



## Laboratory of Fine Grinding and Classification

- I. Location of the laboratory:

Research, Education and Innovation Centre of Earth and Environmental Science  
University of Miskolc building C/2 hall 1.
- II. Operating institute of the laboratory:

Institute of Raw Material Preparation and Environmental Technology
- III. Scientific head of the laboratory:

Gábor Mucsi, PhD, habil, full professor  
3515 Miskolc-Egyetemváros A/4 II. 205  
Telephone: +36-46-565-111/22-95  
e-mail: [gabor.mucsi@uni-miskolc.hu](mailto:gabor.mucsi@uni-miskolc.hu)

Ádám Rácz, PhD, associate Professor  
3515 Miskolc-Egyetemváros A/4 II. 207  
Telephone: +36-46-565-111/22-73  
e-mail: [adam.racz@uni-miskolc.hu](mailto:adam.racz@uni-miskolc.hu)
- IV. Responsible researcher/person:

Kurusta Tamás, assistant research fellow  
3515 Miskolc-Egyetemváros, C/2 204.  
Telefon: +36-46-565-111/19-65
- V. The aims and tasks of the laboratory on the education, scientific and research fields:

Examination of the mechanical, kinetical, mechanochemical phenomenon of the fine grinding.  
Determination of the grindability of raw materials and minerals (coal, ores, non-metallic raw materials, clinker, etc.).  
Experimental investigation and modelling of the open and closed-circuit grinding.  
Classification of fine ground materials.
- VI. Laboratory experiments, services:

Hardgrove grindability measurement  
Examination of open and closed circuit grinding  
Production of fine and ultrafine ground materials by stirred media milling  
Stirred media milling in wet and dry mode as well  
Sample preparation by grinding  
Production of classified fine ground materials  
Production of ultrafine ( $d_{max} < 2..10 \mu\text{m}$ ) classified powders



- VII. Available equipment for education, research and innovation
- Self-developed Universal Hardgrove mill
  - Self-developed laboratory batch stirred media mill with vertical rotor (V=3 dm<sup>3</sup>)
  - Self-developed batch stirred media mill with horizontal rotor and ceramic liners; can be operated in dry and wet mode as well (V=530 ml)
  - Self-developed continuous wet stirred media mill (V=5000 ml)
  - Retsch Ultra Centrifugal Mill ZM 200
  - GAYCO air separator
  - NETZSCH air classifier (d<sub>c</sub>=2-10 μm)
  - Cyclone
  - Alpine zik-zak air separator
- VIII. Laboratory development plan, requirements:
- In its current state, the laboratory meets the challenges of the age and provides a wide range of research opportunities in the field of media mills and air classifiers. Another development possibility is the acquisition of mills that use high-speed impact, such as jet mills and high-speed impact mills.
- IX. Main professional partners / references:
- Our laboratory has cooperated with several domestic and international partners in the past and is currently cooperating, among which we mention the following partners as a reference:
- Josab Hungary Kft.
  - CEMKUT Kft.
  - OMYA Hungária Kft.
  - Bay Zoltán Nonprofit Kft.
- X. Compiler of the information material:
- Tamás Kurusta, Ádám Rác

Miskolc, 19 June 2024