Services offered by

DISTRIBUTED INFRASTRUCTURE OF CENTERS FOR INVESTIGATIONS OF NEW MATERIALS AND THEIR APPLICATIONA AND FOR RESEARCH AND CONSERVATION OF ARTEFACTS (ARCHEOLOGICAL AND ETHNOGRAPHIC)

ACRONYM: INFRAMAT

Partner 1
Institute of Physical Chemistry "Rostislaw Kaischew"– Bulgarian Academy of Sciences
1. Electron Microscopy and Microanalysis
Services:
Our equipment includes two JEOL electron microscopes, energy dispersive detector for all elements including Carbon. We offer images at secondary and back-scattered electrons, line scan analysis, elemental mapping, sample preparation.
Pricelist
- Morphology and elemental analysis – 120 BGN/hour - Sample coating – 40 BGN/sample
Contact person for the above specified services
Assoc. Prof. Bogdan Ranguelov, PhD, rangelov@ipc.bas.bg, Lab. 425 (tel: +359 2 979 2533) Lab. 314 (tel: +359 2 979 3561)
Link to the website of the partner institution
http://ipc.bas.bg/page/en/structural-units/laboratories/elmi.php
2. Laboratory of X-ray Diffraction Methods
Services:
The laboratory covers a wide spectrum of structural X-ray studies on nano- and micro- level of monolithic polycrystalline samples, powder samples and thin films. The diffractometer has opportunities for small-angle diffraction, grazing incident x-ray diffraction, small-angle scattering, micro-diffraction, reflectometry, investigation of texture and residual stresses and measurements at high temperatures in protective environment.
Pricelist
Recording of single diffractogram Empyrean – Panalytical : 40 BGN Recording of single diffractogram Philips PW1830: 20 BGN Phase pattern determination: 5 BGN/phase Determination of crystallite size: 10 BGN/phase Quantitative phase analysis: negotiable Specialized research: • Determination of residual stress by two-axis method: negotiable • Determination of crystallographic texture – recording of pole figure: 80 BGN • Diffractogram by small-angle diffraction (0.5 2θ): 40 BGN Prices do not include 20% VAT.
Contact person for the above specified services
Assoc. Prof. eng. Georgi Avdeev, PhD, g_avdeev@ipc.bas.bg, g_avdeev@abv.bg, +359 2 979 2507
Link to the website of the partner institution
http://ipc.bas.bg/page/bg/struktura/laboratorii/laboratorija-za-specializirani-rentgenovi-metodi-i-tomografii.php
3. Computed Tomography
Services:

The computerized X-ray tomography allows non-destructive testing with high resolution in the entire volume (3D) of various materials, biological objects, archaeological artifacts and other objects that can be penetrated by the X-ray radiation of the device.

Pricelist

Industrial clients

Item	Description	Price excl. VAT*
Scanning and reconstruction	*Scanning with a x-ray tomograph up to 100 kV, reconstruction of 3D image as a series of tif, jpg, bmp or png images.*	80 BGN for the first hour and 60 BGN/h for the subsequent hours
Analysis	*Determination of volumes porosity size distributions of pores or inclusions. Determination of surface areas, preparation of 3D model*	Negotiable but not less than 50 BGN pe analyzed object/sample.
Other analyses	*On client's request*	Negotiable

External academic, research and non-profit institutions.

Item	Description	Price excl. VAT*
Scanning and reconstruction	*Scanning with a x-ray tomograph up to 100 kV, reconstruction of 3D image as a series of tif, jpg, bmp or png images.*	50 BGN for the first hour and 35 BGN/h for the subsequent hours
Analysis	*Determination of volumes porosity size distributions of pores or inclusions. Determination of surface areas, preparation of 3D model*	Negotiable but not less than 30 BGN pe analyzed object/sample**.
Other analyses	*On client's request*	Negotiable

* Unfinished hours of scanning count as full hour.
**May be waved in case of common publication.

Contact person for the above specified services

Assoc. Prof. Dragomir Tatchev, PhD, dtachev@ipc.bas.bg, +359 2 979 2570; +359 2 979 3585; +359 2 872 0021

Link to the website of the partner institution

http://ipc.bas.bg/page/bg/struktura/laboratorii/laboratorija-za-specializirani-rentgenovi-metodi-i-tomografii/aparatura.php

4. X-ray Fluorescence analysis

Services:

The X-ray fluorescence analysis is a method used for qualitative and quantitative elemental analysis of solid, liquid and powdered materials as well as thickness and percentage composition of single and

multilayer coatings composed of elements with numbers between calcium (20) and uranium (92). It is a quick non-destructive method allowing the local qualitative and quantitative determination of the sample composition at concentrations between 0.1 and 100 wt. %.
Prices do not include 20% VAT.

Pricelist

Single measurement of spectrum (material analysis), thickness and composition of monolayer/multilayer coating using existing measuring program 5 BGN. Measurement of metal concentration in solutions including preparation of calibration standards and calibration 100 BGN/hour. Creation of a new measuring program for a new specific multilayer object 50 BGN.

Contact person for the above specified services

Prof. DSc Ivan Krastev, krastev@ipc.bas.bg, 02 979 2574

Link to the website of the partner institution

http://ipc.bas.bg/page/en/structural-units/departments/electrochemistry-and-corrosion/equipment.php

5. Neutral salt spray chamber

Services:

With the help of the aforementioned apparatus, the following services can be offered for hire - corrosion tests of metals, alloys and coatings at artificial conditions.

Pricelist

- Salt spray chamber test – 140 BGN/day (up to 1 month);
  100 BGN/day (when longer than 1 month) or negotiable.
  Evaluation of the samples – 10 BGN/sample for every evaluation (the number of the evaluations is negotiating with the client – every 24 hours or on a certain number of days).
- Testing in humid heat – 160 BGN/day or negotiable.
- Gravimetric (weight loss) test for corrosion rate determination – 15 BGN/sample or negotiated on a larger number of samples.
- Evaluation document in English - 15% on the final price of the test.

Contact person for the above specified services

Prof. Dr. Nikolai Boshkov, NBoshkov@ipc.bas.bg; 02/9792521

Link to the website of the partner institution

http://ipc.bas.bg/page/en/structural-units/departments/electrochemistry-and-corrosion/equipment.php

6. Profile Analysis Tensiometer for investigation of fluid interfaces

Services:

- Investigation of adsorption dynamics at fluid interface;
- Determination of the equilibrium surface tension values at fluid interface;
- Investigation of surface dilational rheology of adsorption layers at fluid interfaces;
- Investigation of the wetting kinetics of a fluid droplet on a solid substrate;
- Determination of the equilibrium contact angle of a droplet on a solid substrate;
- Analysis of the adsorption dynamics and the adsorption layer rheological parameters during controlled changes in the composition of the complex fluid formulations;
- Characterization of fluid interfaces via profile analysis of a droplet or a bubble at strictly controlled temperature changes within a wide temperature range.

Pricelist

1. Single measurements

1.1 Adsorption dynamics at fluid interface:
within 24 hours – 120 BGN
within 72 hours – 240 BGN

1.2 Determination of the equilibrium surface tension value of a fluid interface:
– 80 BGN
1.3 Investigation of the equilibrium rheological parameters of the adsorption layer at fluid interface:
– 300 BGN
1.4 Investigation of the surface rheology dynamics of the adsorption layer at a fluid interface:
within 24 hours – 500 BGN
within 72 hours – 700 BGN
1.5 Investigation of the wetting and spreading dynamics of a liquid droplet on a solid substrate:
within 24 hours – 250 BGN
within 48 hours – 380 BGN
1.6 Determination of the equilibrium contact angle of a liquid droplet on a solid substrate:
– 400 BGN
1.7 Analysis of the adsorption dynamics and the changes in the rheological parameters of an adsorption layer at a fluid interface at controlled changes in the composition of a complex fluid formulation:
– 1000 BGN
1.8 Characterization of a fluid interface via profile analysis of a droplet or a bubble at strictly controlled temperature changes within a wide temperature range: 900 leva
2. Systematic studies (up to 5 single measurements)
2.1 Adsorption dynamics at fluid interfaces
within 24 hours – 360 BGN
within 72 hours – 720 BGN
2.2 Determination of the equilibrium surface tension valuec of fluid interfaces:
– 240 BGN
2.3 Investigation of the equilibrium rheological parameters of the adsorption layer at fluid interfaces:
– 900 BGN
2.4 Investigation of the surface rheology dynamics of the adsorption layer at fluid interfaces:
within 24 hours – 1500 BGN
within 72 hours – 2100 BGN
2.5 Investigation of the wetting and spreading dynamics of a liquid droplet on solid substrates:
within 24 hours – 750 BGN
within 48 hours – 1140 BGN
2.6 Determination of the equilibrium contact angle of liquid droplets on solid substrates:
- 1200 BGN
2.7 Analysis of the adsorption dynamics and the changes in the rheological parameters of adsorption layers at fluid interfaces at controlled changes in the composition of a complex fluid formulations:
– 3200 BGN
2.8 Characterization of fluid interfaces via profile analysis of a droplet or a bubble at strictly controlled temperature changes within wide temperature ranges:
– 3000 BGN

Contact person for the above specified services

Prof. Elena Mileva, DSc, mileva@ipc.bas.bg; +359 2 979 2583

Link to the website of the partner institution

http://ipc.bas.bg/page/en/structural.units/departments/colloids.and-surfaces/equipment.php

7. Four complex equipment for electrochemical studies (Autolab, Ivium, Gamry and PAR) with options for impedance measurements, rotating disk electrode and electrochemical quartz microbalance and software providing flexible opportunities for various regimes of synthesis,

characterization, electrocatalytic and elactroanalytical measurements and electrochemical corrosion tests.

Pricelist

Upon agreement depending on the type of materials and complexity of electrochemical investigations.

Contact person for the above specified services

Prof. DSc Vessela Tsakova, tsakova@ipc.bas.bg

Link to the website of the partner institution

http://ipc.bas.bg/page/en/structural-units/departments/electrochemistry-and-corrosion/equipment.php

8. Contactless Horizontal Optical Dilatometer and High Temperature Microscope for operation in the range 20-1400 ° C (Misura HD / HTM 1400 - Expert System Solution)

Pricelist

	equipment	Max t (^{o}C)	prices for academic institutions (BGN)	prices for external institutions (BGN)
Coefficient of thermal expansion	Optical dilatometer HD1400 (Misura)	1000	70	100 (60)
Coefficient of thermal expansion		1200	85	130 (75)
Coefficient of thermal expansion		1400	100	160 (90)
Dilatometric sintering curves	Optical dilatometer HD1400 (Misura)	1000	80	120 (70)
Dilatometric sintering curves		1200	95	150 (85)
Dilatometric sintering curves		1400	110	180 (100)
High-temperature optical microscopy	HSM 1400 (Misura)	1000	70	100 (60)
High-temperature optical microscopy		1200	85	130 (75)
High-temperature optical microscopy		1400	100	160 (90)

Contact person for the above specified services

Prof. Dr. Alexander Karamanov, karama@ipc.bas.bg

Link to the website of the partner institution

http://ipc.bas.bg/media/Lab_of_Glass_CeramicMat/Cenorazpis.jpg

Partner 2

Institute of Balkan Studies with Centre of Thracology – Bulgarian Academy of Sciences

Infrastructural laboratory and/or equipment

Electronic Database – Online Encyclopaedia *Ancient Thrace and the Thracians*

Services:

Open access (free of charge)

Pricelist

Open access (free of charge)

Contact person for the above specified services

Dr Ruja Popova, ruja.popova@gmail.com, 0898609289

Link to the website of the partner institution
www.thracians.net
Partner 3
Institute of Ethnology and Folklore Studies with Ethnographic Museum- Bulgarian Academy of Sciences
Infrastructural laboratory and/or equipment
1. Laboratory for Analysis, Conservation and Restoration
Services:
• Study of stratigraphy and sanding samples, characterization, solubility and specific analyzes of pigments, dyes, alloys, plasters, etc., determination of fibers and fibers. • Assessment of the physical and chemical state of ethnographic objects and the reasons for their destruction. • Development of a strategy for conservation and restoration of museum objects, as well as of outdoor monuments from wood. • Conservation-restoration intervention. • Prepare a strategy for preventive conservation of museum objects. • Preparation of documentation for exhibitions (eg status reports).
Pricelist
• Microscopic image of an object / part of an object – 15 BGN • Study of the state before the conservation and restoration intervention - 60 BGN/h • Preparation of a plan for conservation and restoration intervention - 60 BGN/h • Conservation-restoration intervention, teamwork fee: 40 BGN/h for team leader, 30 BGN/h for team member, 20 BGN/h for assistant restorer / technician. • Preparation of documentation for conservation and restoration intervention - 60 BGN/h • Preparation of protocols for the status of objects participating in exhibitions - 50 BGN/h.
Contact person for the above specified services
Chief Assist. Assoc. Prof. Iglika Mishkova iglika.mishkova@iefem.bas.bg Gergana Baykusheva
Link to the website of the partner institution
Currently in reconstruction
Partner 4
Institute of Electrochemistry and Energy Systems- Bulgarian Academy of Sciences
Infrastructural laboratory and/or equipment
Laboratory for Electrochemical Material Testing
Services:
Measurements of electrical and electrochemical properties of organic, inorganic and hybrid bulk, thin layer, and powder materials-(electrical conductivity, corrosion resistance, electrocatalytic activity, double layer capacitance, charge exchange capacity, etc.) in various environments and broad range of temperatures
Pricelist
no price list available, payment on agreement in dependence of client's demand
Contact person for the above specified services
Assos. prof. Dr. Elefteria Lefterova, edl@iees.bas.bg , 029792771
Link to the website of the partner institution
www.iees.bas.bg
Partner 5
Institute of Catalysis- Bulgarian Academy of Sciences

Infrastructural laboratory and/or equipment

1. JEOL JES – FA 100 ESR spectrometer

Services:

- Recording of paramagnetic particles with concentrations up to 10^{-11} – 10^{-12} M in solid and liquid phase substances.
- Characterization of catalysts. Determination of the oxidation state of the transition metal ions and the way they interact with the surrounding environment.
- Study of different "point" defects in solids.
- Determination of the nature and relative concentration of natural, mechanical, thermal and radiation-generated free radicals in food and other materials. Study of kinetic changes in the EPR signal after sample treatment.
- Identification of irradiated foods.
- Determining the radical scavenging activity of natural products using a stable free radical.
- Determining of dosimetric properties of substances.

Determination of the soot, polycyclic aromatic hydrocarbons and aerosols content in the air.

Pricelist

- Recording a low resolution EPR spectra at room temperature – 25 BGN for sample count.
- Recording EPR spectrum in a defined area of magnetic field with high resolution at room temperature – 41.67 BGN for sample count.
- Recording of kinetic dependencies at room temperature – 16.67 BGN for a dependency point.
- Recording a low resolution EPR spectrum at a temperature other than the room – 33.33 BGN for sample count.
- Recording EPR spectrum in a defined area of magnetic field with high resolution at temperature other than the room – 50.00 BGN for sample count.
- Recording of kinetic dependencies at temperatures other than the room – 25.00 BGN for a dependency point.
- Recording of temperature dependencies – 41.67 BGN for a dependency point.

Prices are free of VAT.

Contact person for the above specified services

Assist. prof. Dr. Ralitsa Mladenova, ralitsa@ic.bas.bg, 0297923591

Link to the website of the partner institution

http://www.ic.bas.bg/index.php?lang=2&pid=5&sid=6&tid=2&stid=15
http://www.ic.bas.bg/index.php?lang=1&pid=41

2. ESCALAB MkII electron spectrometer

Services:

Qualitative and quantitative information of chemical states of the elements (except hydrogen and helium) presented on the surface of solid state and powder samples. The main techniques used for the analyses are X-ray Photoelectron Spectroscopy (XPS), also known as ESCA (Electron Spectroscopy for Chemical Analysis) and Auger Electron Spectroscopy (AES).

Pricelist

- Sample measurement – 120 BGN / surface
- Spectrum analysis – 120 BGN /sample

Contact person for the above specified services

Assoc. prof. Dr. Hristo Kolev, hgkolev@ic.bas.bg, 029796638

Link to the website of the partner institution

http://ic.bas.bg/index.php?lang=2&pid=5&sid=6&tid=2&stid=7

3. Equipment for infrared spectroscopy

Services:

- IRS modes of measurement applicable in heterogeneous catalysis
- Transmission IRS – pellets of pure substance, mixture with KBr and suspension in nujol
- Diffuse-reflectance IRS - pure substance or with addition of KBr
- ATR IRS - pure substance, coverages
- In situ diffuse-reflectance IRS - pure substance
- *in situ* measurements at temperatures up to 500 ° C in a gas овду or vacuum up to 10^{-5} mm Hg and a pressure of 2 atm (1111-4000 cm-1)

Pricelist

- Recording Transmission IRS spectra (250-600 cm^{-1}) – 15 BGN per sample
- Recording ATR IR spectra (400-4000 cm^{-1}) – 10 BGN per sample
- Recording DR IR spectra (400-4000 cm^{-1}, pure substance) – 7 BGN per sample
- Recording DR IR spectra (400-4000 cm^{-1}, diluted with KBr) – 12 BGN per sample

Prices are free of VAT.

Contact person for the above specified services

Assoc. prof. Maya Shopska, shopska@ic.bas.bg, 02-979-39-18

Link to the website of the partner institution

http://www.ic.bas.bg/?lang=1&pid=41

http://www.ic.bas.bg/uploads/file/40/irs-serviz-tseni_1.pdf

4. Gas Chromatograph with Quadrupole Mass Spectrometric Detector

Services:

Analysis of organic substances in liquid mixtures.

Pricelist

- Analysis of liquid sample - 50 BGN / sample
- Chromatogram analysis - 100 BGN / pcs.

Prices are free of VAT.

Contact person for the above specified services

L. Minchev(+359 2) 975 2572 e-mail: lsminchev@abv.bg

Link to the website of the partner institution

https://www.ic.bas.bg/uploads/file/40/gc_service.pdf

5. *Mössbauer Spectrometer "WissEl - Wissenschaftliche Elektronik GmbH"*

Services:

^{57}Fe Mössbauer Spectroscopy

Pricelist

- Transmission Mössbauer spectrum at room temperature - BGN 120
- Transmission Mössbauer spectrum at special conditions - BGN 240
- Conversion Electron Mössbauer Spectrum - 240 BGN
- Mössbauer spectrum analysis - BGN 72

Prices are free of VAT.

Contact person for the above specified services

Assoc. prof. PhD Nikolay Velinov, nikivelinov@ic.bas.bg , 029792593

Link to the website of the partner institution

http://www.ic.bas.bg

6. Catalytic equipment for complete oxidation of volatile organic compounds (VOC) and CO oxidation in hydrogen reach gases

Services:

- Catalytic tests of catalysts for complete oxidation of volatile organic compounds (VOC), carbon monoxide and carbon monoxide in hydrogen-rich gases.
- Analysis of VOC, hydrogen, methane in gas mixtures.

Pricelist

- Catalytic tests - 200 leva / sample
- Analysis of gas samples - BGN 50 / sample
- Analysis of liquid sample - BGN 50 / sample
- Chromatogram analysis - 100 BGN / pcs.

Prices are free of VAT.

Contact person for the above specified services

Assos. prof. S. Todorova, todorova@ic.bas.bg, 029792576

Link to the website of the partner institution

https://www.ic.bas.bg/index.php?lang=1&pid=1&sid=25

7. **Catalytic equipment for methane reforming.**

Services:

- Catalytic tests of methane reforming catalysts.
- Analysis of methane in gas mixtures.

Pricelist

- Catalytic tests - 200 BGN / sample
- Analysis of gas samples - BGN 50 / sample
- Analysis of liquid sample - BGN 50 / sample
- Chromatogram analysis - 100 BGN / pcs.

Prices are free of VAT.

Contact person for the above specified services

Assos. prof. S. Damyanova, soniad@ic.bas.bg, 02979 2588

Link to the website of the partner institution

https://www.ic.bas.bg/index.php?lang=1&pid=1&sid=25

Partner 6

Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences

1. Bruker D8 Advance with LynxEye detector

Services:

- Qualitative and quantitative X-ray analysis,
- Determination of microcrystalline sizes and stains,
- Determination of crystalline structure of powder samples, bulk samples of alloys and thin layers.

Pricelist

- 1. Qualitative Phase Analysis
- 1.1 Powder diffractogram - 40 BGN
- 1.2 Phase identification (up to two phases) - 20 BGN
- 1.3 Phase identification (over two phases - for each additional) - 10 BGN
- 2. Quantitative Phase Analysis - 240 BGN
- 3. Determination the size of crystallites and strains. -100 BGN
- 4. Determination of unit cell parameters (for one phase) -200 BGN
- 5. Determination of average thickness of polycrystalline coating -100 BGN.
- 6. Precise Phase Indexing - 200 BGN
- 7. Software processing of digital powder diffractograms - By agreement
- 8. Determination of crystal structure of polycrystalline materials - By agreement

The quoted prices are without VAT
Contact person for the above specified services
Prof. Daniela Kovacheva didka@svr.igic.bas.bg, +359 2 979 2587
Link to the internet page of the partner institution
http://www.igic.bas.bg/uslugi/XRD.pdf
2. Flame atomic absorption spectrometer (Flame-AAS) **Thermo Elemental SOLAAR - M5 AA, Thermo Fisher Scientific (USA)**
Services:
• Single element analysis of metal ions in dissolved samples at ppm level
Pricelist
• Analysis of one sample – 15.00 to 40.00 lv/element determination • Method development and scientific interpretation – on agreement
Contact person for the above specified services
Assoc. Prof. Dr. Albena Detcheva-Tchakarova; E-mail: albena@svr.igic.bas.bg; Tel: (+3592) 979 25 04
Link to the internet page of the partner institution
http://www.igic.bas.bg/uslugi/AAS.pdf
3. High Resolution Scanning Transmission electron microscope
Services:
• electron microscopic images of solid state surfaces • determination of morphology and particle size distribution • selected area electron diffraction (SAED) • high-resolution TEM images (HRTEM)
Pricelist
• The price is determined for one hour operation on the microskope – 120 BGN /h • Specimen preparation – 30 BGN /specimen
Contact person for the above specified services
Pavel Markov , pvlmarkov@svr.igic.bas.bg , phone: +359 2 979 25 63
Link to the internet page of the partner institution
http://www.igic.bas.bg/uslugi/TEM.pdf
4. UV-VIS spectrophotometer Thermo Evolution 160 **5. Thermo Evolution 300 DR UV-vis spectrometer equipped with a diffuse-reflectance Praying Mantis device**
Services:
• Quantitative analysis of transition metal ions in solutions; • Qualitative and quantitative analysis of organic compounds in solutions; • Registration of transmission or diffuse-reflectance UV-vis spectra of powered samples; • Registration of transmission UV-vis spectra of liquid samples
Pricelist
• UV-vis spectrum of a powered sample: – 10 BGN /sample • UV-vis spectrum of a liquid sample: – 10 BGN /sample • On agreement
Contact person for the above specified services
Dr. Christina Tzvetkova, hrisi@svr.igic.bas.bg, tel: 02 979 35 70 Dr. Nikola Drenchev, ndrenchev@svr.igic.bas.bg, +359 2 9792556, +359 2 9792573
Link to the internet page of the partner institution

http://www.igic.bas.bg/uslugi/
6. Thermo Nicolet 6700 FTIR spectrometer with DTGS and MCT detectors **7. ThermoScientific Nicolet iS5 FTIR spectrometer with DTGS detector**
Services:
• Registration of FTIR spectra of powered samples in KBr pellets; • Surface acidity determination via low-temperature CO adsorption on pure powered samples in self-supporting pellets.
Pricelist
• FTIR spectrum of a powered sample in a KBr pellet: – 18 BGN /sample • FTIR spectrum of a powered sample in a pre-prepared KBr pellet: – 10 BGN/sample • Surface acidity determination via low-temperature CO adsorption on a self-supporting pellet – 350 BGN /sample
Contact person for the above specified services
Dr. Kristina Chakarova, kristina@svr.igic.bas.bg, +359 2 9792556, +359 2 9792573
Link to the internet page of the partner institution
http://www.igic.bas.bg/uslugi/IR.pdf
8. Thermal conductivity Instrument C-Therm Technologies Ltd.
Services:
• Sample fabrication; • Determination of thermal conductivity.
Pricelist
Determination of thermal conductivity of solids: 40 BGN per sample
Contact person for the above specified services
Dr. Sonya Harizanova, sonya@svr.igic.bas.bg, +359 2 9793904
Link to the internet page of the partner institution
http://www.igic.bas.bg/uslugi/TPM.pdf
9. Equipment for thermal analysis
Services:
• Differential thermal analysis of solid and gel specimens up to 1500°C with the possibility of heating and cooling at a constant rate or maintaining a constant temperature. • Thermogravimetric analysis of solid and gel specimens up to 1500°C with the possibility of heating and cooling at a constant rate or maintaining a constant temperature. • Quality analysis of exhaust gases
Pricelist
• DTA-TG analysis – 100 BGN/h • DTA-TG-MASS analysis – 120 BGN/h The prices are without WAT
Contact person for the above specified services
Assoc. Prof. Dr. Diana Rabadjieva, didiarab@svr.igic.bas.bg, +359 2 9793554 Assist. Prof. Dr. Lubomir Alexandrov, lubomir@svr.igic.bas.bg, +359 2 9793901
Link to the internet page of the partner institution
http://www.igic.bas.bg/uslugi/TA.pdf
10. Hall measurement system MMR Technologies Inc.
Services:
• Sample fabrication: square pellets;

- Measurement of electrical resistivity;
- Determination of carrier mobility and density.

Pricelist

- Determination of electrical properties of solids at room temperature: 40 BGN per sample;
- Determination of electrical properties of solids over the temperature range of 100 – 600 K: 200 BGN per sample;

The quoted prices are without VAT

Contact person for the above specified services

Dr. Sonya Harizanova, sonya@svr.igic.bas.bg, +359 2 9793904

Link to the internet page of the partner institution

http://www.igic.bas.bg/uslugi/

11. Quantachrome Nova 1200e analyser

Services:

- Adsorption measurements with N_2, CO_2, Ar
- Specific surface area by the BET method
- Full isotherm measurement
- Pore volume and average pore diameter determination
  Micro- and mesopore size distribution

Pricelist

- Specific surface area by the BET method - 35 BGN
- Pore volume and mesopore size distribution- 70 BGN
- Pore volume and micropore size distribution - 80 BGN
- Adsorption measurements with CO_2 or Ar- 160 BGN

Prices not including VAT

Contact person for the above specified services

Assoc. Prof. Dr. Ivanka Spassova, ispasova@svr.igic.bas.bg , 9793566

Link to the internet page of the partner institution

http://www.igic.bas.bg/uslugi/BET.pdf

12. X-ray photoelectron spectrometer AXIS Supra (Kratos Analytical Ltd)

Services:

- Analysis of stoichiometry and valence states of chemical elements composing a surface layer with thickness up to 5-8 nanometers of thin films, catalysts, semiconductors, dielectrics, sensors, etc;
- Calculation of concentrations (in at.%) of different chemical elements;
- Deconvolution of the measured peaks on individual components according to the chemical states of the different atoms;
  Removing a surface layer by ion bombardment and measuring the above mentioned chemical characteristics (depth profiling).

Pricelist

- Measurement of one surface - 150 BGN without VAT;
- Depth profiling - 100 BGN excluding VAT per profile point;
- Processing of the measured spectra - by agreement.

Contact person for the above specified services

Assoc. Prof. Dr. Krassimir Kostov, klkostov@svr.igic.bas.bg, klkostov@gmail.com, +359 2 979 2536

Link to the internet page of the partner institution

http://www.igic.bas.bg/uslugi/XPS.pdf

13. Multifrequency electron paramagnetic resonance spectrometer (Bruker EMXplus)

Services:

- Identification and characterization of electronic state, geometry and valency of paramagnetic ions.
- Detection, characterization and quantitative analysis of free radicals
- Study of materials having different type of defects (semiconductors, dielectrics, polymers, minerals, etc.).
- Study of drugs and pharmaceutical samples.

Pricelist

Services	Price, BGN **X-band, 9.4GHz**	Price, BGN **Q-band, 35 GHz**
1. Full temperature range measurements (70 – 450 K)	150	180
2. Room temperature (300 K)	25	30
3. Room temperature and liquid nitrogen temperature	40	50
4. Quantitative EPR	46	55

Contact person for the above specified services

Rositsa Kukeva, rositsakukeva@yahoo.com; +359 2 979 35 74

Link to the internet page of the partner institution

http://www.igic.bas.bg/uslugi/EPR.pdf

14. Inductively coupled plasma optical emission spectrometer (ICP-OES) Prodigy 7 ICP-OES, Teledyne Leeman Labs (USA)

Services:

Multielement analysis of metal ions in dissolved samples in a broad concentration range from ppm to % level

Pricelist

- Analysis of one sample – 5.00 to 20.00 BGN/element determination
- Method development and scientific interpretation – on agreement

Contact person for the above specified services

Assoc. Prof. Dr. Albena Detcheva-Tchakarova; E-mail: albena@svr.igic.bas.bg;
Tel: (+3592) 979 25 04
Assoc. Prof. Dr. Stefka Tepavicharova, stepav@svr.igic.bas.bg, +359 2 979 3926

Link to the internet page of the partner institution

http://www.igic.bas.bg/uslugi/ICP.pdf

Partner 7

Institute of Optical Materials and Technologies - Bulgarian Academy of Sciences

1. Solid State Pulsed Laser Systems

Services:

Deposition of nanostructured biologically active thin films with controllable thickness by MAPLE technology.

Pricelist

• BGN 50 per hour for usage • BGN 65 per hour - if an employee of IOMT participates for creation of a new optical set-up If for the implementation of the service it is necessary the current optical set-up to be disassembled, the time of its restoration is also calculated.
Contact person for the above specified services
Assoc. prof. Georgi Dyankov, E-mail: gdyankov@iomt.bas.bg , +359 2 979 35 09
Link to the website of the partner institution
http://www.iomt.bas.bg/projs/inframat_2019/
2. X-ray Analysis System
Services:
Determination of atomic and molecular structure of crystalline samples - elementary cell parameters, crystal size, texture, quantitative elemental analysis.
Pricelist
Recording of XRD pattern - 50 BGN per hour
Contact person for the above specified services
Technician Emil Milanov, E-mail: emo.milanov16@gmail.com , +359 2 979 35 45
Link to the website of the partner institution
http://www.iomt.bas.bg/projs/inframat_2019/
3. Scanning Transmission electron microscope HRTEM JEOL JEM 2100
Services:
Determination of structure, phase composition and surface morphology of thin layers, volumetric and fibrous materials, powder samples, etc.
Pricelist
• TEM analysis - 250 BGN / hour • Standard sample preparation on Cu grid (for suspensions) - 3 BGN / grid • Suspension preparation (including Cu grid) - 12 BGN / sample • Photo plate imaging (final information is in digital file) - 5 BGN / image • SAED analysis - 40 BGN / image
Contact person for the above specified services
Assoc. Prof. Daniela Karashanova, E-mail: adi@iomt.bas.bg, +359 2 979 35 19
Link to the website of the partner institution
http://www.iomt.bas.bg/projs/inframat_2019/
4. **Spectroscopic Phase Modulated Ellipsometer UNIVESEL 2, Horiba JobinYvon**
Services:
Determination of optical characteristics of thin layers and multilayer systems - modeling of the sample structure, analysis of ellipsometric measurements, measurement and analysis of anisotropic layers, etc.
Pricelist
• **Measurement - BGN 30 per hour** • **Modeling - BGN 20 per hour** • **For more than 10 samples - negotiable prices**
Contact person for the above specified services
Assoc. prof. Violeta Madjarova, E-mail: vmadjarova@iomt.bas.bg , +359 2 979 35 06
Link to the website of the partner institution
http://www.iomt.bas.bg/projs/inframat_2019/
5. Atomic force microscope MFP-3D, Asylum Research, Oxford Instruments

Services:
High-resolution measurements of surface topography and topology of electrical, magnetic and piezoelectric properties of the investigated objects in a gas or liquid environment.
Pricelist
• Measurement of topography - BGN 100 per hour • Electrical measurements - BGN 150 per hour The cantilevers are paid separately. For more than 10 samples - negotiable prices.
Contact person for the above specified services
Assist. prof. Velichka Strijkova-Kenderova, E-mail: vily@iomt.bas.bg , +359 2 979 35 13
Link to the website of the partner institution
http://www.iomt.bas.bg/projs/inframat_2019/
6. 3D Optical profiler, Zeta-20, Zeta Instruments
Services:
Measurement of reflection spectra, obtaining surface roughness information, obtaining a three-dimensional image of the sample surface, etc.
Pricelist
• 70 BGN per hour • For more than 10 samples - negotiable prices
Contact person for the above specified services
Assist. prof. Velichka Strijkova-Kenderova, E-mail: vily@iomt.bas.bg , +359 2 979 35 13
Link to the website of the partner institution
http://www.iomt.bas.bg/projs/inframat_2019/
7. Spectrofluorometer FluoroLog3-22, Horiba JobinYvon
Services:
Fully automated modular system with the highest sensitivity among those available on the market, allowing measurement of light emission of practically any type of samples, including very thin layers with a very low emission as well as quantum dots. Integrating Sphere Assembly for the quantum yield measurement of solid and liquid samples. Solid sample holder. Front-face viewing option with swing-away mirror. Liquid Nitrogen Dewar Assembly.
Pricelist
• Measurement of emission spectra - BGN 80 per hour • Measuring quantum yield and lifetime - BGN 100 per hour • For more than 10 samples - negotiable prices
Contact person for the above specified services
Assist. prof. Petar Ivanov, E-mail: petar@iomt.bas.bg , +359 2 979 35 31
Link to the website of the partner institution
http://www.iomt.bas.bg/projs/inframat_2019/
8. Dynamic Light Scattering, (DLS), Zetasizer Nano ZS, Malvern
Services:
Size measurements from 0.3 nm (diameter) to 10 microns. Molecular weight measurements from 106 Da down to 980 Da. Zeta potential measurements for values in the range: -500 mV to +500 mV.
Pricelist
• 50 BGN per hour • 2 BGN for plastic cuvette

- For more than 10 samples - negotiable prices.

Contact person for the above specified services

Assist. prof. Petia Petrova, E-mail: petia@iomt.bas.bg, +359 2 979 35 43

Link to the website of the partner institution

http://www.iomt.bas.bg/projs/inframat_2019/

9. Laser systems with continuous emission mode and holographic equipment

Services:

Recording holographic optical elements, data storage, recording of monochrome and multicolor art holograms using CW lasers. Interferometric measurements of transmissive and reflective objects under mechanical tension and also on variation of their optical properties in static and dynamic mode.

Pricelist

Lasers:

- BGN 50 per hour for usage
- BGN 65 per hour - if an employee of IOMT participates for creation of a new optical set-up

If for the implementation of the service it is necessary the current optical set-up to be destroyed, the time of its restoration is also calculated.

Holographic equipment:

- BGN 80 per hour for usage
- BGN 120 per hour - if an employee of IOMT participates for creation of a new optical set-up

If for the implementation of the service it is necessary the current optical set-up to be destroyed, the time of its restoration is also calculated.

Contact person for the above specified services

Assoc. prof. Dimana Nazarova, E-mail: dimana@iomt.bas.bg , +359 2 979 35 27

Link to the website of the partner institution

http://www.iomt.bas.bg/projs/inframat_2019/

10. **Glovebox workstation MB-200, MBRAUN**

Services:

Manufacture of organic light-emitting diodes and measurement of their functional characteristics.

Pricelist

- BGN 75 per hour
- BGN 200 per hour for using the built-in evaporator system

Contact person for the above specified services

Assoc. prof. Reni Tomova, E-mail: reni@iomt.bas.bg , +359 2 979 35 43

Link to the website of the partner institution

http://www.iomt.bas.bg/projs/inframat_2019/

Partner 8

Institute of Organic Chemistry with Centre of Phytochemistry - Bulgarian Academy of Sciences

MODULE 1

1. Laboratory "Bulgarian NMR Centre"

Services:

Service analyses:

- NMR spectra of liquid samples: ^{1}H, ^{13}C{H}, DEPT135, DEPT90, ^{31}P{H}, ^{31}P, ^{19}F{H}, ^{19}F, NOE, COSY, NOESY, ROESY, HMQC, HSQC, HMBC, DOSY.
- NMR spectra of solid samples: ^{13}C, ^{31}P, ^{15}N, ^{7}Li, ^{6}Li, ^{11}B, ^{29}Si, ^{27}Al, ^{23}Na, ^{71}Ga, ^{119}Sn etc. with or without cross-polarization (CP-MAS) and/or high-power decoupling (HPDEC).

Research expertise: application of advanced NMR approaches for:

- Structure elucidation of synthetic, natural and pharmaceutical products
- Qualitative and quantitative analysis of chemical composition of extracts from medicinal and aromatic plants
- Structural characterization of new materials: multifunctional organic and hybrid organic/inorganic materials; nano-sized materials based on polymeric hydrogels, mesoporous silicas and zeolites.
- Analysis of complex mixtures based on surfactants and polymers (mixed micelles, liposomes, conjugates, emulsions etc.) with potential applications as drug delivery systems or in cosmetics.
- Analysis of foods and drinks (honey, wine etc.) for determination of origin and authenticity

Pricelist

NMR analyses*	IOCCP	Consortium Partners	Academic institutions	Other
Price/hour (< 2 h)	25	50	75	150
Price/hour (> 2 h)	4	8	12	30
^{1}H (up to 12‘)	5	10	15	30
Tentative prices for 0.1M/0.05M проба (DRX250/AV600)				
^{1}H + D_2O exchange; ^{1}H + ^{13}C spectra (up to 24‘); ^{1}H + COSY (up to 24‘);	10	10	10	10
^{1}H+^{13}C+ DEPT spectra; (up to 36‘)	15	30	45	90
^{1}H+ ^{13}C+ COSY+HSQC	20	20	20	20
^{1}H, ^{13}C, COSY, edHSQC, HMBC, NOESY/ROESY	50	100	150	300
Other experiments	Depending on the experimental time			
* Prices are in BGN, without VAT.				

Contact person for the above specified services

Prof. Pavletta Shestakova PhD, e-mail: psd@orgchm.bas.bg; phone: 02 9606136

Link to the website of the partner institution

http://www.orgchm.bas.bg/~nmr/EN/indexEN.html

2. High-performance Liquid Chromatograph Agilent 1100
Supercritical Carbon Dioxide Extraction Apparatus Separex (1000 bar)
BUCHI Sepacore® flash system with Fraction Collector C-660, UV-Vis Detector C-640 and two pumps C-605 working in isocratic or gradient mode
BUCHI Mini Spray Dryer B-290 System working with both aqueous and organic solutions
Encapsulator BUCHI B-395. Apparatus for sterile microbeads and microcapsules.
Microwave Reaction System: Multiwave PRO - Apparatus for Extraction of Medicinal and Aromatic Plants
Digital Polarimeter Jasco P-2000

Services:

- Quantitative and qualitative determination of components in complex mixtures of synthetic or natural origin: flavonoids, anthocyanins, monosaccharides and oligosaccharides, steviol glycosides, etc.;

- Extraction and isolation of bioactive products of natural origin under light and non-toxic conditions. It relates to medicines, food supplements and cosmetic products;
- Fractionation and purification of mixtures of synthetic and natural products;
- Isolation of dry extracts from biologically active natural substances;
- Preparation of capsules with natural substances and extracts - application in pharmacy, cosmetics and curative foods;
- Extraction of natural compounds, as well as synthesis of analogs in soft and energy-saving conditions;
- Determination of important characteristics of natural compounds. Control of purity and identity;
- Analysis and control of polysaccharides.

Pricelist

- Determination of optical rotation angle with polarimeter - 15 BGN / sample excluding VAT.
- HPLC System. The price for one measurement is 50 BGN excluding VAT for samples with no sample preparation and 45 BGN for samples which need sample preparation. For new method development and validation – the price will be additionally discussed.
- The analyses with other instruments require research and development of methods, depending on the particular nature and complexity of the sample. The price is determined individually for each particular sample.

Contact person for the above specified services

Polarimeter
Prof. Vanya Kurteva PhD, e-mail: vkurteva@orgchm.bas.bg, phone: 02 9606 156
Assist. Maya Tavlinova, e-mail: maya@orgchm.bas.bg, phone: 02 9606 154
High performance liquid and flash chromatography
Assoc. Prof. Svilen Simeonov PhD, e-mail: svilen@orgchm.bas.bg, phone: 02 9606 114
Assist. Prof. Yana Nikolova PhD, e-mail: ynikolova@orgchm.bas.bg, phone: 02 9606 132
Assist. Prof. Mariana Kamenova-Nacheva PhD, e-mail: anmari@orgchm.bas.bg, phone: 02 9606 134
Supercritical Carbon Dioxide Extraction
Prof. DSc Vladimir Dimitrov, e-mail: vdim@orgchm.bas.bg, phone: 02 9606 157
Assist. Prof. Angel Konakchiev PhD, e-mail: angel@orgchm.bas.bg, phone: 02 9606-148
Microwave Reaction System
Assoc. Prof. Georgi Dobrikov PhD, e-mail: gmdob@orgchm.bas.bg, phone: 02 9606-132
Assoc. Prof. Svilen Simeonov PhD, e-mail: svilen@orgchm.bas.bg, phone: 02 9606 114
Apparatus for encapsulation and Spray drying equipment
Assist. Maya Tavlinova e-mail: maya@orgchm.bas.bg, phone: 02 9606 154
Assist. Krasimira Dikova e-mail: petkova@orgchm.bas.bg , phone: 02 9606 158

Link to the website of the partner institution

http://www.orgchm.bas.bg/services_en.html

3. **SKALAR apparatus for automatic determination of uronic acids and total neutral sugars**

Services:

- Analysis of uronic acid content in pectic polysaccharides
- Analysis of total neutral sugar content in pectic polysaccharides

Pricelist

- Analysis of uronic acid content in pectic polysaccharides –50 BGN per sample
- Analysis of total neutral sugar content in pectic polysaccharides – 50 BGN per sample

Contact person for the above specified services

Assist. prof. Manol Ognyanov, PhD, e-mail: mogn@orgchm.bas.bg, phone: +359 32642759

Link to the website of the partner institution

http://www.orgchm.bas.bg/bac_pl_bg.html

MODULE 2

1. **Tensor 27 Bruker FTIR spectrometer with working spectral range 8000 – 400 cm^{-1} at maximum resolution 0.5 cm^{-1}**

Services:

IR- qualitative and quantitative analysis of solid and liquid samples with tablet and ATR techniques.

Pricelist

1. Recording and printing IR spectrum
   a) In mid IR region (4000-400 cm^{-1}) of solid and liquid samples – 30 BGN.
   b) ATR spectrum (4000-600 cm^{-1}) of solid and liquid samples – 36 BGN.
2. IR spectrum interpretation – 40 BGN.
3. Spectral data processing
   a) Resolving overlapping bands – 30 BGN.
   b) Derivatives of spectrum curves – 30 BGN.
   c) Integral of absorption band – 30 BGN.
4. Quantitative analysis - the price is agreed on depending on the complexity of the analysis.

Pricelist for users from Bulgarian Academy of Science and Universities

1. Recording and printing IR spectrum
   a) In Mid IR region (4000-400 cm^{-1}) of solid and liquid samples – 15 BGN.
   b) ATR spectrum (4000-600 cm^{-1}) of solid and liquid samples – 18 BGN.
2. IR spectrum interpretation –20 BGN.
3. Spectral data processing
   a) Resolving overlapping bands - 15 BGN.
   b) Derivatives of spectrum curves - 15 BGN.
   c) Integral of absorption band - 15 BGN.

Quantitative analysis - the price is agreed on depending on the complexity of the analysis.

Contact person for the above specified services

Assos. prof. Dr. Marin Rogozherov, e-mail: mrogojer@orgchm.bas.bg , phone: 02 9606 150,
Assos. prof. Dr. Denitsa Pantaleeva, e-mail: deni@orgchm.bas.bg , phone: 02 9606 106

Link to the website of the partner institution

http://www.orgchm.bas.bg/services_bg.html

Partner 9

Institute of Polymers- Bulgarian Academy of Sciences

1. Equipment for thermal analysis

Services:

- DSC analysis for determination of melting, crystallization, glass transition temperature, heat (enthalpies) of transition (melting, crystallization) of polymers.
- DSC analysis for identification of polymers, blends and composites.
- TGA analysis for determination of thermal stability of high and low molecular mass compounds and composites;
- Determination of mass loss of polymer samples as function of temperature or time of heating. Analysis of the gasses evolved upon thermal decomposition of polymer materials. Qualitative identification via NIST spectral library.

GC/ MS analysis of a sample and/or development of analysis method.

Pricelist

- DSC analysis –50 BGN/sample
- TGA analysis – 50 BGN /sample
- GC/MSG analysis – 100 BGN /analysis

• Development of GC/MSG analysis method – 600 BGN /method • TGA/GC/MSG analysis – 120 BGN /sample
Contact person for the above specified services
Eng. Pencho Tuleshkov, Ph.D., pen.tul@polymer.bas.bg, 029793477
Link to the website of the partner institution
http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#calorimeter http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#tgagcmsd http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=13&Itemid=8&lang=en
2. Equipment for X-ray structural analysis
Services:
• Phase analysis, determination of crystalline structure, micro and residual stress analysis, and orientation of polymer materials and composites
Pricelist
X-ray structural analysis – 50 BGN/analysis(sample)
Contact person for the above specified services
Assist. Prof. Philip Ublekov, Ph.D., fublekov@polymer.bas.bg, 02 979 3475
Link to the website of the partner institution
http://polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#xrd *http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=13&Itemid=8&lang=en*
3. **Equipment for spectrophotometric analysis**
Services:
• UV-VIS quantitative analysis of solutes, incl. polymers, in solution • IR quantitative and qualitative analysis of polymer and composite materials
Pricelist
UV-VIS and IR analysis – 20 BGN/spectrum
Contact person for the above specified services
Prof. Ivaylo Dimitrov, Ph.D., dimitrov@polymer.bas.bg, 02 979 3628 Assist. Prof. Olya Stoilova, Ph.D., stoilova@polymer.bas.bg , 02 979 3468
Link to the website of the partner institution
http://polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#spectrometer http://polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#spectrophotometer *http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=13&Itemid=8&lang=bg*
4. Equipment for physico-mechanical testing of polymer and composite materials
Services:
• Determination of tensile strength, Young`s modulus; maximum elongation at break; maximum tension (strength) at break, bending strength, Izod impact strength of polymer and composite materials • Elaboration of series of polymer testing specimens • Determination of storage and loss moduli of polymer materials
Pricelist
Determination of tensile characteristics– 120 BGN /series Determination of bending characteristics – 150 BGN /series Determination of Izod impact strength – 85 BGN /series

Elaboration of testing specimens – 180 BGN /series Determination of storage and loss moduli – 60 BGN /analysis
Contact person for the above specified services
Assoc. Prof. Mariya Spasova, Ph.D., mspasova@polymer.bas.bg ; 02 9793468, Assist. Prof. Vasil Georgiev, vgeorgiev@polymer.bas.bg; 02 979 6637; Prof. Petar Petrov, D.Sc. ppetrov@polymer.bas.bg 029796335; Eng. Pencho Tuleshkov, Ph.D., pen.tul@polymer.bas.bg , 029793477
Link to the website of the partner institution
http://polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#instron http://polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#dma http://polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#rheometer http://polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#pressa http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=13&Itemid=8&lang=en
5. Equipment for extrusion, compounding and granulation of polymer composites
Services:
• Mixing and rheological measurements of small volume of polymeric materials • Developing of polymeric composite materials
Pricelist
Developing of polymeric composites and blends – single sample up to 5 kg (materials provided by the client) - 220 BGN Mixing and rheological measurement of a polymer based sample of min. 10 gr – 110 BGN
Contact person for the above specified services
Assist. Prof. Vasil Georgiev, vgeorgiev@polymer.bas.bg; 02 979 6637; Eng. Pencho Tuleshkov PhD, pen.tul@polymer.bas.bg , 02 979 3477
Link to the website of the partner institution
http://polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#miniex http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=13&Itemid=8&lang=en
6. Equipment for gas chromatography
Services:
• Analysis of monomer and solvent purity • Determination of monomer content in polymers or reaction mixtures; • Qualitative analysis /method elaboration using по external standards, internal standard or standard reference.
Pricelist
Analysis of monomer and solvent purity / Determination of monomer content in polymers or reaction mixtures – 80 BGN /sample Method elaboration – 400 BGN
Contact person for the above specified services
Eng. Pencho Tuleshkov PhD, pen.tul@polymer.bas.bg , 02 979 3477
Link to the website of the partner institution
http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#gcfid http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=13&Itemid=8&lang=en

7. Equipment for molecular mass determination
Services:
• Determination of molecular mass and heterogeneity of samples in solution, sedimentation and diffusion coefficient • Quantitative analysis of organic compounds in solution • Determination of residual monomers • Determination of molecular-mass characteristics of polymers in solution • Determination of viscosity average molecular mass of polymers.
Pricelist
Determination of molecular mass and heterogeneity of samples in solution, sedimentation and diffusion coefficient using Analytical ultracentrifuge – 150 BGN/sample Determination of molecular-mass characteristics of polymers in solution using GPC (UV and RI detectors) –120 BGN Determination of absolute molecular mass using GPC (multiangle light scattering detector) – 140 BGN Quantitative analysis of organic compounds in solution/ Determination of residual monomers – 100 BGN/measurement Determination of viscosity average molecular mass of polymers – by agreement depending on the solvent
Contact person for the above specified services
Assist. Prof. Zornica Todorova ztodorova@polymer.bas.bg , 02 979 6318; eng. Radka Radeva rradeva@polymer.bas.bg , 02 979 3477; Assoc. Prof. Christo Novakov hnovakov@polymer.bas.bg , 02 979 3477; Eng. Pencho Tuleshkov PhD, pen.tul@polymer.bas.bg , 02 979 3477; Assoc. Prof. Darinka Christova dchristo@polymer.bas.bg , 02 979 2285; eng. Sijka Ivanova, sivanova@polymer.bas.bg , 02 979 2285
Link to the website of the partner institution
http://polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#ultracentrifuge http://polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#uhplgpc http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=13&Itemid=8&lang=en
8. Equipment for atom force microscopy
Services:
Determination of morphology and size/shape of nano/micro-objects
Pricelist
Determination of morphology and size/shape of nano/micro-objects – 120 BGN/sample
Contact person for the above specified services
Assist. Prof. Georgy Grancharov, PhD, granchar@polymer.bas.bg , 02 979 6319; Assist. Prof. Mariya Kyulavska, mkyulavska@polymer.bas.bg, 02 979 6319.
Link to the website of the partner institution
http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#afm http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=13&Itemid=8&lang=en
9. **Equipment for investigation of polymer solutions and colloid systems applying static/dynamic and electrophoretic light scattering**
Services:
The equipment includes a goniometer BI-200SM and zetasizer 90Plus PALS, Brookhaven Instruments;

Orange Analytics DNDC 19 for determination of gradient of the refractive index
Pricelist
Determination of particle size, particle size distributions, diffusion coefficients – 50 lv/sample Determination of zeta potential - 25 lv/sample (solution)
Contact person for the above specified services
Prof. Stanislav Rangelov, DSci., rangelov@polymer.bas.bg, 029792293; Assoc. Prof. Emi Halajova, PhD, ehaladjova@polymer.bas.bg; 02 979 3973.
Link to the website of the partner institution
http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#gnmtr http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=13&Itemid=8&lang=en
10. **Equipment for measurement of surface tension of liquids and dynamic contact angle**
Services:
Determination of: - surface tension and interfacial tension in the range from 1 to 2000 mN/m, - dynamic contact angle measurements in the range from 0 to 180°.
Pricelist
Determination of surface tension - 50 BGN /sample Determination of dynamic contact angle – 50 BGN /sample
Contact person for the above specified services
Assoc. Prof. Olya Stoilova, Ph.D, stoilova@polymer.bas.bg , 02 979 3468
Link to the website of the partner institution
http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=54&Itemid=41&lang=en#tm http://www.polymer.bas.bg/index.php?option=com_content&view=article&id=13&Itemid=8&lang=en
Partner 10
National Museum of History
Infrastructural laboratory and/or equipment
Central Laboratory for Conservation and Restoration (CLCR)
Services:
• Expertise and evaluation of the condition of cultural valuables; • Designing a project or a program for conservation-restoration activities; • Carrying out conservation-restoration projects according to preliminary offered plan, forming of teams; • Preparing of conservation-restoration documentation; • Inspection of cultural valuables in various ranges of the light spectrum; • Forming of conservation-restoration strategies for various types of cultural valuables; • Making condition checking reports for travelling and visiting exhibitions.
Pricelist
• Expertise and evaluation of the condition: 60 BGN/h • Designing a project or a program for conservation-restoration activities: 60 BGN/h • Carrying out conservation-restoration projects according to preliminary offered plan, forming of teams: 40 BGN/h for head of team, 30BGN/h for restorers (members of a team or freelance), 20 BGN/h for assistant restorers/technicians. • Preparing of conservation-restoration documentation: 60 BGN/h • Inspection of cultural valuables in various ranges of the light spectrum: 60 BGN/h • Forming of conservation-restoration strategies for various types of cultural valuables:

60 BGN/h • Making condition checking reports for travelling and visiting exhibitions: 50 BGN/h.
Contact person for the above specified services
Alexander Vatov, avatov@historymuseum.org, 02955760134
Link to the website of the partner institution
not yet available
Partner 11
National Archaeological Institute with Museum- Bulgarian Academy of Sciences
1. **XRF spectrometer, Shimadzu EDX-720**
Services:
• chemical elemental analysis of nonorganic materials • evaluation of the authenticity of archaeological finds • evaluation of the physical condition of an archaeological objects and the reasons causing the processes of deterioration • strategies for conservation-restoration treatment for museum objects as well as big outdoor monuments • conservation-restoration treatment • strategies for preventive conservation of the museum artifacts • preparation of documents (such as condition reports) for exhibitions
Pricelist
• elemental XRF analysis – 36 BGN • pre-conservation evaluation of the condition: 60BGN/h • preparation of plan for conservation-restoration treatment: 60BGN/h • conservation-restoration treatment payment of the team: 40BGN/h for head of team, 30BGN/h for restorers, 20BGN/h for assistant restorers/technicians. • Preparing of conservation-restoration documentation: 60BGN/h • Making condition checking reports for travelling and visiting exhibitions: 50BGN/h.
Contact person for the above specified services
Assist. prof. Dr. Petya Penkova, lab@naim.bg, 029882406
Link to the website of the partner institution
http://naim.bg/bg/content/category/200/89/department/85/
Partner 12
National Academy of Art
- **Professional camera Fujifilm UVIR Pro with lenses, filters, tripods and light.** - **Microscopes Amplival, Neophot** - **Stereo microscopes Carl Zeiss – Jena** - **Equipment for micro chemical analyses and liquid chromatography** - **Data logger KlimaLogg Pro with external sensors** - **Thermal camera**
Services:
• Micro chemical analyses; • Liquid chromatography; • Mobile photographic investigation, including in the visible spectrum, IR spectrum, UV spectrum, UV luminescence, IR luminescence, False Colour Infrared; • Mobile thermo-vision diagnostic of wall paintings and decorative architectural surfaces;

- *In-situ* taking samples, preparation of cross-sections and microscopy analyses in normal and polarised light;
- Investigation of the microclimate in collections, wall paintings and architectural cultural heritage objects;
- Analyses and evaluation of the changes and damages in cultural heritage objects with main focus on easel paintings, prints, drawings, books, wall paintings and decorative architectural surfaces;
- Analyses of the cultural value of the heritage objects with main focus on easel paintings, prints, books, wall paintings and decorative architectural surfaces;
- Investigation of historical and archival documents and data, related with cultural heritage conservation;
- Investigation of technical and technological paintings and drawings practice through experimental practical application;
- Complex condition assessment of cultural heritage with main focus on easel paintings, prints, books, wall paintings and decorative architectural surfaces;
- Complex conservation-restoration research with main focus on easel paintings, prints, drawings, books, wall paintings and decorative architectural surfaces.

Pricelist

There is no fixed price list. Prices depend on the quantity and the complexity of the asked service.

Contact person for the above specified services

Assos. prof. Stefan Belishki, Head of the department of Conservation-Restoration, 0878311087, stefan_belishki@yahoo.com

Link to the website of the partner institution

not yet available

Partner 13

New Bulgarian University – not supported as a private institution

Partner 14 (1)

Sofia University , Faculty of Chemistry and Pharmacy

1. Scanning Electron Microscope JEOL 5510

Services:

- electron microscopic imaging of the sample surface morphology (solid state samples)

Pricelist

- imaging and gold coating – 50 BGN/h

Contact person for the above specified services

Assist. Prof. Dr. Siliyana Pereva, spereva@chem.uni-sofia.bg, 0883452330
Assist. Prof. Dr. Stanislava Todorova, stodorova@chem.uni-sofia.bg, 02 8161346

Link to the website of the partner institution

not yet available

2. **Transmission electron microscope JEOL JEM-2100**

Services:

- electron microscopic imaging of the sample morphology and microstructure (solid state samples);
- electron diffraction and crystal structure determination;
- elemental composition analysis, chemical mapping.

Pricelist

Standard TEM analysis (TEM imaging and/or electron diffraction and/or microanalysis – EDX) – 150

lv./h

Contact person for the above specified services

Dr. Lyuben Mihaylov, nhtlm@chem.uni-sofia.bg, 0888960858

Link to the website of the partner institution

not yet available

3. **Atomic force microscopy NanoScope V system (Bruker Ltd, Germany)**

Services:

AFM images of surface topography, with characterization of:

- roughness and the measurements of surface topography in the nanometric scale;
- mechanical characteristics.

Pricelist

- Measure and analysis of the sample - 50 BGN/for sample
- AFM images in contact and/or non-contact mode (*Tapping mode*) and analysis of the surface topography.

Contact person for the above specified services

Research Associate Silviya Simeonova, ssimeonova@chem.uni-sofia.bg, tel. 02 8161 341
Leader of the AFM lab: Prof. Konstantin Balashev, fhkb@chem.uni-sofia.bg

Link to the website of the partner institution

not yet available

4. **Bruker Avance III 500MHz NMR Spectrometer**

Services:

- structure elucidation of newly synthesized organic compounds in solution;
- specific techniques for dynamic processes;
- determination of molecule and aggregate size, determining the degree of polymerization, metal complexes with varied ligands, size of a solvation shell or other microscopic structure;
- structure elucidation of newly synthesized organic compounds and new materials in solid-state

Pricelist

- Solution NMR Spectra – 30 / 50 lv/h and extra analysis
- Solid-State NMR Spectra – 45 lv/h and extra analysis

Contact person for the above specified services

Dr. Nevena Petkova-Yankova, nipetkova@chem.uni-sofia.bg, tel: +359 81 61 249
Dr. Nikola Burdzhiev, nburdzhiev@chem.uni-sofia.bg, tel: + 3592 8161 225

Link to the website of the partner institution

not yet available

5. **Atomic-absorption spectrometer Perkin Elmer AAnalyst 400, equipped with modules for atomization with flame (general module), graphite furnace (HGA 900), hydride generation (MHS 15) and autosampler AS 800**
Electrothermal atomic-absorption spectrometer with Zeeman corrector Perkin Elmer Zeeman 3030
Atomic-absorption spectrometer Varian AA240 with possibility for flame (general module) and hydride (VGA77) atomization
Flame atomic-absorption spectrometer Pye Unicam SP1950

Services:

- Sample preparation of samples with different matrixes for spectrometric analysis
- Atomic-absorption instrumental determination of chemical elements content

Pricelist

- Sample preparation – 20 – 30 BGN in accordance to matrix's difficulty
- Chemical elements content determination with flame atomization – 10 – 15 lv per element in

one sample in accordance to number of samples for analysis and type of the element • Chemical elements content determination with electrothermal and hydride atomization – 15 – 20 lv per element in one sample in accordance to number of samples for analysis
Contact person for the above specified services
Chief Assist. Prof. Elisaveta Mladenova, PhD, elimladenova@chem.uni-sofia.bg, +359 2 81 61 356 Chief Assist. Prof. Tsvetomil Voyslavov, PhD, voyslavov@abv.bg, +359 2 81 61 277
Link to the website of the partner institution
not yet available
6. **Gas chromatograph HP 5890 series II equipped with Split/splitless and on-column injectors, Flame Ionization Detector** **Gas chromatograph HP 6890 equipped with Split/splitless and on-column injectors, EI-mass detector** **High Performance Liquid Chromatograph KONIK HPLC 560 equipped with Diode Array Detector**
Services:
The laboratory is carried height-training on • gas chromatography and gas chromatography with EI-masspectrometry; • high performance liquid chromatography; • mass spectrometry. The laboratory performs a qualitative and quantitative analysis of: • Organic synthesis products; • natural products - plant extracts, essential oils and others; • pollutants in the environment - soils, waters; • gas samples; • pharmaceutical preparations. We offer • Sample preparation • Development and validation of methods of analysis • Statistical processing of the results.
Pricelist
• GC - 20 BGN single analysis (without sample preparation). The cost of the sample preparation depends on the required consumables and time • HPLC - 30 BGN single analysis (without sample preparation). The cost of the sample preparation depends on the required consumables and time • GC-MS - 50 BGN single analysis (without interpretation of the mass spectra, if necessary to interpret the information - depending on the number of analytes in the sample • For training and consulting - 40 BGN per hour
Contact person for the above specified services
Assoc. Prof. Dr. Christo Chanev, ohhc@chem.uni-sofia.bg, 028161367 Assist. Prof. Stela Georgieva, ohsg@ chem.uni-sofia.bg
Link to the website of the partner institution
not yet available
Partner 14 (2)
Sofia University, Faculty of Physics
1. Micro-Raman spectrometer LabRAM HR Visible (HORIBA Jobin Yvon) **He-Ne laser (633 nm), Ar+ ion laser (515 nm, 488 nm и 458 nm)** **Optical cell LINKAM TH600 for measurements at different temperatures (77 K – 600 deg C)**
Services:

Free text in an e-mail with subject „a request for Raman spectra measurements“, where the type of the samples (solid, liquid or powder) should be noted, their number, the expected volume of the work (in hours) as well the accessible information (approximate chemical content, expected crystal/amorphous structure, expected phase content) for the samples
Pricelist
• Measurement of nonpolarized Raman spectra using 633 nm laser line – 100 BGN/h • For all other types of measurements of Raman spectra (using the other accessible laser lines, polarized spectra, temperature dependences) and/or their analysis – the price is set after a discussion of the characteristics of the samples and the specific conditions of the measurements
Contact person for the above specified services
prof. Miroslav Abrashev, DSc, mvabr@phys.uni-sofia.bg, (+359)28161816, (+359)28161778 prof. Victor Ivanov, DSc, vgi@phys.uni-sofia.bg, (+359)28161778 assist. prof. Neno Todorov, PhD, neno@phys.uni-sofia.bg, (+359)28161778
Link to the website of the partner institution
www.raman.phys.uni-sofia.bg (or www.phys.uni-sofia.bg/~raman/)
Partner 14 (3)
Sofia University, Faculty of History and Faculty of Chemistry and Pharmacy (Module 2)
1. Inductively Coupled Plasma Mass Spectrometry (Perkin Elmer SCIEX DRC-e ICP-MS) equipped with laser-ablation system (LA-ICP-MS, New Wave Research) and on-line liquid chromatographic section (LC-ICP-MS) **Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES, Perkin Elmer Optima 7000 DV)** **High Performance Liquid Chromatography equipment with a diode array detector (HPLC-DAD, VARIAN ProStar system)** **Gamma spectrometer** **Microwave oven (Anton Paar, Multiwave 3000)**
Services:
Elemental analysis of liquid (ICP-MS and ICP-AES) and solid (LA-ICP-MS) samples, chemical speciation (LC-ICP-MS), determination of organic pollutants (HPLC), determination of radionuclides (Gamma spectrometry). The laboratory provides possibility of total characterization of the composition of various types of samples: archaeological metals, pottery, glass, alloys; geological (soils, rocks, sediments); environmental of all types, biological, objects of art etc.
Pricelist
Elemental analysis of liquid samples (determination of >10 elements) – 100 BGN/sample Elemental analysis of solid samples (determination of >10 elements) - with digestion 150 BGN/sample; Elemental analysis of solid sample without digestion (determination of>10 elements) – 80 BGN\sample Determination of gamma radionuclides – 45 BGN/sample Chemical speciation, determination of organic pollutants – specific price, depending on the problem
Contact person for the above specified services
Assoc. Prof. Dr. Valentina Lyubomirova, vlah@chem.uni-sofia.bg 028161 243, 298
Link to the website of the partner institution
https://www.uni-sofia.bg/index.php/bul/universitet_t/fakulteti/fakultet_po_himiya_i_farmaciya/struktura/katedri/analitichna_himiya/uchebno_nauchni_laboratorii/uchebno_nauchna_laboratoriya_po_sledovi_analiz_isp_tehniki_i_radioanalitichni_metodi

2. Handheld XRF Analyzer S1 TITAN 800, Bruker
ARTLASER LAMBDA SpA

Services:

- Fully non-destructive analysis of archaeological finds
- Determination of elemental composition of metallic samples, glass, ceramics, etc. - from magnesium to uranium (Mg-U)
- Professional laser equipment for surface cleaning of works of art and archaeology artefacts

Pricelist

- Element composition determination – 30 lv/specimen
- Laser surface cleaning – specific price, depending on the matter of work

Contact person for the above specified services

Dr. Velislav Bonev, velislav@clio.uni-sofia.bg; 0895720400

Link to the website of the partner institution

not yet available

Partner 15

University of chemical technology and metallurgy, Laboratory for advanced materials research (LAMAR)

1. Universal electrochemical device type Autolab – 30, Potentiostat/Galvanostat
Integrated FRA-2 frequency response analyzer unit
Electrochemical flat cells ISO 16773, for long term tests combined with exposure to model corrosive media at room temperature.

Services:

- Electrochemical Impedance Spectra acquisition and analysis
- Acquisition of linear voltammograms (LVA)
- Ciclic Voltammograms (CVA)
- Relaxation and impulse methods

Pricelist

1. Sample treatment	ECT-1	2.50 BGN per sample
2. Galvanostatic measurements	ECT-2	10.00 BGN per sample
3. Galvanodynamic measurements	ECT-3	10.00 BGN per sample
4. Potentiostatic measurements	ECT-4	10.00 BGN per sample
5. Potentiodynamic measurements	ECT-5	10.00 BGN per sample
6. Impulse and reversion electrochemical measurements	ECT-6	17.50 BGN per sample
7. Electrochemical Impedance Spectroscopy	ECT-7	17.50 BGN per sample

2. Easyscan-2 of Nanosurf (Swiss), equipped by Budgetsensor cantilevers (Bulgaria).

Services:

Acquisition of 3-D images from the investigated surfaces
Acquisition of 2-D images from the investigated surfaces
Determination of the basic roughness parameters values, including on nano-level

Pricelist

1. Scanning and surface topology	AFM-1	40.00 BGN per sample

2. 2D & 3D roughness determination	AFM-2	25.00 BGN per sample
3. 3D Topography for quantitative and qualitative determination of the surface roughness.	AFM-3	25.00 BGN per sample
4. 2D scanning 3D topography of the fingerprint-impact on the sample surface, after scratching, friction, etc.	AFM-4	25.00 BGN per sample

3. Theta Lite Optical Contact Angle Meter, product of "Dynatesting co. (UK)", in complete with precise Gastight-1001 type syringe, of "Hamilton (Nevada, USA)"

Services:

- Direct high speed photographs
- Definition of the contact angle values
- Hydrofobility/hydrofility determination

Pricelist

1. Adhesion determination	SPD -1	15.00 BGN per sample
2. Wetting angle determination	SPD -2	17.50 BGN per sample
3. Color characteristics definition	SPD -3	20.00 BGN per sample
4. Treatment with UV lamp **	SPD -4	47.50 BGN per sample
5. Probe milling by "Fritsch"	SPD -5	7.50 BGN per sample

4. Positest A-TA, product of DeFelsko (USA)

Services:

Numerical data acquisition

Pricelist

1. Sample drying	EA - 15	2.00 BGN per sample
2. Thermal treatment and annealing up to 4 hours*	TT-1	7.50 BGN per sample
3. Differential Thermal Analysis and Thermogravimetry	DTA-1	17.30 BGN per sample
4. Differential Scanning Calorimetry	DSC-1	20.70 BGN per sample

Contact person for the above specified services

Dr. Chem. Eng. Stephan Kozhukharov
stephko1980@abv.bg *and/or* stefko1980@abv.bg

Link to the website of the partner institution

http://mmu.uctm.edu/bg/sites/default/files/cnil/bl/KATALOG_CNIL_2019.pdf
http://mmu.uctm.edu/bg/sites/default/files/cnil/bl/%D0%A1eni%20_vutreshni_vuzlojiteli_CNIL_012019.pdf

Partner 16

Central Laboratory of Applied Physics - Bulgarian Academy of Sciences

1. High-technological equipment Platit π80+ for cathodic-arc deposition

Services:

- Deposition of hard coatings from nitrides of transition metals (Cr, Ti) – thickness 1-5 µm.
- Deposition of hard coatings from carbides and carbo-nitrides of transition metals (Cr, Ti) – thickness 1-5 µm.
- Deposition of superhard nanocomposites – thickness 1-5 µm.

Pricelist

- Deposition of hard CrN and TiN coatings – thickness 1-5 µm – (360 – 400) BGN/for single

loading of the chamber (without VAT).
- Deposition of hard TiCN coatings – thickness 1-5 µm – (380 – 420) BGN/for single loading of the chamber (without VAT).
- Deposition of superhard TiAlSiN and CrAlSiN nanocomposites – thickness 1-5 µm – (400 – 440) BGN/for single loading of the chamber (without VAT).

Contact person for the above specified services

Prof. Dr. Roumen Kakanakov, ipfban@mbox.digsys.bg, 0893 611030

Link to the website of the partner institution

http://www.clap-bas.com/index.php?ID=141

2. High-technological equipment UDP 850-4.

Services:

- Deposition of binary hard coatings from nitrides of transition metals (Cr, Ti, Al) – thickness 1-3 µm.
- Deposition of multicomponent hard coatings from nitrides of transition metals (Cr, Ti, Al) – thickness 1-3 µm.
- Deposition of multilayer hard coatings from nitrides of transition metals (Cr, Ti, Al) – thickness 1-3 µm.
- Low-temperature deposition (<200 ^{o}C) of multicomponent and multilayer coatings from nitrides of transition metals (Cr, Ti, Al) – thickness 1-3 µm.

Pricelist

- Deposition of CrN, TiN and AlN hard coatings – thickness 1-3 µm. . – (380 – 420) BGN/for single loading of the chamber (without VAT).
- Deposition of TiAlN, CrAlN and CrTiAlN hard coatings – thickness 1-3 µm. – (400 – 440) BGN/for single loading of the chamber (without VAT).
- Deposition of CrN/TiN multilayer hard coatings – thickness 1-3 µm. – (400 – 440) BGN/for single loading of the chamber (without VAT).
- Low-temperature deposition (<200 ^{o}C) of multicomponent and multilayer coatings from nitrides of transition metals (Cr, Ti, Al) – thickness 1-3 µm. . – (420 – 460) BGN/for single loading of the chamber (without VAT).

Contact person for the above specified services

Prof. Dr. Roumen Kakanakov, ipfban@mbox.digsys.bg, 0893 611030

Link to the website of the partner institution

http://www.clap-bas.com/index.php?ID=141

3. Multifunctional equipment Compact Platform CPX-MHT/NHT

Services:

- Measurement of the microhardness
- Measurement of the nanohardness
- Determination of the elastic module
- Determination of the friction coefficient
- Study of the adhesion
- Study of the wear resistance

Pricelist

Measurement of microhardness, nanohardness and determination of the elastic modulus.

- Single indentation with depth adjustment – 40 BGN;
- Statistics with one load single depth adjustment – 40 BGN + 5 BGN for each next indentation;
- Statistics with one load and depth adjustment for each indentation – 40 BGN + 10 BGN for

each next indentation;
- Progressive indentation with single depth adjustment – 45 BGN for 2 indentation + 5 BGN for each next indentation;
- Progressive indentation with depth adjustment for each next indentation– 45 BGN for 2 indentation + 10 BGN for each next indentation;
- Analysis of the results – 100 BGN.

Scratch test for adhesion, determination of the coefficient of friction and wear resistance.
- Scratch test with a constant load – 45 BGN;
- Scratch test with a progressive load – 45 BGN;
- Multiscratch test with a constant load – 45 BGN + 10 BGN for each next scrarch;
- Multiscratch test with a progressive load – 55 BGN + 10 BGN for each next scrarch;
- Analysis of the results – 100 BGN.

The prices are without VAT.

Contact person for the above specified services

Assoc. Prof. Dr. Lilyana Kolaklieva, ohmic@mbox.digsys.bg, 0893 611033

Link to the website of the partner institution

http://www.clap-bas.com/index.php?ID=141

February, 2019