


BUILDING MATERIALS RESEARCH GROUP

Contact details

Name	Building Materials Research Group
Acronym	BURG
Logo	
Site	http://burg.utcluj.ro/
Address	25, G. Baritiu Street 400027 Cluj-Napoca, România
Faculty Department	Faculty of Civil Engineering Department of Civil Engineering and Management
Telephone	+40264401548
Director	Prof. Dr. Eng. Daniela Lucia MANEA
e-mail	daniela.manea@ccm.utcluj.ro



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. Dana Adriana Ilutiu-Varvara; Assist. Prof. Dr. Eng. Elena JUMATE; Assist. Prof. Dr. Eng. Florin Babota; Assist. Prof. Dr. Eng. Luminița Monica Pleșa; Assist. Prof. Dr. Eng. Răzvan Andrei Ierņuan; Assist. Dr. Eng. Raluca Istoan; CSIII Dr. Eng. Adrian-Victor Lăzărescu, CSIII Dr. Eng. Tudor Toader; CSIII Dr. Eng. Brăduț Ionescu; Assist. Dr. Eng. Alexandra Olga Țiriac; Dr. Eng. Denes Tunde-Orsolya; Dr. Eng. Siomin Adrian; Dr. Eng. Tintisan Loredana; Phd Students: Eng. Iacob Florea; Eng. Roxana Rada; Eng. Cadar Daniel, Eng. Șaitiș Cătălin; Eng. Isac Dorin; Dr.Ec. Vălean Maria; Eng. Barnabas Lorintz Attila.

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).

Significant results

1. C. Aciu, C. Roman, D.A. Iluțiu - Varvara, C. Puia, O. Cadar (2016). Plastering Mortar with Antibacterial and Antifungal Properties. *Romanian Journal of Materials*, 46 (2):160 – 166.
2. E. Jumate, D. Moldovan, D. Manea, D. Demco, R. Fechete (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. Soimosan Melania; Moga Ligia; Danku Gelu; Cazila Aurica; Manea Daniela (2019). "Assessing the Energy Performance of Solar Thermal Energy for Heat Production in Urban Areas: A Case Study", *ENERGIES*, 12(6).
4. Raluca Iștoan, Daniela R. Tămaș-Gavrea, Daniela L. Manea (2020). "Experimental Investigations on the Performances of Composite Building Materials Based on Industrial Crops and Volcanic Rocks", *Crystals*, 10, 102.
5. 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.
6. 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.
7. D. A. Iluțiu – Varvara, C. Aciu (2022). "Metallurgical Wastes as Resources for Sustainability of the Steel Industry". *Sustainability*, vol. 14(9), 5488.
8. D. A. Iluțiu – Varvara, M. Tintelecan, C. Aciu, I. M. Sas-Boca (2022). "The Assessment of the Leaching Behavior of Metallurgical Wastes for a Sustainable Circular Economy". Springer's Lecture Notes in Networks and Systems book series, vol. 605, pp. 282-290.
9. Zaharie, A., Țințișan, M.L., Siomin, AC., Manea, D.L., Pleșa Luminita Monica (2022). The Use of Ceramic Waste in the Construction Materials Industry Based on the Concept of Sustainable Development. The 15th International Conference Interdisciplinarity in Engineering. Inter-Eng 2021. Vol 386. Springer.
10. Raluca ISTOAN, Lucia Daniela MANEA, PLESA Luminita, ML TINTISAN, (2022). Increasing the sustainability of construction sector by developing new products based on biomass and renewable polymers-bibliometric analysis, IOP Conference Series: Materials Science and Engineering, Volume 1251, Issue 1, Publisher: IOP Publishing.
11. Plesa Luminita, LD Manea, R Istoan, (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.
12. 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>.
13. 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>.
14. Iernutan Razvan Andrei, Plesa Luminita Monica (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.
15. 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>.
16. 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.

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; - 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	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. Tests on building materials (natural stone, aggregates, plaster, lime, cement, mortar, ceramic products, bitumen and bitumen impregnated materials etc.). Determination of the specific surface using Blaine permeameter. Determination of mechanical strengths of building materials (tensile, flexural and compressive strength) Observation of the behaviour of structures in real-time using non-destructive methods.
Training	Specialized courses in quality control of building materials. Training courses in the field of special rehabilitation materials.

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