

RESEARCH GROUP CONTACT >>

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THEMATIC RESEARCH FOCUS >

RESEARCH AREA

Physical chemistry of colloid and macromolecular systems

EXCELLENCE

Applied physical chemistry (3 researchers are in the world's top 10 %)

MISSION

- » To look towards the European excellence in research of physical chemistry of biocolloids
- » To be attractive partner for industrial R&D
- » To provide a high quality educational process (for students and employees of industrial partners)

DEVELOPED TECHNOLOGIES >

CONTENT OF RESEARCH

- » Biocolloid transport systems for biomedical and environmental technologies, nanomedicine and other nanotechnologies
- » Research on biomaterials for medical applications / applications of lignite and humic acids (e.g. sorbents)

MAIN CAPABILITIES

- » Physicochemical characterization of delivery systems for (nano) medicine, cosmetics and agriculture
- » Physicochemical characterization of humic substances and new humic materials for applications in agriculture and environmental technologies
- » Diffusion in gels

FIELDS OF RESEARCH RESULTS APPLICATION

- » Biomedicine
- » Agriculture and food biotechnology
- » Plastics industry
- » Environmental protection technology

ALUMNI PROFILE

Alumni are specialists in applied physical and colloid chemistry in the production of specialty or consumer chemical products or for small-scale chemical and biotechnological industry in general.

NUMBER OF RESEARCH POSITIONS >

SENIOR RESEARCH STAFF

3

JUNIOR RESEARCH POSITIONS (INCL. PH.D. STUDENTS)

15

KEY RESEARCH EQUIPMENT >

LIST OF DEVICES

- » Ultrasonic spectrometer (Ultrasonic Scientific, HR-US 102) - unique in the Czech Republic
- » Rheometry (TA Instruments, AR G2)
- » Thermal analysis (TA Instruments, DSC Q200 and TG Q5000IR)
- » Tensiometry (KSV, Sigma 701 and bubble pressure BPO 800 P)
- » Densitometry (Anton Paar DMA 4500)
- » Fluorescence (Aminco Bowman Series 2)
- » UV/VIS (Hitachi U-3900H, Varian Cary 50)



- » IR spectroscopy (Nicolet Impact 400)
- » Diffusion cells

BUDGET ↘

TOTAL (MIL. CZK/ MIL. EUR)

11 / 0.44

PART OF THE TOTAL BUDGET FROM PRIVATE RESOURCES (%)

5

PART OF THE TOTAL BUDGET FROM FOREIGN RESOURCES (%)

0

MAIN PROJECTS ↘

2010-2013: Centres for materials research at FCH BUT (project ED0012/01/01 financed by the Operational Programme Research and Development for Innovation, Ministry of Education, Youth and Sports)

2008-2011: Self-assembling colloids hyaluronan-surfactant, hyaluronan-amino acid for nanomedical applications (project OC08004 financed by programme OC – COST, Ministry of Education, Youth and Sports)

2005-2008: Structural effects of humic substances and some plant alkaloids on the degradation and detoxification of persistent organic pollutants in soils (project 04-82-7271 INTAS financed by the Sixth Framework Programme)

2005-2007: Progressive and efficient non-energy applications of lignite (project GA105/05/0404 financed by the Czech Science Foundation)

MAIN COLLABORATING PARTNERS ↘

COLLABORATION WITH ACADEMIC PARTNERS

- » Mendel University (Brno, CZ)
- » Academy of Sciences of the Czech Republic, Institute of Biophysics - Nanomedic cluster (CZ)
- » University of Poitiers (FR)
- » NTNU Trondheim (NO)
- » University College Dublin (IE)

COLLABORATION WITH COMPANIES

- » CPN (CZ)
- » Generi Biotech (Hradec Králové, CZ)
- » Nanomedic (cluster) (CZ)
- » Amagro (CZ)

EXPECTATIONS ↘

REQUIREMENTS

- » Cooperation with interesting subjects and companies – cooperation with potential for further academic work
- » Cooperation based on clearly defined research and development tasks from the field of colloids or nanocolloids

OFFERS

- » Experience and facility in physical chemistry of colloids, including soft and macromolecular matter applicable in wide range of specific subjects or technologies
- » Ideas for development of application activities

04 / 2011

