

Complexity and synergy!



National Roadmap for Research Infrastructure



2017-2023

MODULE 1
1+2
MODULE 2

Research infrastructure

- Scanning electron microscopy
- Transmission electron microscopy
- Atomic force microscopy
- XRD methods and computer tomography
- Nuclear magnetic resonance
- Electron paramagnetic resonance
- Raman spectroscopy
- X-ray photoelectron spectroscopy
- Mössbauer spectroscopy
- Chromatography
- Thermal analysis
- Electrochemical measurements and corrosion tests
- Determination of specific surface, hydrophilicity, electric conductivity etc.
- X-ray fluorescent spectroscopy
- Infrared and UV-Vis spectroscopy
- Analysis, conservation and restauration and socialization of archeological finds
- Restauration of paintings, graphics, books, wall-paintings and decorative architectural surfaces
- Analysis, conservation and restauration of ethnographic finds
- Chemical trace analysis for archeological research
- Electronic encyclopedia "Ancient Thrace and the Thracians"

DISTRIBUTED INFRASTRUCTURE OF CENTERS FOR SYNTHESIS AND CHARACTERIZATION OF NEW MATERIALS AND CONSERVATION OF ARCHEOLOGICAL AND ETHNOGRAPHIC ARTEFACTS

INFRAMAT

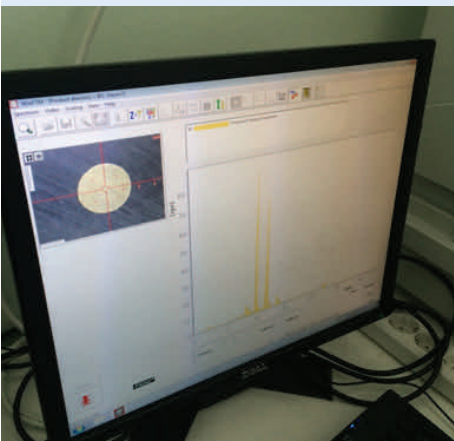
Modern research infrastructure in support of science, culture and technological development

Contacts

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INSTITUTIONS

MODULE 1

Institute of Physical Chemistry "Acad. R. Kaischew" - BAS, coordinator
Institute of Electrochemistry and Energy Systems "Acad. E. Budevski" - BAS
Institute of Catalysis - BAS
Institute of General and Inorganic Chemistry - BAS
Institute of Optical Materials and Technologies "Acad. J. Malinowski" - BAS
Institute of Polymers - BAS
University of Chemical Technology and Metallurgy, Laboratory LAMAR
Central Laboratory of Applied Physics - BAS

1+2

Institute of Organic Chemistry with Centre of Phytochemistry - BAS
Sofia University "St. Kliment Ohridski" - Faculty of History, Faculty of Chemistry and Pharmacy, Faculty of Physics

MODULE 2

Institute of Balkan Studies and Centre of Thracology - BAS
Ethnographic Institute and Museum - BAS
National Institute of Archaeology with Museum - BAS
National Museum of History
National Academy of Arts
New Bulgarian University

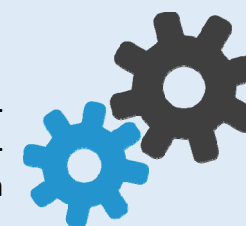
Aims

- Integration of large and unique laboratories and equipment necessary for the synthesis and complex characterization of advanced materials and for research and conservation of cultural goods
- New quality of scientific research in the field of advanced materials and conservation of cultural goods by combining and concentrating high level expertise (human resources) and modern instrumental techniques (material resources)
- Open access to distributed infrastructure for scientists from partner institutions and support for complex investigations on synthesis and characteristics of advanced materials and research and conservation of cultural goods
- Education and training of highly qualified experts
- Integration and cooperation with European research infrastructures and participation in international projects.

Expected benefits

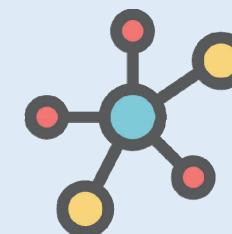
For industry

- Synthesis and characterization of new advanced materials with applications in industry
- Synthesis and testing of new materials for storage and catalysts for utilization of ecological fuels
- Synthesis of new oxide and polymer materials with application in optoelectronics and laser technique
- Development of functional coatings with improved characteristics for machine building



For biomedical applications

- Isolation and investigation of natural compounds and synthesis of new materials with applications in cosmetics, pharmacy, nutraceuticals (functional foods) etc.
- Development of new polymers with specific application in medicine and pharmacy
- Design and characterization of sensing materials for determination of bioactive compounds involved in the human metabolism;
- Synthesis of fluorescent markers for nucleic acids and tumor cells
- Estimation of stability of free radicals in foods, relevant to the validity of European protocols for dry foods and fruits



For ecology

- Utilization of industrial wastes for the synthesis of glass ceramic materials
- Synthesis of environmentally friendly materials used as catalysts for purification of water and atmosphere and chemosensors for environmental control, e.g. of pesticides in foods
- Development of approaches for utilization of sea chemical resources, e.g. for production of inorganic chemicals
- Development of methods for extraction of metals from waste raw materials through electroextraction and electrorefining



For conservation of cultural heritage

- Establishment of an objective basis for strategies for better preservation, for more precise diagnostics and identification of archaeological finds, as well as, for their more effective conservation and restoration
- Provision of data for more precise dating and condition checking
- Evaluation of the existing materials and techniques for conservation and restoration, as well as, testing of new ones
- Studying the correlations between the parameters of the burial conditions in various archaeological sites, the condition of the materials to be discovered and their reaction when taken out in the atmosphere
- Formation and furnishing of mobile laboratories equipped with teams of specialists for the inspection, analysis, in situ stabilization and conservation in order to facilitate the work of the archaeologists during excavations



More about the project ...

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