PERSONAL DATA

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PROFESSIONAL PROFILE: RESEARCH INTEREST

Emilia Vasanelli has been a researcher at the Institute of Heritage Sciences of the National Research Council (ISPC-CNR) since 2010. She holds a degree in Materials Engineering and a PhD in "Materials and Structures Engineering." Her research interests concern the study of nondestructive and semi-destructive techniques for the diagnostics and physical-mechanical characterization of building materials (natural and artificial stone materials (mortars and concrete)) used in existing buildings of cultural and noncultural interest. In particular, she is involved in developing new measurement protocols, correlations between destructive and nondestructive test results, and their statistical analysis.
In addition, she deals with the study of the durability of building materials: analysis of cracking, physical-mechanical deterioration in the presence of aggressive agents, and the effect of time and weathering on the mechanical and physical performance of materials.
She is also involved in the development and physical/mechanical characterization of innovative materials for the consolidation and structural rehabilitation of existing buildings. In particular, she studies the formulation and characterization of geopolymers to develop innovative and sustainable mortars for building retrofitting.

EDUCATION AND PROFESSIONAL EXPERIENCES

- Degree in Material Engineering 110/110 magna cum laude – University of Salento - December 2004
- Professional habilitation as engineer - 2006
- Qualification as "Specialized researcher in modeling and design of repair measurements in concrete structures using fiber reinforced composites (FRP)", at Consorzio CETMA Brindisi- March 2006.
- PhD in Engineering of Materials and Structures XXI cycle, at University of Salento- July 2011
- Enrollment in the regional register of voluntaries for seismic emergency, after the attendance of the course "Technical management of seismic emergency, damage assessment and practicability evaluation", August 2014.

- Invited researcher at the I2M Laboratory of the University of Bordeaux, in the research group of Prof. Mehdi Sbartai and Prof. Denys Breysse, June 2015.
- Evaluator of project proposals under the MISE calls - fund for sustainable growth: technical-scientific evaluator of the project proposal submitted under D.M. March 5, 2018, and the subsequent D.D. November 20, 2018, inherent to the INTELLIGENT FACTORY sector, position 89.
- Supervisor of "Archaeometry, Diagnostics and Conservation, Physics section" laboratory at ISPC Lecce office, September 2020.
- Teaching activities "Advanced Training Course, Sudan INNOVATION - A new Sudan through culture, technology and innovation" (CCST from January 25th to February 4th, 2021) with the lecture "Application of data mining techniques and validation methods for the analysis of experimental results in the field of cultural heritage."
- Lecturing activities 20 hours between February and June 2023, in the Biennial Education Course for Specialized Higher Technicians in "Digital Construction Manager of Historical Buildings" in the modules "Elements of Construction Science and Technology. Techniques of Investigation of Causes of Degradation" and 'Methodologies and Techniques of Conservation and Maintenance of Materials and Structures' for the foundation 'Apulia Regional ITS for The Industry of Hospitality and Expanded Tourism'
- Invited speaker at the workshop "Statistics at CNR at the Service of the Country - CNR Centennial Edition" with the contribution "Descriptive and predictive models for the mechanical characterization of stone materials using non-destructive measurement techniques." October 2023
- Guest Editor of the special issue "Advanced Research on Cultural Heritage" for the international open-access journal Buildings (MDPI). The assignment that began in November 2022 is currently ongoing.
- Invited speaker at the PhD Course in Engineering Science – Cycle XL "NON-DESTRUCTIVE IN SITU STRENGTH ASSESSMENT OF CONCRETE: AN OVERVIEW ON 249-ISC RILEM TC RECOMMENDATIONS PROPOSAL" with the seminar "Punta Perotti case study: estimating in situ concrete strenght combining direct and indirect measurements via cross validation procedure"June 17-19 2025 University "G. d'Annunzio" Chieti-Pescara.
-- Reviewer activity for the following international scientific journals: Construction and Building Material; Advances in civil engineering materials; International Journal of Rock Mechanics and Mining Science; Materials and Structures; Journal of cultural heritage; International Journal of Architectural Heritage; Mechanics of advanced materials and structures; Case studies in construction materials; Journal of building engineering; Minerals; Structures; Buildings; Symmetry.

PUBLICATIONS ON INTERNATIONAL JOURNALS

1. Vasanelli, E., Calò, S., Leone, M., & Aiello, M. A. (2025). Effect of content, gradation, and saturation of expanded waste glass aggregates on physical and mechanical properties of a fly-ash geopolymeric mortar. Construction and Building Materials, 499, 144111.DOI: 10.1016/j.conbuildmat.2025.144111
2. Emilia Vasanelli, Davide Di Gennaro, Matteo Sticchi, Gianni Blasi and Luigi Capozzoli, Comparison of Pulse-Echo Tomography and Through-Transmission Ultrasonic Test for UPV Characterization of Building Materials, Infrastructures 2025, 10(7),162; https://doi.org/10.3390/infrastructures10070162
3. Vasanelli, E.; Calò, S.; Cascardi, A.; Aiello, M.A. The Use of Lightweight Aggregates in Geopolymeric Mortars: The Effect of Liquid Absorption on the Physical/Mechanical Properties of the Mortar. Materials 2024, 17, 1798. https://doi.org/10.3390/ma17081798.
4. Emilia Vasanelli, Giovanni Quarta. DRMS for the mechanical characterization of lime mortars: Influence of user-controlled variables on the correlations between UCS and drilling results. Construction and Building Materials. Volume 384, 27 June 2023, 131492.
5. Emilia Vasanelli, Giorgia Di Fusco, Giovanni Quarta, Angela Calia. The use of drilling test to investigate the salt distribution in air lime mortars. Journal of Cultural Heritage 58 (2022) 49–56.
6. Emilia Vasanelli, Angela Calia, Maurizio Masieri, Giovanni Quarta, New insights into the use of drilling test for the characterization of soft lime mortars, Construction and Building Materials, Volume 316, 2022, 125894, ISSN 0950-0618, https://doi.org/10.1016/j.conbuildmat.2021.125894.
7. Emilia Vasanelli, Giovanni Quarta, Maurizio Masieri & Angela Calia (2021) High temperature effects on the properties of a high porosity calcareous stone building material, European Journal of Environmental and Civil Engineering, DOI: 10.1080/19648189.2021.1960897.
8. Emilia Vasanelli, Giovanni Quarta, Francesco Micelli, Angela Calia, The effects of an historical fire on a porous calcarenite from an industrial-archaeological building in the south of Italy, Engineering Geology, Volume 292,2021,106270, ISSN 0013-7952, https://doi.org/10.1016/j.enggeo.2021.106270.
9. Vasanelli, E.; Micelli, F.; Colangiuli, D.; Calia, A.; Aiello, M. A. A non-destructive testing method for masonry by using UPV and cross-validation procedure. Materials and Structures volume 53, Article number: 134 (2020). https://doi.org/10.1617/s11527-020-01568-8.
10. Micelli, F.; Candido, L.; Vasanelli, E.; Aiello, M.A.; Plizzari, G. Effects of Short Fibers on the Long-Term Behavior of RC/FRC Beams Aged under Service Loading. Appl. Sci. 2019, 9, 2540. https://doi.org/10.3390/app9122540.
11. Vasanelli, Emilia; Calia, Angela; Masieri, Maurizio; Baldi, Giovanni. Stone consolidation with SiO2 nanoparticles: Effects on a high porosity limestone. Construction and Building Materials. Volume 219, 20 September 2019, Pages 154-163
12. Vasanelli, Emilia; Colangiuli, Donato; Calia, Angela; Sbartaï, Zoubir Mehdi; Breysse, Denys. Combining non-invasive techniques for reliable prediction of soft stone strength in historic masonries. Construction and Building Materials Volume 146, 15 August 2017, Pages 744-754. https://doi.org/10.1016/j.conbuildmat.2017.04.146
13. Vasanelli E.; Colangiuli D.; Calia A.; Luprano V.A.M. Estimating in situ concrete strength combining direct and indirect measures via cross validation procedure, Construction and building materials Volume 151, 1 October 2017, Pages 916-924. https://doi.org/10.1016/j.conbuildmat.2017.06.141

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14. E. Vasanelli, A. Calia, D. Colangiuli, F. Micelli, M. A. Aiello. Assessing the reliability of non-destructive and moderately invasive techniques for the evaluation of uniaxial compressive strength of stone masonry units. Construction and Building Materials. Accepted for publication on 07/26/2016. DOI:10.1016/j.conbuildmat.2016.07.130
15. E. Vasanelli, A. Calia, V. Luprano, F. Micelli. Ultrasonic pulse velocity test for non-destructive investigations of historical masonries: an experimental study of the effect of frequency and applied load on the response of a limestone. Materials and Structures (2017) 50:38. DOI 10.1617/s11527-016-0892-7
16. E. Vasanelli, D. Colangiuli, A. Calia, M. Sileo, M.A. Aiello, Ultrasonic pulse velocity for the evaluation of physical and mechanical properties of a highly porous building limestone, Ultrasonics 60:33-40 · February 2015 DOI: 10.1016/j.ultras.2015.02.010.
17. E. Vasanelli, M.Sileo, G. Leucci, A. Calia, M.A. Aiello, F. Micelli, Mechanical characterization of building stones through DT and NDT tests: research of correlations for the in situ analysis of ancient masonry, Key Engineering Materials Vol. 628 (2015) pp 85-89.
18. E.Vasanelli, F. Micelli, M.A. Aiello. Influence of matrix grade on the mechanical behaviour of FRC. Proceedings of the Institution of Civil Engineers. Construction materials July 2014. DOI 10.1680/coma.13.00028.
19. Emilia Vasanelli, Francesco Micelli, Maria Antonietta Aiello and Giovanni Plizzari: “Crack width prediction of FRC beams in short and long term bending condition”. Materials and Structures. January 2014, Volume 47, Issue 1-2, pp 39-54. ISBN/ISSN 1359-5997.
20. E.Vasanelli, Maria Sileo, Angela Calia , Maria Antonietta Aiello: “Non-destructive techniques to assess mechanical and physical properties of soft calcarenitic stones.” Procedia Chemistry, V.8C, 2013, pp. 35-44. ISBN/ISSN 1876-6196.
21. Vasanelli, E., Micelli, F., Aiello, M.A. and Plizzari, G. (2013) "Long term behavior of FRC flexural beams under sustained load", Engineering Structures, Volume 56, pp.1858-1867. DOI: 10.1016/j.engstruct.2013.07.035. ISBN/ISSN 0141-0296
22. Francesco Micelli, Maria Antonietta Aiello, Salvatore Tundo, Luca Pallara, Emilia Vasanelli: “Travi in frc senza staffatura: comportamento fessurativo nella regione a momento costante”. Structural 181 – settembre 2013 – paper 21 – ISSN 2282-3794 (In Italian).
23. E. Vasanelli, F.Micelli, M.A. Aiello, G.Plizzari: “Durabilità di travi armate in calcestruzzo fibrorinforzato”. IN CONCRETO n.112 Focus Calcestruzzi Speciali, 22-25 (In Italian). ISBN/ISSN 2039-1218.