Approved
By order of director of Center
for Physical Sciences and Technology
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Services provided in OAC Electron Microscopy, X-ray diffractometry and Spectrometry. Tariffs of services

No.	Service	Specific description of service	Potential of use (specific activities)	Tariff of use of service (Euros per hour) Without VAT	
				Full price	Discount price
1.	Determination of chemical composition of a solid material by EDX or WDX in a scanning electron microscope (SEM).	Determination of local chemical composition on the basis of x-ray spectra excited by electron beam of a SEM. Planning of studies and interpretation of results.	A non-destructive determination of local chemical composition of small objects (up to 10 cm^2) made of metal, alloy, semiconductor, ceramics. Determination of the chemical composition and thickness of a thin film. Mapping of the chemical composition at a surface and in a cross-section.	50.00	42.00
		Determination of local chemical composition on the basis of x-ray spectra excited by electron beam of a SEM. Interpretation of results.			
		Determination of local chemical composition on the basis of x-ray spectra excited by electron beam of a SEM.			
2.	Imaging of surface of solid materials by scanning electron microscope (SEM).	Imaging of surface of solid materials by SEM using backscattered and secondary electrons. The imaging of cross-section formed in the SEM using focussed ion beam (FIB). Planning of studies and interpretation of results.	Imaging of a surface and a cross-section of solid materials by SEM, determination of grain size and dimension of cavity.	50.00	42.00
		Imaging of surface of solid materials by SEM using backscattered and secondary electrons. Interpretation of results.			
		Imaging of surface of solid materials by SEM using backscattered and secondary electrons.			
3.	Study of inner crystalline structure and chemical composition of solid materials by transmission electron microscope (TEM).	TEM study of thin films cut from solid materials using FIB. Determination of particles, grains and crystallites size. Determination of crystalline structure and defects of crystalline structure using electron micro-diffraction. Determination of chemical composition by EDX.	Study of inner crystalline structure and chemical composition of solid materials.	32.00	27.00

4.	Study of crystalline structure and phase composition of polycrystalline materials by x-ray diffraction (XRD).	XRD studies of crystalline structure and phase composition of polycrystalline materials using a special software powder XRD database. Planning of studies and interpretation of results. XRD studies of crystalline structure and phase composition of polycrystalline materials using a special software powder XRD database. Interpretation of results. Measurement of XRD patterns for polycrystalline materials.	Determination of a phase composition and crystalline structure of polycrystalline materials: rocks, soil, minerals, salts, ores, metals and alloys, ceramics. Determination of crystallites size and microdeformations.	32.00	27.00
5.	Determination of texture of polycrystalline materials by pole figure method.	Determination of texture (prefered orientation) of a bulk polycrystalline material or a thin film by pole figure method using x-ray diffractometer SmartLab. Planning of studies and interpretation of results. Measurement of the pole figure for determination of texture of a bulk polycrystalline material or a thin film by x-ray diffractometer SmartLab.	Determination of texture (prefered orientation) of a bulk polycrystalline material or a polycrystalline thin film.	32.00	27.00
6.	Determination of residual stress by XRD method.	Determination of residual stress of polycrystalline bulk materials and thin films by non-destructive XRD $\sin^2\Psi$ method using polycapillary optics and 2D detector. Planning of studies and interpretation of results. Determination of residual stress of polycrystalline bulk materials and thin films by non-destructive XRD $\sin^2\Psi$ method using polycapillary optics and 2D detector.	Determination of residual stress of polycrystalline bulk materials and thin films.	32.00	27.00
7.	Study of crystalline structure and phase composition of polycrystalline materials by XRD at elevated temperatures.	Study of crystalline structure and phase composition of polycrystalline materials by XRD at temperatures up to 1100 °C in air, vacuum or helium atmosphere using linear or 2D detector. Planning of studies and interpretation of results.	Study of crystalline structure and phase composition of polycrystalline materials by XRD at elevated temperatures. Determination of a coefficient of thermal expansion, characteristic	35,00	29,20

		Study of crystalline structure and phase composition of polycrystalline materials by XRD at temperatures up to 1100 °C in air, vacuum or helium atmosphere using linear or 2D detector.	temperature of material.		
8.	Study of phase composition and crystalline structure of polycrystalline materials by XRD at a selected area (microdiffraction).	Study of phase composition and crystalline structure of polycrystalline materials by XRD using high intensity x-ray beam (1 mm in diameter) formed by polycapillary optics. The measurement areas are selected an attached camera. Planning of studies and interpretation of results.	Study of phase composition and crystalline structure of a small object, a selected area of bulk material.	32.00	27.00
		Study of phase composition and crystalline structure of polycrystalline materials by XRD using high intensity x-ray beam (1 mm in diameter) formed by polycapillary optics. The measurement areas are selected an attached camera.			
9.	Study of epitaxial layers and thin films by high resolution XRD (HRXRD and XRR).	Measurement of rocking curves and reciprocal space mapping for epitaxial layers. Determination of composition and thickness of layers, miss-orientation between substrate and epilayer. The measurement of x-ray intensity distribution at small angles (0-10°) for determination of a film thickness, density and roughness by x-ray reflectivity technique. Planning of studies and interpretation of results.	XRD studies of epitaxial layers and thin films using HRXRD and XRR methods.	32.00	27.00
		Measurement of rocking curves and reciprocal space mapping. The measurement of x-ray intensity distribution at small angles (0-10°).			

10.	Study of phase composition and crystalline structure of thin polycrystalline films by XRD In-plane method.	Study of phase composition and crystalline structure of thin polycrystalline films by measurement of x-ray diffraction in crystallographic planes perpendicular to the film surface using special axis of goniometer which is perpendicular to the base axis. Planning of studies and interpretation of results. Measurement of XRD pattern using In-plane technique.	Study of phase composition and crystalline structure of very thin (1-10 nm) polycrystalline films and strongly textured polycrystalline thin films.	32.00	27.00
11.	Determination of size distribution of nanoparticles and nanopores (1-10 nm) in thin films.	Determination of size distribution of nanoparticles and nanopores (1-10 nm) in thin films by a measurement of x-ray scattering at small angles (SAXS) in reflection mode. Planning of studies and interpretation of results. Measurement of x-ray scattering at small angles in reflection mode.	Determination of size distribution of nanoparticles and nanopores (1-10 nm) in thin films.	32.00	27.00
12.	Determination of chemical composition by x-ray fluorescence spectroscopy with wave dispersion (WDXRF).	A powdery material (rock, soil, manure, ash) is grinded by a ball grinding-mill and into tablets of 37 mm in diameter or fused in a special furnace into bead sample of 27 mm in diameter. If a metallic sample is analysed a disk of 37 mm in diameter is cut out. A characteristic x-ray spectrum is excited by a high energy x-rays and according to the former determination of elements and their quantity is performed.	Quantitative chemical analysis of powdery materials, metals, alloys. Determination of chemical composition and thickness of thin films. RoHS tests.	31.00	26.00
13.	Determination of carbon and sulphur in powdery materials and metallic articles.	A sample is weighed and combusted in high frequency induction or high temperature resistance furnaces in oxygen flow. A quantity of C and S determined by IR analyser with 4 independent solid state IR detectors for determining	A precise determination of total quantity of carbon and sulphur in organic and inorganic materials. A fractional analysis of free and bounded carbon and sulphur. Determination of	30.00	25.00

		CO_2 and SO_2 contents in combustion gases. Sensitivity up to 1 ppm.	organic and inorganic carbon. Determination of LOI.		
14.	Determination of chemical composition of thin films by x-ray photoelectron and Auger electron spectroscopy.	Determination of chemical composition is based on a measurement of biding energy of photoelectrons and energy of Auger electrons. The sample surface can be etched by Ar ions in a high vacuum which enables a determination of depth profile of the chemical composition.	Determination of chemical composition of thin (2-3 nm) surface layer. Determination of depth profiles of chemical composition.	44.00	37.00

The Discount price could be applied for students.