

<b>DEPARTMENT OF MATERIAL ENGINEERING</b>
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## I. STAFF

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### Craftsmen

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## II. EQUIPMENT

### II.1 Teaching and Research Laboratories

1. Concrete technology laboratory
2. Lightweight concrete laboratory
3. Ceramics laboratory
4. Binder laboratory
5. Building chemistry laboratory
6. Laboratory for scanning electron microscopy and mercury intrusion porosimetry
7. Laboratory for X-ray diffraction analysis
8. Laboratory for differential thermal analysis

## II.2 Special Measuring Instruments and Computers

- Derivatograph-C, MOM Budapest, Hungary
- Derivatograph G 425, MOM Budapest, Hungary
- Diffractometer Mikrometa 2, Chirana, Prague, Czech Republic
- Scanning electron microscope BS-301, Tesla Brno, Czech Republic
- Spectrophotometer Specol, Carl Zeiss Jena, Germany
- Equipment for determining thermal conductivity PMV - 01, Elsys, Prague, Czech Republic
- Apparatus for determining thermophysical parameters - Isomet, Model 104, Applied Precision, Bratislava, SR
- Schmidt concrete test hammers, Proseq SA, Zürich, Switzerland
- Dyna pull-off tester, Proseq SA, Zürich, Switzerland
- Resonance apparatus RP-5, Mankovický, Bratislava, SR
- Porosimeter, Model 70H, Carlo Erba, Milan, Italy
- Test apparatus for determining air content B 2020, BC-Export Unlingen, Germany
- Pentium computers
- Testing machines with loads of 200, 400, 1000 and 3000 kN
- Device for waterproofing concrete
- Apparatus for measuring changes in length

## III. TEACHING

### III.1 Graduate Study

Subject	Semester	Hours per Week		Lecturer
		Lectures	Seminars	
Chemistry for Civil Engineers	1	2	1	V. Pavlík
Building Materials I.	2	2	1	I. Rouseková S. Unčík
Building Materials II.	3	2	1	I. Rouseková S. Unčík
Building Materials	1	2	2	D. Šályová
Chemistry of Building Materials	7	3	4	V. Pavlík
Ceramics	7	3	3	M. Šveda
Binders	8	3	3	A. Bajza
Precast Concrete Technology	8	3	4	L. Marko, S. Unčík
Concrete Technology	9	3	4	A. Bajza
Designing Plants for Production of Building Materials	9	0	4	J. Šimovič
Technology of Built-Up Constructions	9	2	3	L. Marko
Testing	10	2	2	V. Priechodský
Technological Project	10	0	8	J. Šimovič
Lightweight Concrete	10	2	3	J. Šimovič
Insulating Materials	10	2	2	O. Vrana

## IV. RESEARCH TARGETS

Current research in the Department is focused, above all, on the utilisation of industrial waste products in cement composites, the development of composite materials based on alkali-silica binders and the affecting of concrete properties by admixtures, as well as the modification of properties of brick-shatter using organic substances and light materials from industrial wastes.

## V. RESEARCH PROJECTS

1. Optimisation of Properties of Mortars and Concrete Based on Mining Rocks and Industrial Wastes (I. Rouseková)

## VI. COOPERATION

### VI.1 Cooperation in Slovakia

1. HYDROSTOP Ltd., Poprad
2. ZIPP Bratislava Ltd., Bratislava
3. HOLCIMBETON Ltd., Bratislava
4. HYDROSAN, Bratislava
5. Applied Precision Ltd., Bratislava
6. Sika Slovakia Ltd., Bratislava
7. Slovak Institute of Standardisation, Bratislava
8. Slovak Office of Standards, Metrology and Testing, Bratislava
9. BETÓN-RACIO, Ltd. Tnava
10. TERRANOVA - INDUSTRIA Ltd., Bratislava
11. HOLCIM, Joint Stock Company, Rohožník
12. Tesla Stropkov, Joint Stock Company, Stropkov
13. Chestreal, Joint Stock Company, Bratislava
14. Premac Ltd., Bratislava
15. Duslo, Joint Stock Company, Šaľa
16. SE, Joint Stock Company, Jaslovské Bohunice
17. MC-Bauchemie Ltd., Nitra
18. Civil Engineering Technical and Testing Institute, Bratislava
19. Baumit Ltd, Bratislava
20. ORGWARE, Joint Stock Company, Bratislava
21. Chemical Factories, Joint Stock Company, Nováky
22. Cooling Towers Ltd., Jaslovské Bohunice
23. SKW-MBT Slovakia Ltd., Žilina
24. SE, Joint Stock Company, Nováky

### VI.2 International cooperation

1. Klokner Institute, TU Prague, Czech Republic
2. Department of Building Materials, FCE TU Opole, Poland
3. Research Institute of Civil Engineering, Zlín, Czech Republic
4. CarboTech Bohemia Ltd., Ostrava, Czech Republic

5. Research Institute of Binders Prague Ltd., Czech Republic
6. School of Civil Engineering, Purdue University, West Lafayette, Indiana, USA
7. Department of Civil Engineering, University of Toronto, Canada
8. Institute for Prefabrication and Precast Concrete Buildings, Weimar, Germany
9. Research Institute of Building Materials, Joint Stock Company, Brno, Czech Republic
10. VUT Brno, Czech Republic
11. ČVUT Prague, Czech Republic
12. VŠB TU Ostrava, Czech Republic

### VI.2.1 Visitors to the Department

- Dr. J.P. Skalny, University of Toronto, Canada, 6 days
- Doc.Ing.R. Drochytka, CSc., Faculty of Civil Engineering VUT, Brno, Czech Republic, 2 days
- Ing. J. Knězek, CSc., VÚSH, Brno, Czech Republic, 1 day
- Prof. Ing. J. Cigánek, CSc., Faculty of Civil Engineering, Ostrava, Czech Republic, 1 day
- Ing. T. Klečka, CSc., Klokner Institute, VUT, Prague, Czech Republic, 2 days

### VI.2.2 Visits of Staff Members and Postgraduate Students to Foreign Institutions

- Adolf Bajza, University of Florida, Gainesville, USA, 2 days
- Adolf Bajza, Faculty of Civil Engineering TU, Brno, Czech Republic, 2 days
- Ildikó Rouseková, Faculty of Civil Engineering TU, Brno, Czech Republic, 2 days
- Stanislav Unčák, Faculty of Civil Engineering TU, Brno, Czech Republic, 4 days
- Ildikó Rouseková, Klokner Institute, TU Prague, Czech Republic, 3 days
- Adolf Bajza, Klokner Institute, TU Prague, Czech Republic, 3 days
- Stanislav Unčák, Klokner Institute, TU Prague, Czech Republic, 3 days

## VII. THESES

### VII.1 Graduate Theses (Diploma Work)

No.	Student's Name	Title
1.	Tomáš Barto	Effect of Flux on the Frost Resistance of Roof Tiles
2.	Radoslav Briatka	INTEGRO Skeleton with Supporting External Wall
3.	Zuzana Gondová	Self-Compacting Cement Composites
4.	Jaroslav Hrbek	Effect of Plastiment BV 40 Plasticizing Admixture on the Properties of Cement Mortars with Constant Workability
5.	Mário Klimek	Effect of Burning Curve on the Durability of Roof Tiles
6.	Marián Kovalčík	Superplasticizers for High - Performance Cement Composites
7.	Monika Lábska	Effect of Plastiment BV 40 Plasticizing Admixture on the Properties of Cement Mortars with Constant Water-to-Cement Ratio
8.	Ján Lehocký	Low-Rise Built-Up Constructions
9.	Juraj Mravec	Evaluation of the Properties of Crushed Aggregate
10.	Ľubomír Rác	Corrosion of Hardened Cement Paste in Solutions of Hydrochloric and Sulphuric Acids
11.	Ján Sečkář	Effect of Alkali on the Carbonation of Hardened Cement Paste
12.	Daniel Šavel	Properties of Repair Mortars
13.	Peter Ščasný	Andesites and Their Future Utilisation in Civil Engineering

14. Marián Tedla      Verification of the Effect of Duvilax Dispersion on the Properties of Cement Mortars

## VIII. OTHER ACTIVITIES

### VIII.2 Commercial Activities

1. Repairing Degraded Concrete in a 150 M ENO B Stack from the Inside (A. Bajza, I. Rouseková, S. Unčík, V. Pavlík, M.-Dubík)
2. Formulation of Concrete Composition with Sika Plastiment BV 40 Plasticizing Admixture (A. Bajza, I. Rouseková, S. Unčík)
3. Expert Analysis Aimed at Finding the Source of Odors in the Building of the Representative of the Slovak Republic at the UNO in Geneva (A. Bajza)
4. Analysis of the Pore Structure of the Body of Bobrovka Roofing Tiles in Terms of Frost Resistance (M. Šveda)
5. Improvement of Thermal Parameters of Brick Products in the Borský Sv. Jur Brick Plant (M. Šveda)
6. Technical Support and Quality Control in the Repair of the SO 460 Ventilation Stack (A. Bajza, I. Rouseková, S. Unčík)
7. Evaluation of the Suitability of Lime from the DOVAP Varín Lime Plant and Glassner Žirany Lime Plant in the Manufacture of Cellular Concrete (A. Bajza, I. Rouseková, V. Pavlík, M. Dubík)

## IX. PUBLICATIONS

### IX.1 Journals

- [1] ŠVEDA, M.: Frost Resistance of Bricks. American Ceramic Society Bulletin, Vol. 80, 2001, No. 9, pp. 46 – 48.
- [2] ŽIVICA, V.- BAJZA, A.: Acidic Attack of Cement Based Materials - A Review. Part 1. Principle of Acidic Attack. Construction and Building Materials 15, 2001, 8, pp. 331-340.
- [3] ŠVEDA, M.: Exploitation of Sandy Dust in Brickmaking. Ziegelindustrie International, Vol. 54, 2001, No. 4, pp. 44 - 50
- [4] ŠVEDA, M.: : Elimination of the Reduction Core in a Clay Roofing Tile Body. Ziegelindustrie International, Vol. 54, 2001, No. 8, pp. 34 - 43
- [5] ŠVEDA, M.: Use of Sandy Dust in Brickmaking. Silika, Vol. 11, 2001, Nos. 1-2, pp. 35 – 37 (in Slovak)
- [6] ŠVEDA, M.: Effect of Wood Sawdust on the Properties of a Brick Body. Stavební obzor, Vol. 10, 2001, No. 1, pp.17-20 (in Slovak)
- [7] ROUSEKOVÁ, I.: Effect of Plastiment BV 40 Plasticizing Admixture on the Properties of Cement Mortars. Supplementary papers published in the SZVK (Slovak Association of Aggregate Producers) technical journal from the CONCRETE 2001 Conference, Vol. 2, 2001, No. 1, pp.14-19 (in Slovak)
- [8] BAJZA, A.-ROUSEKOVÁ, I.: Penetrating Inhibitor of the Corrosion of Steel Reinforcement in Concrete. Aggregate and Concrete. Supplementary papers published in the SZVK (Slovak Association of Aggregate Producers) technical journal from the CONCRETE 2001 Conference, Vol. 2, 2001, No. 1, pp.7-9 (in Slovak)

- [9] UNČÍK, S.: Possibility of Utilising Polycarboxylates in Production of High-Performance Concrete. Supplementary papers published in the SZVK (Slovak Association of Aggregate Producers) technical journal from the CONCRETE 2001 Conference, Vol. 2, 2001, No. 1, pp. 21-24 (in Slovak)

### IX.3 Conferences

- [1] ROUSEKOVÁ, I.-BAJZA, A.-UNČÍK, S.-PAVLÍK, V.-DUBÍK, M.: Repair of Degraded Concrete of the ENO B Stack at Nováky Power Plant. In: Proceedings of 23<sup>rd</sup> Conference of Czech Building Society, and 3<sup>rd</sup> Conference of WTA CZ Repair and Reconstruction 2001. Prague 2001. ISBN 80-02-01433-2, pp. 257-263 (in Slovak).
- [2] ROUSEKOVÁ, I.: Effect of Plastiment BV 40 Plasticizing Admixture on Properties of Cement Mortars. In: Proceedings of 7<sup>th</sup> CONSTRUMAT 2001 International Conference, Brno, FAST VUT 2001, pp. 32-36 (in Slovak).
- [3] BAJZA, A.-ROUSEKOVÁ, I.: Penetrating Inhibitor of Corrosion. In: Proceedings of International Conference on Building Materials and Testing 2000, Bratislava, Orgware, 2001, pp. 55-57 (in Slovak).
- [4] BAJZA, A.: Problems of Indoor Pollution in Dwelling Houses. In: Proceedings of CONSTRUMAT 2001 7<sup>th</sup> International Conference, Brno, FAST VUT 2001, pp. 9-11 (in Slovak).
- [5] UNČÍK, S.: Some Problems of Self-Compacting Concrete. In: Proceedings of International Conference on Building Materials and Testing 2000, Bratislava, Orgware, 2001, pp. 49-51 (in Slovak).
- [6] UNČÍK, S.: Effect of Polycarboxylate-Based Admixtures on the Properties of Cement Mortars. In: Proceedings of 7<sup>th</sup> CONSTRUMAT 2001 International Conference, Brno, FAST VUT 2001, pp. 40-46 (in Slovak).
- [7] PAVLÍK, V.: Deterioration of Hardened Cement Paste and Concrete by Acid Solutions. In: Proceedings of 2<sup>nd</sup> International Scientific Conference on Quality and Reliability in the Building Industry, Levoča, SvF TU Košice 2001, pp. 403-410.
- [8] PAVLÍK, V.: Effect of Atmospheric Pollution on Building Materials Based on Lime and Cement. In: Proceedings of 7<sup>th</sup> CONSTRUMAT 2001 International Conference, Brno, FAST VUT 2001, pp. 26-31 (in Slovak).
- [9] ŠVEDA, M.: Effect of a Brick Body's Pore Structure on Its Durability. In: Proceedings of 2<sup>nd</sup> International Scientific Conference on Quality and Reliability in the Building Industry, Levoča, SvF TU Košice 2001, pp. 515 – 520.
- [10] ŠVEDA, M.: New Possibilities in Lowering Heat Conductivity of a Lightened Brick Body. In: Proceedings of 7<sup>th</sup> CONSTRUMAT 2001 International Conference, Brno, FAST VUT 2001, pp. 37-39 (in Slovak).
- [11] MARKO, L.- STRUHÁROVÁ, A.: Unconventional Design of Precast Constructions with a Low Number of Floors. In: Proceedings of 7<sup>th</sup> CONSTRUMAT 2001 International Conference, Brno, FAST VUT 2001, pp. 20-25 (in Slovak).
- [12] LEDEREROVÁ, M.: Aggregates from Mine Waste – Application in the Production of Concrete and Mortars. In Proceedings of 7<sup>th</sup> CONSTRUMAT 2001 International Conference, Brno, FAST VUT 2001, pp. 16-19 (in Slovak).
- [13] LEDEREROVÁ, M.: Possibilities for the Utilization of Aggregates from Mine Wastes in the Production of Concrete and Mortars. In: Proceedings of Recycling 2001 Conference on Possibilities and Future of Recycling Wastes from the Building Industry as a Resource of Valuable Raw Materials. Brno, FSI VUT and ARRSM ČR, 2001, pp. 47-52 (in Slovak).
- [14] UNČÍK, S.- BAJZA, A.- ROUSEKOVÁ, I.: Corrosion of Reinforced Concrete Constructions by Sanitation and Washing Solutions. In: Proceedings of Seminar on

- Repairing Concrete Constructions, Bratislava, ZSBK and KMTI SvF STU, 2001, pp. 23-27 (in Slovak).
- [15] BAJZA, A.- ROUSEKOVÁ, I.- UNČÍK, S.: Damage to Concrete Floors. In: Proceedings of Seminar on Repairing Concrete Constructions, Bratislava, ZSBK and KMTI SvF STU, 2001, pp. 65-69 (in Slovak).
- [16] ROUSEKOVÁ, I.- UNČÍK, S.- BAJZA, A.: Control of the Quality of Repairs. In: Proceedings of Seminar on Repairing Concrete Constructions, Bratislava, ZSBK and KMTI SvF STU, 2001, pp. 86-90 (in Slovak).
- [17] PAVLÍK, V.: Durability of Concrete and Cement Stone in Acid-Aggressive Environments. In: Proceedings of Seminar on Repairing Concrete Constructions, Bratislava, ZSBK and KMTI SvF STU, 2001, pp. 100-111 (in Slovak).
- [18] ŠVEDA, M.: Effect of Water Absorption and the Pore Structure of a Clay Roofing Tile with Regard to Frost Resistance. In: Proceedings of Symposium on Roofs 2001, Bratislava, KKPS SvF STU, 2001, pp. 130 – 133 (in Slovak).
- [19] BAJZA, A.: Concrete Today. In: Proceedings of Conference on Concrete 2001, Košice, SvF TU Košice, 2001, pp. 173-181 (in Slovak).