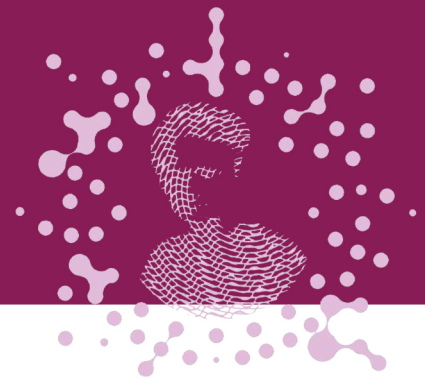




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1. Supervisor

Supervisor: prof. Eleonora Paris – School of Science and Technology/Geology division - UNICAM

Current academic position: Full Professor of Mineralogy

Professional and academic competencies: Mineralogy, Geochemistry, High temperature experiments, Geomaterials, Glasses, Waste materials, Synthesis of new materials from waste, Circular economy, Sustainability

Contacts eleonora.paris@unicam.it cell. +39-3207985880

Curriculum vitae

- Full professor at University of Camerino (UNICAM), Mineralogy sector (GEO/06) since 2023-
- Associate professor at University of Camerino (UNICAM), Mineralogy sector (GEO/06) 2002-2023. Teaching Geomaterials (LM74 course), Mineralogy, Cultural heritage materials
- President of the board of Gruppo Nazionale di Mineralogia (GNM) 2022-24. Member of the board (2021-24)
- Coordinator of the MSc. course "Geoenvironmental resources and risks" LM74, in English, at UNICAM, 2006-2025
- Master "CIRCUL_AR – Forms and methods for a circular architecture" (2021-23) teaching the module "CDW and material passports"
- Master "Innovative materials for a sustainable economy" (2020) teaching the module "New materials from waste"
- Member of the PhD Board of Science and Technology at UNICAM, since 2000
- Member of the Review Committee for evaluation of beamtime proposals, ESRF synchrotron (Grenoble, F) 2003-4
- Visiting scientist at Rensselaer Polytechnic Institute (NY, USA) 2004
- Responsible for experimental (granted) proposals at XAS beam lines at synchrotrons of LURE (Parigi, F), ESRF (Grenoble, F), SSRL (Stanford, USA), Daresbury (UK) 1991-2005
- Visiting researcher at the Dept. of Geology, University of Bristol (UK) 1991-95
- Visiting researcher at the Dept. of Geology, University of Bristol (UK). Scholarship by Royal Society-Accademia dei Lincei. 1990
- Visiting researcher (Naturwissenschaftlerin) at the Bayerisches Geoinstitut - Universität Bayreuth (D). German grants. 1988 - 89
- "Guest researcher" at LNF-INFN Frascati. Responsible for experimental proposal at XAS beam line at Frascati synchrotron (I) 1985-99

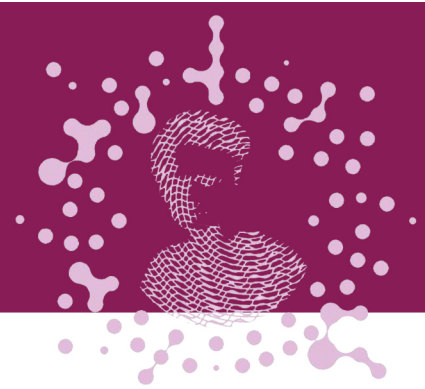
Education

- 1995 Ph.D., University of Bristol, UK
- 1981 Bachelor/MSc. Degree in Geological Sciences, University Roma La Sapienza (Italy) "cum laude" (with honors). Experimental thesis in Mineralogy.



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2026



Scientific interests

- Study of new sustainable materials from waste and industrial applications
- Determination of crystal chemical and structural role of transition elements and relationships with physical properties of minerals, glasses, melts/magmas.
- Synthesis at high pressure and temperature of minerals and glasses. In-situ study of high pressure behavior of oxides and silicates by diamond anvil cell.
- Application of XANES and EXAFS theoretical calculations to the study of materials relevant for the Earth Sciences. Determination of the role of light and volatiles elements (S, Cl, Al, Si, P) in silicate minerals and glasses.

Publications

Total number of publications: 125 on international peer-review journals citations 3128, H index 32 (march 2026, google scholar)
<https://orcid.org/0000-0002-1208-8690>

Funded projects (2000-2025)

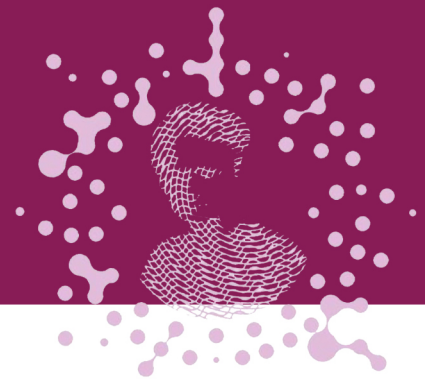
as Principal Investigator or Unit Coordinator or Scientific referent for industrial projects

- **FTIM (2023)** project MASKVERDE Riciclo delle mascherine chirurgiche per nuovi prodotti per l'edilizia sostenibile **Principal Investigator**
- **PRIN 2022** MUR project Rubble to resources (RUB2RS) Earth Science knowledge for sorting and recycling Construction and Demolition Waste. **Unit Coordinator**
- **Progetto Coesione 2022** (Trailed-lab) Un laboratorio mobile per la caratterizzazione dei materiali e delle strutture a servizio dei comuni del cratere del sisma 2016. **Unit Coordinator**
- **FESR/POR (2019)** industrial project NUOVAVITA Economia circolare post sisma per costruzioni ed opere **Scientific Referent**
- **ASSAM** Regione Marche (2019) Project on soil mineralogy. **Principal Investigator**
- **EU-LIFE project (2015-18)** LIFE14 ENV/IT/000801 ECOTILES (<http://www.ecotiles-lifeproject.eu/>) ECO innovative methodologies for the valorisation of construction and urban waste into high grade TILES **Principal Investigator**
- **Loccioni Industries (2014)** Project "Study of mortars from S. Clemente Abbey, Marche" **Principal Investigator**
- **FAR (2014)** Ateneo Project – An archaeometrical study of materials from Medieval monasteries in Central Italy (ARCHAEOMON) **Principal Investigator**
- **CUIA (2013)** Studi e applicazioni archeometriche sui materiali dell'architettura italiana in Argentina with UNIPV, UNIURB, UNICAL **Unit Coordinator**
- **MIUR 6/2000 (2013)** Cultura scientifica - Improving geoscience education to promote a widespread culture of natural hazards and mitigate their effects **Principal Investigator**
- **ANPA srl (2008-09)** Industrial project Analysis of ornamental rocks, with patent WO2010063570A1 **Scientific Referent**
- **PRIN 2003** MUR Cristallografia e ruolo strutturale degli elementi minori nei minerali metalliferi tramite XAS **Unit Coordinator**
- **MURST COFIN02 (2002-4)** The structure of silicate melts at extreme conditions **Principal Investigator**
- **PRIN 2001** MUR Coordinazione e stato di ossidazione degli elementi di transizione nei minerali mediante spettroscopia di assorbimento dei raggi X **Unit Coordinator**
- **CNR 2000 (2001-3)** High temperature XAS analysis of transition elements in silicate glasses **Principal Investigator**



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2026



List of some publications relevant for the project

STABILE P., FORNASINI L., PASETTI L., BERSANI D., DOMINIJANNI S., DI GENOVA D., ROMANO C., PARIS E. (2025) Characterization of mixed- waste glasses in the CAS system: insights from differential scanning calorimetry and Raman spectroscopy. *Eur. Phys. J. Plus* 140, 739

LATINI, M., MATTIELLO, S., ERCOLI, R., STABILE P., SANTULLI, C., PARIS E. (2025) Use Of Biogenic Calcium Carbonate From Mollusk Shell Waste For The Production Of Geopolymers. *Journal of Wastes and Biomass Management*, 7(2): 34-40.

ERCOLI, R., STABILE, P., OSSOLI, E., LUCONI, I., RENZULLI, A., PARIS E. (2025) Recycling Face Mask Fibers in Geopolymer-Based Matrices for Sustainable Building Materials *Ceramics* 8 (2), 54

VOLPINTESTA, FINOCCHIARO C., BARONE, G., MAZZOLENI, P., PARIS E. (2024) Compositional Differences in Construction and Demolition Wastes (CDWs) for Geopolymer Mortars: A Comparative Study Using Different Precursors and Alkaline Reagents *Minerals* 14 (4), 376

VOLPINTESTA, F., OSSOLI, E., STABILE, P., REGGIANI, A., SANTULLI, C., PARIS E. (2023) Geopolymers-based application for the up-cycling utilization of Construction and Demolition Waste from the 2016 Central Italy earthquakes *Materials Letters*, 333, 133849

OSSOLI, E., VOLPINTESTA, F., STABILE, P., REGGIANI, A., SANTULLI, C., PARIS E. (2023) Upcycling of composite materials waste into geopolymer-based mortars for applications in the building sector *Materials Letters*, 333, 133625

STABILE P., ABUDUREHMAN A., CARROLL, MR., PARIS E. (2023) Bulk Composition Effects on Vitrification of Mixed Fine Construction–Demolition and Inorganic Solid Waste *Minerals* 13 (11), 1378

STABILE, P., BELLO, M., PETRELLI, M., PARIS, E., CARROLL MR (2019) Vitrification treatment of municipal solid waste bottom ash *Waste Management* 95, 250-258 <https://doi.org/10.1016/j.wasman.2019.06.021>

2. Research Group and Facilities

Laboratory & Facilities: Available instruments include HP/HT experimental labs (with several instruments to reach conditions up to 2 GPa/1800°C), X-ray diffraction, X-ray fluorescence, spectroscopy (FTIR, Raman), electron microscopy (SEM/EMPA), digital imaging, mechanic properties lab, physical properties (thermal, acoustic), preparation lab.

Research Network: The UNICAM research group include Eleonora Paris, Paola Stabile, Carlo Santulli, Michael R. Carroll, PhD students and collaborators. Active projects are currently carried out in collaboration with Universities of: Ferrara, Roma La Sapienza, Chieti-Pescara (PRIN and Progetto Coesione), Parma, Catania and CNR-ISSMC. The group has also ongoing collaborations with industries.

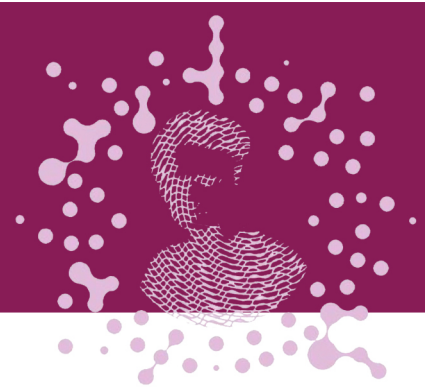
3. Research Thematic Area/Project Idea

Macroarea: This project is interdisciplinary and falls in the area of Scientific panel **Environmental and Geosciences (ENV)** both in level 1 keywords **V1-Environment and society (Circular economy)** and **V2-Earth system science (Mineralogy, petrology, igneous petrology, metamorphic petrology)**. The project can be well described by keywords waste, heavy metals geochemistry, new products, upcycling, sustainability



Marie Curie Postdoc Fellowship

2026



Title of the project: NEW MATERIALS FROM INDUSTRIAL WASTE

Project Overview:

The project aims at studying the possibility to obtain new environmentally friendly materials for the building sector using CDW (Construction and Demolition Waste), industrial waste like sludges and polishing/cutting muds, waste incinerator bottom and fly-ash. All these materials have limited recycling, due to the release of hazardous components or are landfilled for lack of upcycling applications, with CDW stream representing also a major problem due large accumulation in EU.

Experiments will be carried out using mixes of different wastes and substituting the traditional cement or resin-based binders with a geopolymer matrix or other inorganic binders. The materials obtained with these processes, which are aimed at the production of construction blocks/tiles as well as novel coibentant/insulation panels will be aimed at containing large quantities of recycled waste, with technical performance comparable or even higher than those of current best marketed products.

The waste incorporation is also aimed at avoiding leaching of hazardous elements from waste. Therefore the project will investigate the crystal chemical distribution of heavy-metals in incineration wastes and their behavior at a function of temperature during a vitrification process, by evaluating the partition between glass and crystalline phases. The absence of leaching after thermal treatments will help evaluate possible applications of these glassy products.

This research follows the EU directives about waste and landfill reduction, saving georesources, reducing CO₂ emissions, meeting the green public procurement. The aim is also to maintain collaborations with industries stimulating Circular Economy and a zero-waste approach, increasing the general environmental awareness of the EU stakeholders and population.

Using an existing network already established in a previous EU-LIFE project carried out by the research group, industrial stakeholders will act as waste materials providers. The project will demonstrate also the possibility to start a local "green district" for new eco-friendly products in the construction sector, to be extended to other sectors, transforming an environmental challenge into a potential resource for a wide range of application.

4. Candidate and Career Plan

Expected background of the candidate. The candidate will have a background in Geosciences with focus on mineralogy/geochemistry or Materials Science with interest on sustainability.

Competences and knowledge to be developed by the candidate. The candidate will develop competences in the analysis of geomaterials as well as industrial wastes, synthesis procedures, characterization of products (glasses, ceramics and glass-ceramics, geopolymers) and industrial applications. The candidate will make use of methods of analysis to investigate the chemical and structural properties by means of a variety of techniques (XRPD, XRF, SEM/EMPA, FTIR, Raman, tomography) as well as tests to evaluate physico-mechanical properties. The collaboration with companies will allow the candidate to enter in contact with the industrial world. EU collaborations include University of Hannover and University of Muenchen (D).