

CERAMIC AND SILICATE MATERIALS AND TECHNOLOGIES

Testing, research, development and optimisation of materials and related manufacturing technologies used in the ceramics and silicate industries.

COMPETENCIES

- Development of manufacturing processes and products of ceramic, silicate and composite materials
- Development of traditional and innovative building materials
- Investigation of the usability of secondary raw materials in the ceramics industry
- Design and development of foam insulating materials with the involvement of secondary raw materials
- Testing, development, compositional optimization and failure analysis of products made of the aforementioned materials
- Lab tests to support manufacturing
- 3D printing



SERVICES

- Comprehensive and complex material and structural testing
- Material and product development, failure analysis
- Design and testing of special recipes and mixtures
- Determination of physical, chemical, mechanical and melting properties of raw materials
- Manufacturing and product development support through critical analysis of relevant literature (patents, Hungarian and international journals and books)
- Production planning and support, analysis of technological problems, determination of optimal technological parameters
- 3D prototype printing (from ceramic and polymer raw materials)



TOOLS

- Raw material testing: SEM, XRD, FTIR, XRF, CT, DMA, DTA, DSC, HSM, ICP MS, FT-IR, GDOES, RAMAN, BET, porosimetry, chromatography
- Mechanical testing: compressive, tensile, bending, impact strength; hardness; roughness, wear resistance
- Thermophysical testing: absolute and relative length change, coefficient of thermal expansion, differential thermal analysis, thermal conductivity (0.03-500 W/mK) in the temperature range -50-200 °C
- Testing of rheological properties
- Preparatory, shaping and heat treatment equipment



REFERENCES

- "Research and development of foam glass", GINOP-2.1.1-15-2015-00706 (R&D subcontractor)
- "Development of technology for new, marketable rolled aluminum products", GINOP-2.2.1-15-2016-00018
- "RubCon – Product and prototype development of building materials using waste materials", GINOP-2.1.7-15 (R&D subcontractor)
- "Porous aggregates", GINOP-2.1.2-8-1.4-16 (R&D subcontractor)
- "Development of electrical and other advanced technical ceramics at Cerlux Ltd ",GINOP-2.1.2-8-1-4-16-2017-00219 (R&D subcontractor)