


BUILDING MATERIALS RESEARCH GROUP

Contact details

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Acronym	BURG
Logo	
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Areas of expertise

Civil engineering

- materials chemistry;
- green building materials;
- sustainable development;
- quality control of building materials;
- recovery of industrial waste in construction materials;
- influence of construction materials on health and environment;
- „In situ” determination of mechanical strengths by non-destructive methods.

Team

Prof. Dr. Eng. Daniela Lucia Manea; Assoc. Prof. Dr. Eng. Claudiu Aciu; Assoc. Prof. Dr. Eng. Daniela-Roxana Tămaş-Gavrea; Assoc. Prof. Dr. Eng. Dana Adriana Iluţiu-Varvara; Assist. Prof. Dr. Eng. Elena Jumate; Assist. Prof. Dr. Eng. Florin Babota; Assist. Prof. Dr. Eng. Luminiţa Monica Pleşa; Assist. Prof. Dr. Eng. Răzvan Andrei Ieruşan; Assist. Prof. Dr. Eng. Raluca Iştoan; CSI Dr. Eng. Andreea Hegyi, CSII Dr. Eng. Adrian-Victor Lăzărescu, CSIII Dr. Eng. Tudor Toader; CSIII Dr. Eng. Brăduţ Ionescu; Assist. Prof. Dr. Eng. Alexandra Olga Ţiriac; Dr. Eng. Tunde-Orsolya Deneş; Dr. Eng. Marta-Ioana Moldoveanu; Dr. Eng. Roxana Rada; PhD. Eng. Cătălin Şaitiş. Phd Students: Eng. Iacob Florea; Eng. Dorin Isac; Eng. Sorin Ioan Leţiu, Eng. Paul Răzvan Costin, Eng. Lidia Semerian; Eng. Ioan Cosmin Filipaş.

Representative projects

"Studies and researches regarding the reduction of the negative environmental impact of the pollutants and solid wastes from the steelmaking", "Development and support of multidisciplinary postdoctoral programmes in major technical areas of national strategy of Research - Development - Innovation" **4D-POSTDOC**, contract no. POSDRU/89/1.5/S/52603, project co-funded by the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, <http://193.226.17.4:8080/sites/fordoc/default.aspx> (2010-2013).

"Innovative Ecological Materials in Construction: A Multicriteria Analysis for Optimizing the Choice of Sustainable Building Materials in the Context of Sustainable Development" (2014 – 2015) – Post-Doctoral Programme POSDRU/159/1.5/S/137516, project co-funded from European Social Fund through the Human Resources Sectorial Operational Program 2007-2013.

"Studies of methods to optimize the use of sludge in the building materials industry", Internal competition for Research/ Development/ Innovation. Project C.I. type 1.1-T5 / 2016, Technical University of Cluj-Napoca (2016-2017).

"Research concerning the characterization of the oily mill scale in order to identify a optimum method for reduction of the quantities of hazardous wastes landfilled", Internal competition for Research/ Development/ Innovation –Project 16362/07.07.2016, C.I. type 1.1 - T4, Technical University of Cluj-Napoca (2016-2017).

"Innovative solutions for the acoustic comfort in open space offices", GNaC2018 ARUT nr. 3223/06.02.2019 (2019-2020)

"Production of modern composites from construction and demolition waste with improved properties. Complex analysis and investigations." GNaC2023 ARUT nr. 26 / 01.07.2024. (2024-2025)

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Significant results

1. Aciu C., Roman C., Iluțiu – Varvara D.A., Puia C., Cadar O. (2016). Plastering Mortar with Antibacterial and Antifungal Properties. *Romanian Journal of Materials*, 46 (2):160 – 166.
2. Jumate E., Moldovan D., Manea D., Demco D., Fechete R. (2016). The Effects of Cellulose Ethers and Limestone Fillers in Portland Cement-Based Mortars by ¹H NMR relaxometry. *Applied Magnetic Resonance*, 47: 1353-1373.
3. Mircea, C.; Toader, T.-P.; Hegyi, A.; Ionescu, B.-A.; Mircea, A. Early Age Sealing Capacity of Structural Mortar with Integral Crystalline Waterproofing Admixture. *Materials* 2021, 14, 4951.
4. C. Aciu, D. L. Manea, D. A. Iluțiu – Varvara (2021). “Study Regarding the Micro Filler Effect of Sludge Resulting from Steel Pickling”. *Metals*, vol. 11(2), pp. 361-372.
5. Iluțiu – Varvara D.A., Aciu C. (2022). “Metallurgical Wastes as Resources for Sustainability of the Steel Industry”. *Sustainability*, vol. 14(9), 5488.
6. Sava C., Iluțiu-Varvara D.A., Mare R., Roman M.D., S. Rada, Pică, L. Jäntschi, “Physico-chemical characterization and possible uses of sludge processed from an urban sewage treatment plant”. *Heliyon*, vol. 10(8), e29576, 2024.
7. Saitis C.; Manea D.L.; Moldovan, M.; Pleasa, L.M.; Borodi, G.; Petean, I.; Sorin, L. Recycled Aggregates Influence on the Mechanical Properties of Cement Lime-Based Mortars. *Materials* 2024, 17, 5122.
8. Iștoan, R.; Tămaș-Gavrea, D.-R.; Dumitran, M.; Gavriș, O.G. Comparative, Cost and Multi-Criteria Analyses of Traditional Binders in the Composition of Hemp-Based Finishing Products. *Materials* 2025, 18, 452.
9. Plesa L., Manea D.L., Iștoan R., (2022). Recycling plastic wastes in order to obtain new building materials, *Journal, IOP Conference Series: Materials Science and Engineering*, Volume 1251, Issue 1, Publisher IOP Publishing.
10. Ionescu, B.A.; Chira, M.; Vermeșan, H.; Hegyi, A.; Lăzărescu, A.-V.; Thalmaier, G.; Neamțu, B.V.; Gabor, T.; Sur, I.M. Influence of Fe₂O₃, MgO and Molarity of NaOH Solution on the Mechanical Properties of Fly Ash-Based Geopolymers. *Materials* 2022, 15, 6965. <https://doi.org/10.3390/ma15196965>.
11. Tintelecan, M.; Iluțiu-Varvara, D.-A.; Sas-Boca, I.M.; Aciu, C. The Behavior of a Zn-Al Anticorrosive Coating in the Wiredrawing Process. *Materials* 2022, 15, 6190. <https://doi.org/10.3390/ma15186190>.
12. Iernutan R. A., Plesa L. M.(2023). Assessment of the Safety Level for a Structural Wall Belonging to a Building with an ACC Masonry Structure Confined by Dispersed The 16th International Conference Interdisciplinarity in Engineering. *Inter-Eng 2022. Lecture Notes in Networks and Systems*, vol 605. Springer.
13. Ionescu, B.A.; Barbu, A.-M.; Lăzărescu, A.-V.; Rada, S.; Gabor, T.; Florean, C. The Influence of Substitution of Fly Ash with Marble Dust or Blast Furnace Slag on the Properties of the Alkali-Activated Geopolymer Paste. *Coatings* 2023, 13, 403. <https://doi.org/10.3390/coatings13020403>.
14. Vălean, M.; Manea, D.L.; Aciu, C.; Popa, F.; Pleșa, L.M.; Jumate, E.; Furtos, G. Performance Assessments of Plastering Mortars with Partial Replacement of Aggregates with Glass Waste. *Buildings* 2024, 14, 507.
15. Cadar D., Manea D. L., Jumate E., Popa F, Moldovan D., Fechete F., Structural and dynamic characterization of two-component waterproof mortars by ¹H NMR, FT-IR, mechanical and SEM investigations, *Construction and Building Materials*, 378, 2023, 131182.
16. Dénes, T.-O.; Iștoan, R.; Tămaș-Gavrea, D.R.; Manea, D.L.; Hegyi, A.; Popa, F.; Vasile, O. Analysis of Sheep Wool-Based Composites for Building Insulation. *Polymers* 2022, 14, 2109.
17. Moldoveanu, M. I., Manea, D. L., Jumate, E., Iștoan, R., Fechete, R., & Toader, T. P. (2025). Nuclear Magnetic Resonance in Tire Waste Mortars. *Applied Sciences*, 15(12), 6895. <https://doi.org/10.3390/app15126895>

Patents

1. **RO135991** - Modular panel based on sheep's wool and the method to obtain it, 2024, WOS: DIIDW:2022E5572B
2. **RO134330** - Natural fiber composite plate and method for obtaining it WOS: DIIDW:2020-728483
3. **RO133661** - Sandwich panel based on hemp shives and fibres, and the modality of obtaining it, 2019, WOS: DIIDW:201983939Y
4. **RO133261** - Multilayered composite panel and the method used for obtaining it, 2018, WOS: DIIDW:201949410U

The offer addressed to the economic environment

Research & development	<p>Research & development in core areas Fundamental domain Civil Engineering – modern techniques and methods used in building materials quality control.</p> <p>Research & development in applied fields Green building materials. Recovery of industrial waste in construction materials. Influence of construction materials on health and environment.</p> <p>Development strategy The research and development activities of the research group are focused on: contracts with third parties, research in the fields of building materials; publishing articles in national and international journals indexed BDI and ISI; and participating in conferences, products presentations or technology development in the field of Civil Engineering.</p>
Consulting	Quality control of building materials. Consultancy and applied research for the industrial or academic environment, according to the skills of the group members.
Applied engineering services	<p>The Building Materials laboratory is part of the Central Laboratory of the Faculty of Civil Engineering and can issue quality certificates (test reports) for the authorized profiles.</p> <p>Tests on building materials (natural stone, aggregates, plaster, lime, cement, mortar, ceramic products, bitumen and bitumen impregnated materials etc.).</p> <p>Determination of the specific surface using Blaine permeameter.</p> <p>Determination of mechanical strengths of building materials (tensile, flexural and compressive strength)</p> <p>Observation of the behaviour of structures in real-time using non-destructive methods.</p>
Training	<p>Specialized courses in quality control of building materials.</p> <p>Training courses in the field of special rehabilitation materials.</p>

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