

Microbiological studies – substantial part of the State research program NatRes project “Mineral Resources”

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**LATVIJAS
UNIVERSITĀTE**
ANNO 1919



CBM
Rīga, Latvija 2012

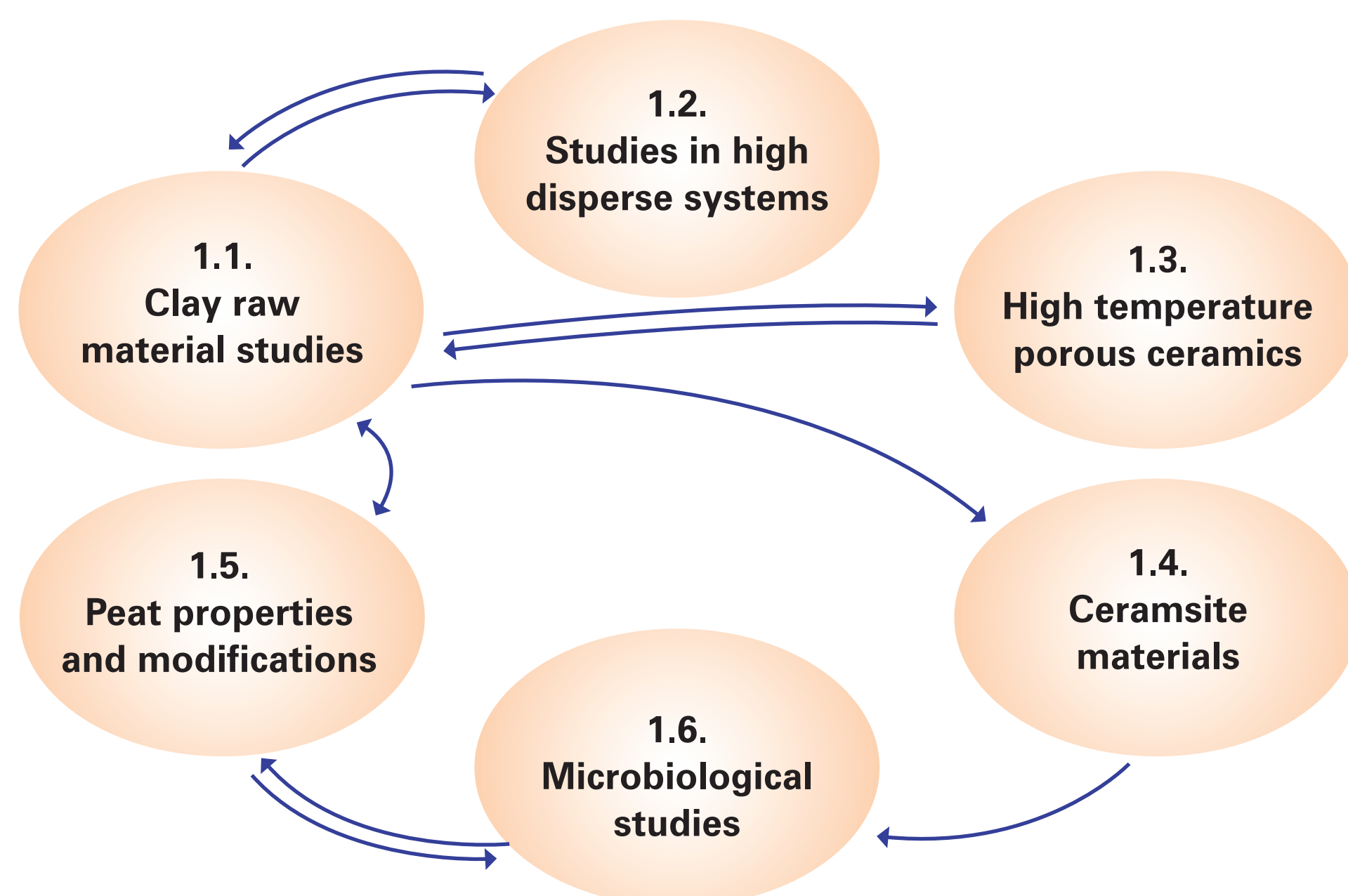
Abstract

The State research program NatRes project „Mineral Resources” pays a specific attention to biotechnologies, which are based on scientific potential regarding novel and outstanding biotechnological products and technologies with particular utilisation of local mineral resources and derivatives.

Project in general supported and promoted the collaboration of scientists from various scientific fields from the exploration of the basic mineral resources, raw material processing and new product development. Besides traditional localized in separate laboratories and research groups, the new technologies and multidisciplinary innovations are the result of efficient scientific collaboration and implementation of engineering solutions. Therefore the project is a multidisciplinary scientific project, comprising six deeply interconnected and synergic research directions with high application potential for national economy.

The project is being implemented in a close cooperation of the research groups from University of Latvia and Riga Technical University, focusing on 17 research themes involving scientists in geology, chemistry, biology, as well as different scientific areas of environmental and material studies. This is the key of success and project know-how.

Internal Project Logistics and data exchange between the partners (2011–2012)



Mentioned above themes of scientific research are from evaluation of clay resources in Latvia to novel biotechnological products and technologies based on ceramsite with high potential of commercial development in the future. There are two major issues to be stressed as value added- new technologies and products, both as measurable scientific results regarding clay ceramics, peat extracts and biotechnology.

From this point of view development and scientific studies in microbiology can be recognized as one of the most successful stories within the State research program NatRes and particular project “Mineral Resources”.

Main Results & Perspectives

Results 2011

The cooperation and partnership between the scientists have stimulated the exchange of ideas; scientific discussions and interaction are resulted in the achievement of high scientific results already on the second year of the project.

The results are proved by 3 doctoral thesis presented, new researchers involved in the project, one monograph issued, 29 papers published in international journals and collective monographs, numerous articles and thesis published in Latvia, but the most significant achievement is the registration of 5 patents.

These patents cover three main and the most efficient research fields with high economic value – technologically advanced products – ceramics, high value added peat products and biotechnological solutions.

Long-term perspective

However, project developed new technological solutions and innovative products do not ensure their introduction in the scale of industrial production, even if such products are useful and economically substantiated.

There are needs for long term state support for mineral processing industry. At current conditions scientists have limited possibilities to promote and support modernization of the production and, in terms of the current project, this issue is one of the most significant factors in broad sense imposing further development.

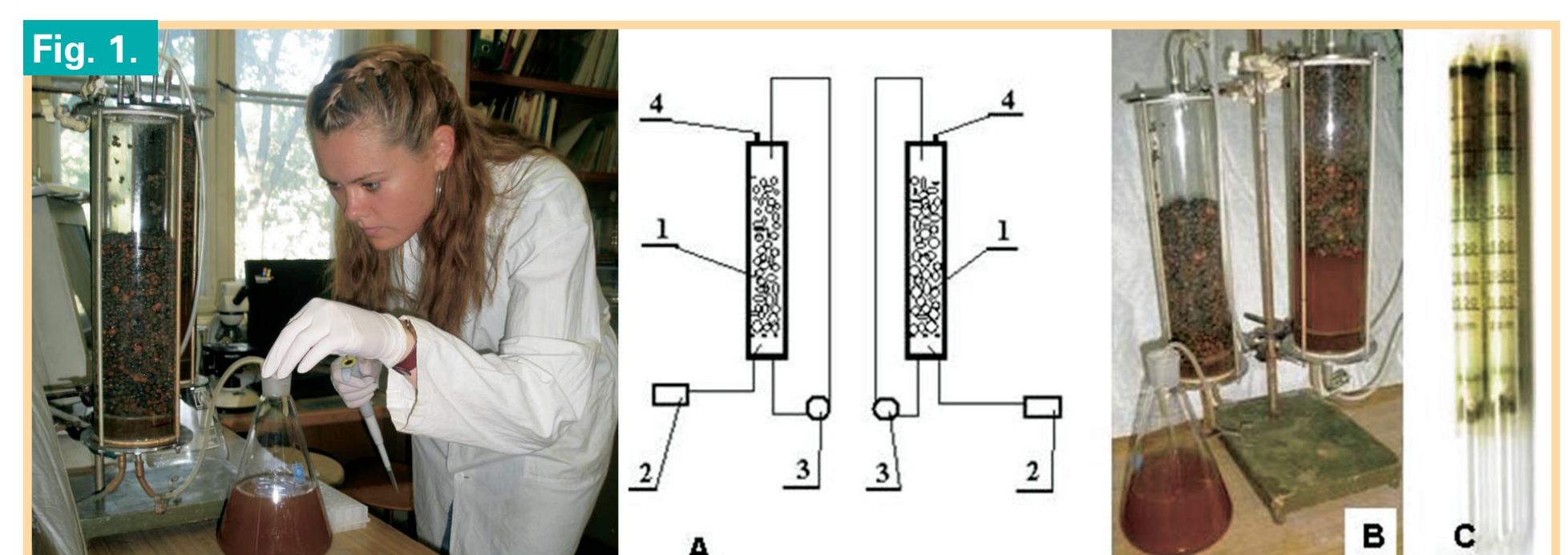


Figure legends

1. Mag. Biol. Katrīna Potapova performs the experiment with two-columns biofiltration model.
2. Pilot scale experiment on the use of ceramic beads for remediation of contaminated soil. Mag. eng. A. Bērziņš, PhD student Baiba Līmane.
3. Discussion with experts from the Institute of Silicate Materials, Riga Technical University. Dr. hab. ing. V. Švinka, Dr. ing. A. Cimmers.
4. Ceramic beads used in the experiment.

Acknowledgements

State Research program Nr. 2010.10-4/VPP-5 NatRes the 1st Project “Mineral Resources” is a supporter of CBM 2012.