held | Scientific leader - Researcher |
| Main activities and responsibilities | Identification of consolidation agents of marble in the restoration project of the Chiesa di Santa Maria di Nazareth (degli Scalzi) in Venice (Italy) |
| From – to | 2015-2018 |
| Name and address of employer | Università degli Studi di Cagliari - Dept. of Chemical and Geological Sciences |
| Type of business or sector | Research |
| Occupation or position held | Scientific leader - Researcher |
| Main activities and responsibilities | Study of decay processes of various kinds of rocks from Sardinia region. The work was in the framework of a project financed by Regione Sardegna (L.R. 7 agosto 2007, n.7 - CUP F71J11000620002). |
| From – to | 2010-2012 |
| Name and address of employer | CNR - Institute for Conservation and Enhancement of Cultural Heritage (ICVBC) - Florence |
| Type of business or sector | Research |
| Occupation or position held | Researcher |
| Main activities and responsibilities | Scientific leader of the WP3 in the framework of the Tecon@BC Project (Innovative technologies for Conservation and Enhancement of Cultural Heritage) (POR FESR 2007-2013 Attività 1.1 Linee d'intervento D – Regione Toscana) |
| From – to | 2010-2011 |
| Name and address of employer | CNR - Institute for Conservation and Enhancement of Cultural Heritage (ICVBC) - Florence |
| Type of business or sector | Research |
| Occupation or position held | Project leader - Researcher |
| Main activities and responsibilities | Project leader of the Bilateral Project CNR Italy – CNRST Morocco “Restoration methodologies of mosaic decorations in Moroccan and Italian historical buildings”. |
| From – to | 2009-2011 |
| Name and address of employer | CNR - Institute for Conservation and Enhancement of Cultural Heritage (ICVBC) - Florence |
| Type of business or sector | Research |
| Occupation or position held | Project leader - Researcher |
| Main activities and responsibilities | Project leader of the CNR research project “Chemical geochemical and biological methodologies and technologies supply for the conservation and enhancement of cultural assets” (Commessa INT.P10.003) |
| From – to | 2008-2009 |
| Name and address of employer | CNR - Institute for Conservation and Enhancement of Cultural Heritage (ICVBC) - Florence |
| Type of business or sector | Research |
| Occupation or position held | Project leader - Researcher |

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| Main activities and responsibilities | Project leader of the Bilateral Project CNR Italy – CNRST Morocco “Integrated and compared study on the degradation problems of mosaics and tiles of the Moroccan and Italian historic buildings: proposal for suitable restoration strategies”. |
| From – to | 2005-2008 |
| Name and address of employer | CNR - Institute for Conservation and Enhancement of Cultural Heritage (ICVBC) - Florence |
| Type of business or sector | Research |
| Occupation or position held | Project leader - Researcher |
| Main activities and responsibilities | Project leader of the CNR research project “Development of new materials and techniques for the restoration and conservation of Cultural Heritage” (Commessa PC-P03-006, 2005-2008). |
| From – to | 2008, 2010-2017 |
| Name and address of employer | University of Bologna - Branch of Ravenna |
| Type of business or sector | Teaching |
| Occupation or position held | Adjunct Professor |
| Main activities and responsibilities | Course of “Natural and Synthetic polymers in conservation” at 2nd International Cycle Degree in “Science for Conservation and Restoration”. |
| From – to | 2004-2008 |
| Name and address of employer | University of Bologna - Branch of Ravenna |
| Type of business or sector | Teaching |
| Occupation or position held | Adjunct Professor |
| Main activities and responsibilities | Course of Chemistry of synthetic polymers”at 2nd Level Degree Course in “Sciences and Technologies for the Conservation and Restoration of Cultural Heritage” |

EDUCATION AND TRAINING

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| From – to | February-May 1996, November- December 1994 |
| Name and type of organisation providing education and training | Dept. of Chemical Engineering- North Carolina State University, Raleigh N.C. - U.S.A, and Dept. of Chemistry -University of North Carolina at Chapel Hill, Chapel Hill, N.C. - U.S.A. |
| Principal subjects occupational skills covered | Transport properties of gas in polymers and determination of solubility of perfluorinated compounds in supercritical CO ₂ |
| Title of qualification awarded | Certificate |
| Level in National classification | Research Scholar |
| From – to | 1986-1989 |
| Name and type of organisation providing education and training | CNR - Centro di Studio sulle cause di Deperimento e Metodi di Conservazione delle Opere d'Arte - Firenze |
| Principal subjects occupational skills covered | Synthesis, characterization and testing of some polymeric materials that will be used as stone protection |
| Title of qualification awarded | Certificate |
| Level in National classification | 1 Lincei and 3 AIRI Scholarships |
| From – to | 1984-1986 |
| Name and type of organisation providing education and training | Department of Organic Chemistry-University of Florence |

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| Principal subjects occupational skills covered | Synthesis and catalytic activity of some Ru-carbonyl-carboxylates |
| Title of qualification awarded | Certificate |
| Level in National classification | Laboratories assistant |
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| From – to | July 1984 |
| Name and type of organisation providing education and training | Department of Chemistry - University of Florence |
| Principal subjects occupational skills covered | Thesis: Synthesis and catalytic activity of some Ru-carbonyl-carboxylates with chiral ligands. |
| Title of qualification awarded | University degree (Graduation in Chemistry) |
| Level in National classification | |

RESEARCH ACTIVITIES

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| Attuali campi di ricerca / Research sectors | <ul style="list-style-type: none"> - Synthesis and characterization of polymeric materials (such as derivatives of perfluoropolyetheric oligomers, partially fluorinated (meth)acrylic polymers and functionalized polyolefin) for the protection and consolidation of works of art, in particular stone artefacts and paints; - Evaluation of the performance (e.g. chemical, UV, and thermal stability, water-repellence, resistance to acidic gases, drilling and abrasion resistance) of some polymeric compounds used as protective and consolidation agents for stone; - Sorption, transport, and permeation of small molecules in polymers; - Diffusivity of water in porous media, before and after treatment with polymeric compounds, by NMR techniques (MR-Imaging and NMR-Relaxometry); - Characterization of architectural and artistic surfaces by non-invasive and non-destructive systems (hyperspectral devices) for the evaluation and monitoring of their state of conservation; - Chemical and physical (Er-YAG laser) cleaning of mural paintings. |
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Recent Scientific Activities. Development of new formulate and application methods for stones consolidation and protection

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| Books and Articles | <ul style="list-style-type: none"> - Yijian Cao, Antonella Salvini, Mara Camaiti, "Superhydrophobic fluorinated oligomer as protective agent for building materials", <i>Natural Product Research</i> (in press) - Cong Wang, Sandro Moretti, Mara Camaiti, "Fast and non-invasive identification of binding media in easel paintings by a portable hyperspectral sensor", <i>Studies in Conservation and Restoration</i> (in press) - Jinneng Zhu, Xuanhua Li, Yuanyuan Zhang, Jia Wang, Yijian Cao, Mara Camaiti, and Bingqing Wei (2019), " Dual Functionalities of Few-Layered Boron Nitrides in the Design and Implementation of Ca(OH)₂ Nanomaterials toward an Efficient Wall Painting Fireproofing and Consolidation", <i>ACS Appl. Mater. Interfaces</i>, 11, 11792–11799. - Yijian Cao, Antonella Salvini, Mara Camaiti (2018), "Facile design of “sticky” near superamphiphobic surfaces on highly porous substrate", <i>Materials & Design</i>, 153,(5),139-152. - Mara Camaiti, Leonardo Brizi, Villiam Bortolotti, Alessandra Papacchini, Antonella Salvini, and Paola Fantazzini , (2017) "An Environmental Friendly Fluorinated Oligoamide for Producing Nonwetting Coatings with High Performance on Porous Surfaces", <i>ACS Appl. Mater. Interfaces</i>, 9, 37279-37288 - Leonardo Brizi, Mara Camaiti, Villiam Bortolotti, Paola Fantazzini, Bernhard Blümich, Sabine Haber-Pohlmeier, (2018), "One and Two-dimensional NMR Studies for Cultural Heritage: Evaluation of Consolidants", <i>Microporous & Mesoporous Material</i>, 269, 186-190 - Yijian Cao, Antonella Salvini, Mara Camaiti (2017), "Oligoamide grafted with perfluoropolyether blocks: |
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- a potential protective coating for stone materials", *Progress in Organic Coatings*, 111, 164-174.
- Mara Camaiti, Marco Benvenuti, Pilario Costagliola, Francesco Di Benedetto, Sandro Moretti (2017), "Hyperspectral sensors for the characterization of Cultural Heritage surfaces", in *Sensing the Past - Form artifact to historical site, Geotechnologies and the Environment*, Vol. 16, Edited by N. Masini and F. Soldovieri, Springer International Publishing, pag 289-311, ISBN: 978-3-319-50516-9 (Print) 978-3-319-50518-3 (Online) DOI 10.1007/978-3-319-50518-3
 - Daniele Ciofini, Jana Striova, Mara Camaiti, Salvatore Siano (2016), "Photo-oxidative kinetics of solvent and oil-based terpenoid varnishes", *Polymer Degradation and Stability*, 123, 47-61. doi:10.1016/j.polyimdegradstab.2015.11.002
 - A. Andreotti, W.P. Brown, M. Camaiti, M.P. Colombini, A. DeCruz, (2016), "Diagnosis of materials and effectiveness of Er:YAG Laser cleaning in a Borrassa's Panel Painting (15th Cent.)", *Applied Physics A*, 122, 572 (12 pages). DOI: 10.1007/s00339-016-0100-1
 - M. Camaiti, V. Bortolotti, P. Fantazzini, (2015), "Stone porosity, wettability changes and other features detected by MRI and NMR relaxometry: a more than 15-year study", *Magn. Reson. Chem.*, 53, 34-47 published online 16 October 2014 - DOI: 10.1002/mrc4163
 - A. Ugolini, G. Ungherese, M. Ciofini, A. Lapucci, M. Camaiti, (2013), "Microplastic debris in sandhoppers", *Estuarine, Coastal and Shelf Science*, 129, 19-22
 - E. Pecchioni, S. Alvisi, M. Camaiti, E. Cantisani, (2012), "La Loggia dei Lanzi a Firenze: un ottimo esempio di trattamento conservativo con prodotti perfluorurati", *Arkos - Scienza e Restauro*, 30-33 (Gennaio-Dicembre 2012), 56-60, ISBN 978-88-8393-121-5
 - G. Di Silvestro, M. A. Ortenzi, H. Farina, M. Camaiti, (2012), "Effetto protettivo di poli(meta)Acrilati portanti mini blocchi fluorurati", *Arkos - Scienza e Restauro*, 30-33 (Gennaio-Dicembre 2012), 34-38, ISBN 978-88-8393-121-5
 - M. Camaiti, (2012), "L'evoluzione dei perfluoropolietteri nella conservazione dei manufatti lapidei", *Arkos - Scienza e Restauro*, 30-33 (Gennaio-Dicembre 2012), 20-24, ISBN 978-88-8393-121-5.
 - G. Baldi, M. Camaiti, L. Luvidi, C. Mazzotta, A.M. Mecchi, (2011), "Caratteristiche fotocatalitiche e antibatteriche di nanomateriali", *Arkos - Scienza e Restauro*, 28 (Luglio-Settembre 2011), 19-24, ISSN 1974-7950
 - M. Camaiti, E. Benvenuti, L. Paciulli, (2011), "Formulati a base di poliammidi parzialmente fluorurate e fluoroelastomeri per la protezione e il consolidamento di manufatti lapidei", *Arkos - Scienza e Restauro*, 28 (Luglio-Settembre 2011), 29-33, ISSN 1974-7950
 - S. Agnoletti, L. Brambilla, A. Brini, A. Cagnini, M. Camaiti, C. Celi, L. Cetarini, R. De Lapi, M. Galeotti, S. Goidanich, S. Porcinai, B. Salvadori, L. Toniolo, (2011), "Formulati e metodologie per la pulitura e la protezione di superfici metalliche", *Arkos - Scienza e Restauro*, 28 (Luglio-Settembre 2011), 34-37, ISSN 1974-7950
 - P. Machetti, V. De Troia, P. Pallecchi, M. Camaiti, S. Cerreti, (2011), "Modellazione 3D della Tomba Ildebranda e della Tomba dei Demoni Alati con georeferenziazione e visualizzazione di dati eterogenei", *Arkos - Scienza e Restauro*, 28 (Luglio-Settembre 2011), 69-72, ISSN 1974-7950
 - M. Camaiti, S. Cerreti, P. Machetti, I. Malesci, P. Pallecchi, (2011), "Sistema informativo per la gestione di dati eterogenei e la valutazione della durabilità di trattamenti conservativi", *Arkos - Scienza e Restauro*, 28 (luglio-Settembre 2011), 73-77, ISSN 1974-7950
 - M. Camaiti, L. Borgioli, L. Rosi, (2011) "Photostability of innovative formulations for artworks restoration", *La Chimica & l'Industria*, 9, p. 100-105
 - J. Striova, M. Camaiti, E.M. Castellucci, A. Sansonetti, (2011), "Chemical, morphological and chromatic behaviour of mural paintings under Er:YAG laser irradiation", *Appl Phys A - Material science & processing*, 104 N.2, 649-660, DOI 10.1007/s00339-011-6303-6. Published on line 09 February 2011
 - M. Camaiti, M. Benvenuti, L. Chiarantini, P. Costagliola, F. Di Benedetto, S. Moretti, F. Paba, E. Pecchioni, S. Vettori, (2011), "Hyperspectral sensor for gypsum detection on monumental buildings", *Journal of Geophysics and Engineering*, 8, pp.S126-S131.
 - O.A. Cuzman, M. Camaiti, Sacchi B., P. Tiano, (2011), "Natural antibiofiling agents as new control method for phototrophic biofilms dwelling on monumental stone surfaces", *International Journal of Conservation Science*, 2 (1), pp 3-16.
 - M. Frediani, L. Rosi, M. Camaiti, D. Berti, A. Mariotti, A. Comucci, C. Vannucci, I. Malesci, (2010) "Poly lactide/Perfluoropolyether Block Copolymers: Potential Candidates for Protective and Surface Modifiers", *Macromolecular Chemistry and Physics*, 211/9, 988-995, DOI 10.1002/macp.201000034.
 - M. Gombia, V. Bortolotti, R.J.S. Brown, M. Camaiti, L. Cavallero, F. Fantazzini, (2009) "Water vapor absorption in porous media polluted by calcium nitrate studied by time domain nuclear magnetic resonance", *J. Phys. Chem. B*, 113, 10580-10586 (published on July 13, 2009 on <http://pubs.acs.org/doi:10.1021/jp902781f>)
 - S. Bugani, M. Camaiti, L. Morselli, E. Van de Castele, K. Janssens, (2008) "Investigating morphological changes in treated vs. untreated stone buildings materials by X-ray micro-CT", *Analytical and Bioanalytical Chemistry*, 391 (4), 1343-1350.
 - M. Gombia, V. Bortolotti, R.J.S. Brown, M. Camaiti, P. Fantazzini, (2008) "Models of water imbibition in

- untreated and treated porous media validated by quantitative Magnetic Resonance Imaging”, *J. of Applied Physics*, vol. 103 Issue 9, 094913.
- S. Bugani, M. Camaiti, L. Morselli, E. Van de Castele, K. Janssens, (2007) “Investigation on porosity changes of Lecce stone due to conservation treatments by means of X-ray nano- and improved micro-Computed Tomography: preliminary results”, *X-Ray Spectrometry*, 36, 316-320.
 - M. Camaiti, S. Bugani, E. Bernardi, L. Morselli, M. Matteini, (2007) “Effects of atmospheric NOX on biocalcarene coated with different conservation products”, *Applied Geochemistry*, 22, 1248-1254.
 - M. Camaiti, C. Casieri, F. De Luca, P. Fantazzini, C. Terenzi, (2007) “The use of portable single-sided Relaxometry and laboratory imaging NMR devices in stone conservation”, *Studies in Conservation*, 52, 37-49
 - V. Bortolotti, M. Camaiti, C. Casieri, F. De Luca, P. Fantazzini, C. Terenzi, (2006) “Water absorption kinetics in different wettability conditions studied at pore and sample scales in porous media by NMR with portable single-sided and laboratory imaging devices”, *J. Magnetic Resonance*, 181, 287-295.
 - M. Camaiti, V. Bortolotti, M. Gombia, and P. Fantazzini, (2005) “Systematic MRI investigations of stone conservation treatments with traditional and innovative hydrophobic products”, *Magnetic Resonance Imaging*, vol. 23, p. 427.
 - G.C. Borgia, M. Camaiti, F. Cerri, P. Fantazzini, F. Piacenti, (2000) “Study of water penetration inside rock materials by Nuclear Magnetic Resonance Tomography: hydrophobic treatments effects”, *J. of Cultural Heritage*, 1, 127-132.
 - M.J. Melo, S. Bracci, M. Camaiti, O. Chiantore, F. Piacenti, (1999) “Photodegradation of acrylic resins used in the conservation of stone”, *Polymer Degradation and Stability*, 66, 23-30.
 - F.F. Hénon, M. Camaiti, A.L.C. Burke, R.G. Carbonell, J.M. DeSimone, F. Piacenti (1999) “Supercritical CO2 as a solvent for polymeric stone protective materials”, *Journal of Supercritical Fluids*, 15, pp. 173-179.
 - F. Piacenti, M. Camaiti (1994) "Synthesis and characterization of fluorinated polyetheric amides", *Journal of Fluorine Chemistry*, 68, pp 227-235.

Florence, April 17th, 2019

Dr. Mara Camaiti
