

PERSONAL INFORMATION**Francesca Sbardella**✉ francesca.sbardella@uniroma1.it

Sex Female | Date of birth 17/05/1988 | Nationality Italian

WORK EXPERIENCE

From January 2020 to December 2020

Post-doctoral research fellowDICMA- Department of Chemical Engineering Materials Environment, Sapienza - Università di Roma (*Assegno di ricerca*)

Progettazione con approccio statistico e realizzazione di un piano sperimentale per la caratterizzazione dinamica di laminati compositi e giunti ibridi

Scientific sector: Materials science and technology (ING-IND/22)

From December 2017 to December 2019

Research fellowINSTM - National Interuniversity Consortium of Materials Science and Technology, Italy (*Borsa di ricerca*)

Nano-materiali e compositi per l'estrusione di tubi multistrato in applicazioni avanzate legate alla sostenibilità ambientale (NANOMATUBAM)

Scientific sector: Materials science and technology (ING-IND/22)

From August 2016 to November 2017

Research fellowCISTeC - Research Center in Science and Technology for the Conservation of historical-architectural heritage, University of Rome "Sapienza" (*Borsa di studio*)

Synthesis, application and characterization by spectroscopic techniques and high-resolution microscopy of hybrid silico-acrylic polymers on porous media

Scientific sector: Industrial and technological chemistry (ING-IND/27)

From October 2015 to February 2016

Research fellowDepartment of Structural and Geotechnical Engineering, University of Rome "Sapienza" (*Borsa di studio*)

Investigation of thermo-mechanical properties of fibre-reinforced porous materials

MIUR National Government Grants - PRIN 2015-2018: Multiscale and Multiphysics Modelling for "Complex Materials", Coordinated by Prof. P. Trovalusci.

EDUCATION AND TRAINING

October 2018

Doctor of Philosophy, (PhD)

in "Electrical, Materials and Nanotechnology Engineering" University of Rome "Sapienza", Italy and in "Applied chemistry and polymeric materials" University of Basque Country, UPV/EHU, San Sebastian Spain

Final evaluation: "Ottimo cum laude" and "Sobresaliente cum laude"

From November 2014 to October 2018

Ph.D. student

PhD student in a joint research doctoral thesis in "Electrical, Materials and Nanotechnology Engineering" University of Rome "Sapienza", Italy and in "Applied chemistry and polymeric materials" University of Basque Country, UPV/EHU, San Sebastian Spain

▪ Synthesis, characterization and application of polyacrylate / silica hybrid films for protective coatings

From September 2011 to
December 2013

Master's degree

Master's degree in "Science and Technology for the Conservation of Cultural Heritage", University of Rome "Sapienza", Italy

- Application of NanoSilicates for the Production of Consolidants for Plasters

Graduated in Science and Technology for the Conservation of Cultural Heritage with 110 /110 e lode

From September 2007 to March
2011

Bachelor's degree

Bachelor's degree in "Science Applied to Cultural Heritage and Diagnostics for their Conservation", University of Rome "Sapienza", Italy

- Study of painted plasters from the Augustus's House in Rome

Graduated in Conservation Sciences with 108/110

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
Spanish	C2	C1	C2	C1	C1

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

Job-related skills

- Infrared and Raman Spectroscopy analyses (FT-IR, FT-Raman, FTIR- ATR, μ -Raman and μ -FTIR)
- Thermal analysis (DSC, TGA, DTA)
- Scanning electron microscopy with X-rays microanalysis (SEM-EDX)
- Transmission electron microscopy (TEM, cryo-TEM)
- Mechanical characterization of polymeric and inorganic material (tensile, compression, bending, peeling, fatigue, low velocity impact, microhardness, fibre/matrix interfacial adhesion via single fibre fragmentation test)
- Extrusion and injection moulding of polymers and polymer matrix composites
- X-ray diffraction (XRD, XRPD)
- X-ray fluorescence spectroscopy (XRF)
- Rheological measurements
- Contact and non-contact profilometry
- Preparation and characterization of cross and thin sections
- Atomic Force Microscopy (AFM)
- Nuclear magnetic resonance spectroscopy (NMR)
- Polymeric Synthesis in batch, semibatch and continuous reactors
- Characterization of polymeric and hybrid dispersions (Dynamic Light Scattering, Turbiscan, Optical Contact Angle/static contact angle, Sonifier, Gas chromatography, Minimum film formation temperature, Tensiometer/ Surface tension, Ultracentrifuge)
- Indoor and outdoor Microclimatic studies
- ISO and ASTM accelerated weathering test
- Design of experiments (DoE)
- Computer skills: Word, Excel, PowerPoint, Origin, ImageJ, Opus, RStudio

Digital competence

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient User	Proficient user	Independent user	Independent user	Proficient user

Levels: Basic user - Independent user - Proficient user
[Digital competences - Self-assessment grid](#)

Driving licence B

ADDITIONAL INFORMATION

Scientific publications

- F. Sbardella, M. Lilli, M. C. Seghini, I. Bavasso, F. Touchard, L. Chocinski-Arnault, I. Rivilla, J. Tirillò, F. Sarasini, Interface tailoring between flax yarns and epoxy matrix by ZnO nanorods, *Composites Part A*, October 2020, In press, doi.org/10.1016/j.compositesa.2020.106156
- C. Sergi, F. Sbardella, M. Lilli, J. Tirillò, A. Calzolari, F. Sarasini, Hybrid cellulose–basalt polypropylene composites with enhanced compatibility: the role of coupling agent, *Molecules*, 25, 4384, 2020, doi:10.3390/molecules25194384
- M. Lilli, F. Sbardella, I. Bavasso, M. P. Bracciale, C. Scheffler, I. Rivilla, J. Tirillo', W. Xin, I. Maria De Rosa, F. Sarasini, Tailoring the interfacial strength of basalt fibres/epoxy composite with ZnO-nanorods, *Composite Interfaces*, 2020, DOI: 10.1080/09276440.2020.1805217
- F. Sbardella, M.P. Bracciale, M.L. Santarelli, José M. Asua, Waterborne modified-silica/acrylates hybrid nanocomposites as surface protective coatings for stone monuments, *Progress in Organic Coatings* 149 (2020), 105897, doi.org/10.1016/j.porgcoat.2020.105897
- V. Mazzanti, L. Malagutti, A. Santoni, F. Sbardella, A. Calzolari, F. Sarasini, F. Mollica, Correlation between Mechanical Properties and Processing Conditions in Rubber Toughened Wood Polymer Composites, *Polymers* 2020, 12, 1170; doi:10.3390/polym12051170
- D. Puglia, F. Luzi, M. Lilli, F. Sbardella, M. Pauselli, L. Torre, P. Benincasa, Straw fibres from barley hybrid lines and their reinforcement effect in polypropylene based composites, *Industrial Crops & Products* 154 (2020) 112736, doi.org/10.1016/j.indcrop.2020.112736
- P. Russo, L. Vitiello, F. Sbardella, J. I. Santos, J. Tirillò, M. P. Bracciale, I. Rivilla, F. Sarasini, Effect of Carbon Nanostructures and Fatty Acid Treatment on the Mechanical and Thermal Performances of Flax/Polypropylene Composites, *Polymers* 2020, 12, 438; doi:10.3390/polym12020438
- W. Xin, F. Sarasini, J. Tirillò, I. Bavasso, F. Sbardella, L. Lampani, I.M. De Rosa, Impact and post-impact properties of multiscale carbon fiber composites interleaved with carbon nanotube sheets, *Composites Part B* 183 (2020) 107711, doi.org/10.1016/j.compositesb.2019.107711
- F. Sarasini, J. Tirillò, I. Bavasso, M. P. Bracciale, F. Sbardella, L. Lampani, G. Cicala, Effect of electrospun nanofibres and MWCNTs on the low velocity impact response of carbon fibre laminates, *Composite Structures* 234 (2020) 111776, doi.org/10.1016/j.compstruct.2019.111776
- F. Sarasini, J. Tirillò, L. Ferrante, C. Sergi, F. Sbardella, P. Russo, G. Simeoli, D. Mellier, A. Calzolari, Effect of temperature and fiber type on impact behavior of thermoplastic fiber metal laminates, *Composite Structures*, Volume 223, 2019, doi.org/10.1016/j.compstruct.2019.110961

- I. Bavasso, M.P. Bracciale, F. Sbardella, J. Tirillò, F. Sarasini, L. Di Palma, Effect of yerba mate (*Ilex paraguariensis*) residue and coupling agent on the mechanical and thermal properties of polyolefin-based composites, *Polymer Composites*, 1-13, 2019, DOI: 10.1002/pc.25355
- Sbardella, F., Pronti, L., Santarelli, M.L., González, J.M.A., Bracciale, M.P., Waterborne acrylate-based hybrid coatings with enhanced resistance properties on stone surfaces, *Coatings*, 2018, 8(8), 283; doi.org/10.3390/coatings8080283
- Capobianco G., Bracciale M.P., Sali D., Sbardella F., Belloni P., Bonifazi G., Serranti S., Santarelli M.L., Cestelli Guidi M., Chemometrics approach to FT-IR hyperspectral imaging analysis of degradation products in artwork cross-section, *Microchemical Journal*, 2017, 132, 69-76. doi 10.1016/j.microc.2017.01.007
- Bracciale M.P., Broggi A., Bartollini E., Sbardella F., Poldi M., Marrocchi A., Santarelli M.L., Vaccaro L., Preparation and characterization of cross-linked polymer supports for catalysts immobilization, *International Journal of Engineering Research & Science (IJOER)*, 2016, 2, 166-189. ISSN: [2395-6992]
- Santarelli M.L., Sbardella F., Zuena M., Albé M., Quattrocio G., Tirillò J., Valente M., Sarasini F., Malte più performanti con le fibre di basalto, *COMPOSITI MAGAZINE*, 2014, 33, 7-16.
- Santarelli, M.L., Sbardella, F., Zuena, M., Tirillò, J., Sarasini, F., Basalt fiber reinforced natural hydraulic lime mortars: A potential bio-based material for restoration, *Materials and Design*, 2014, 63, 398-406. doi.org/10.1016/j.matdes.2014.06.041
- ICCM22 - 22nd International Conference on Composite Materials 2019, 11 - 16 August 2019, Melbourne, Australia, "Hierarchical modification of flax fibres by zinc oxide nanostructures" (*speaker*).
- ECCM18 – 18th European Conference on Composite Materials, 25-28 June 2018, Athens, Greece.
- "TechnoHeritage 2017 - 3rd International Congress Science and Technology for the Conservation of Cultural Heritage", 21-24 May 2017, Cadiz, Spain, "Synthesis and characterizations of polyacrylate/silica hybrid films for coating applications in Cultural Heritage" (*poster*).
- "Fifth International Symposium Frontiers in Polymer Science", 17-19 May 2017, Sevilla, Spain "Synthesis and characterizations of polyacrylate/silica hybrid films for coating applications" (*poster*).
- "ECIS 2016, the 30th Conference of the European Colloid and Interface Society", 4-9 September 2016, University of Rome "La Sapienza".
- "Urban Workshop: Columna, from Object to City", University of Arkansas Rome Centre, Rome (IT); 6 February 2014, "Study of microclimatic condition and the decay of Trajan's Column" (*speaker*).
- L'innovazione tecnologica per la diagnostica dei Beni Culturali: macro-imaging IR e micro XRF" Roma (IT); 15 March 2013, "Study of painted plasters of the House of Augustus" (*speaker*).

International and European Conferences

Conference Proceedings

- M. Lilli, F. Sbardella, I. Bavasso, M. P. Bracciale, M. C. Seghini, L. Di Palma, J. Tirillò, F. Sarasini, "Functionalization of basalt fibers by hydrothermal growth of zinc oxide nanostructures", ICCM22, Melbourne, Australia
- I. Rivilla, F. Sbardella, F. Sarasini, J. Tirillò, F. P. Cossío, "Synthesis of peptides possessing *à la carte* polarities for surface modification of natural fibers", ICCM22, Melbourne Australia.
- F. Sbardella, M. Lilli, I. Bavasso, M.P. Bracciale, M.C. Seghini, L. Di Palma, J. Tirillò, F. Sarasini, "Hierarchical modification of flax fibres by zinc oxide nanostructures", ICCM22, Melbourne, Australia, 11 -16 August 2019

Honours and awards

- Premio AIMAT (Associazione Italiana di Ingegneria dei Materiali) 2019 for the best PhD Thesis in Materials Science and Engineering: "Synthesis, characterization and application of polyacrylate / silica hybrid films for protective coatings", Ischia 21-24 July 2019.
- Traineeship winner (Erasmus+) at Basque Center for macromolecular design and engineering, Polymat San Sebastian, Spain, Project Title: Synthesis of polyacrylate/silica hybrid films for coatings application, from April to July 2015.
- "Ferroni Beni Culturali 2014", The Foundation Prof. Enzo Ferroni – NPO; for the thesis entitled "Application of NanoSilicates for the Production of Consolidants of Plasters"; April 2014.

Courses

- "Experimental Design", Kode srl, Pisa, 3-5 July 2019.
- "Introduction to the structure and properties of polymers" (8hrs), Prof. Alejandro J. Muller, April 2016, Polymat, University of Basque Country (UPV/EHU), San Sebastian, Spain.
- Infrared Spectroscopy School Applied to Diagnostics for Cultural Heritage, Fourth Edition, Conservation and Restoration Center, Venaria Reale, Turin, October 2015.
- "Course on Emulsion polymerization processes" 7-11 September 2015, Basque Center for macromolecular design & engineering, (Polymat) San Sebastian, Spain.
- "Itinerant Course on Stone Conservation" - Cultural Heritage Agency of the Netherlands in Amsterdam; EU project CHARISMA: "Cultural Heritage Advanced Research Infrastructures: Synergy for a Multidisciplinary Approach to Conservation/Restoration, 27 May - 7 June 2013.

Seminars

- "Non-destructive investigations for structural integrity monitoring: Ultrasound technique. Physical principles of the method and application fields", Prof. L. Lampani, 12 May 2017, University of Rome "Sapienza".
- "Non-destructive investigations for structural integrity monitoring: acoustic emission. Physical principles of the method and application fields", Prof. F. Sarasini, 12 May 2017, University of Rome "Sapienza".
- "Non-destructive investigations for structural integrity monitoring: non-destructive investigation techniques. Introduction, certification standards", Prof. J. Tirillò, 3 May 2017, University of Rome "Sapienza".
- "Non-destructive investigations for structural integrity monitoring: infrared thermography. Physical principles and Applications", Prof. S. Sfarra, 3 May 2017, University of Rome "Sapienza".
- "Hybrid organic-inorganic materials for optoelectronic", Dr. Ruben Costa, 22 February 2016, University of Basque Country (UPV/EHU), San Sebastian, Spain.
- "Controlled radical polymerization as a tool for the synthesis of surfactant free polymer particles

and organic/inorganic latexes”, Dr. Muriel Lansalot, 17 September 2015, University of Basque Country (UPV/EHU) San Sebastian, Spain.

- “Organic semiconductors device applications”, Prof. A. Marrocchi, 22 May 2015, University of Rome “Sapienza”.

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Rome, 26/10/2020