Technická dokumentace a specifikace

Předmět koupě musí splňovat minimálně níže uvedené technické parametry.

Zařízení musí splňovat veškeré nároky vycházející z technických a bezpečnostních norem platných v ČR pro tento typ. Součástí je i předání úplné dokumentace k zařízení.

The specific technical requirements for the subject matter of the public contract are as follows:

Requirement	Comply	Comment
At least one extreme brightness X-ray generator. The generator delivers intense monochromatic X-rays produced with use of a liquid metal alloy jet (major component: Gallium) as its anode, hit by an energetic electron beam. The X-ray generator must contain a minimum of one X-ray port.	**Y**	The offered SAXSpoint 2.0 system comprises the extremely bright C2+ MetalJet microfocus X-ray source. The unique metal jet anode technology featuring advanced electron optics in combination with the customized ASTIX X-ray optics delivers an intense and highly monochromatic X-rays: • X-ray flux after optics: **> 1 x 10^9 ph/s** • Spectral purity: **better than 99.9 %** The X-ray includes 2 X-ray ports.
At least one uninterruptable power supply (UPS) to secure the operation of the X-ray source.	**Y**	A UPS (6 kVA) for securing the operation of the MetalJet SAXSpoint 2.0 system is included in the system.
At least one X-ray shutter. One complete set of X-ray mono-chromatizing optics optimized for Gallium K□ radiation.	**Y**	The MetalJet source includes two X-ray ports, one shutter is installed for connecting the SAXSpoint 2.0 system. The monochromatizing ASTIX optics is a customized 2-dimensionally focusing X-ray mirror optimized for the Gallium MetalJet source: • The ASTIX optics ensures effective suppression of K□ radiation and Bremstrahlung: Spectral purity > 99.9% • The customized 2-dimensionally focusing optics uses high-quality substrates, which are super-polished to highest surface precision regarding micro roughness, slope and figure. These substrates are coated with high performance multilayers optimized for high flux and high resolution at Ga K□ radiation. This combination is essential for a highly symmetric and homogeneous beam profile.

Requirement	Comply	Comment
At least one complete set of collimation elements of the X-rays produced by the X-ray source, optimized for Gallium K□ radiation, namely: a minimum of two sets of motorized scatterless slits allowing to adjust independently the horizontal and vertical size of the X-ray beam (under the instrument control software).	Y	The integrated fully motorized and automated scatterless slit collimation system allows to freely adjust the X-ray beam size. Further advantages are: • Lowest parasitic scattering through single-crystal slits, • Excellent S/N ratio and data quality due to superior beam formation and full beam path in vacuum (no absorbing/scattering windows), • A single click to change the beam diameter, i.e. flux and resolution settings.
At least one 2D hybrid pixel photon-counting detector for direct detection of X-rays.	Y	SAXSpoint 2.0 integrates the high-resolution hybrid photon counting (HPC) 2D EIGER R 1M detector with direct X-ray detection: • High spatial resolution thanks to small pixel size: 75 x 75 µm², • point spread function: 1 pixel, • high count rate of 5 x 10^8 ph/s/mm² at zero dark current, • fully integrated in vacuum ensures no absorption of scattered X-rays by windows (e.g. Be or Kapton).
At least one beam stop suitable for extremely low resolution measurements of X-ray scattering.	Y	Beam stops (Ni, W) of various sizes are provided with the system. For high-resolution SAXS studies of e.g. large protein complexes beam stops with small dimension are used, with this set-up extremely low q-values down to 0.002 $Å^{-1}$ can be reached. For high-flux measurements of small, low concentrated or weakly scattering protein samples a large beam stop size can be chosen accordingly.
At least one thermalized sample environment, suitable for bio materials, allowing manual loading of samples for measurements. At least one sample loading robot (autosampler) allowing to dispense liquid samples into a measurement flow-cell.	Y	The offered system comprises a temperature-controlled sample holder unit. It enables SAXS measurements from -10 °C up to +120 °C with high sample temperature control accuracy of ± 0.1 °C. Samples can either be loaded manually by using low-noise sample holders (e.g. capillaries) or automatically by dispensing and processing up to 192 liquid samples using the coolable ASX-c autosampler with the FlowCell.
At least one computer to drive the X-ray source and data acquisition instrument.	Y	A fully equipped modern PC system is provided with the system for full system control (X-ray source, SAXSpoint 2.0

Requirement	Comply	Comment
		system with all sample stages and autosampler, detector) and for automated data acquisition, processing and evaluation.
Software necessary to operate both the X-ray source and data acquisition instrument.	Y	The SAXSdrive is a single software interface for the SAXSpoint 2.0 system for i) full control of all hardware devices and ii) design and acquisition of automatic measurement series (single or multiple samples, temperature series, etc.).

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In addition, the individual items and parts of the subject matter of the public contract meet the following parameters:

No.	Requirement	Comply	Comment
1	The instrument must be windowless and in vacuum, at least from X-ray optics exit to X-ray detector data acquisition window and must contain all equipment to generate, maintain and release vacuum at a level necessary for X-ray SAXS experiments.	Y	The instrument is windowless from the exit of the X-ray optics onwards, the X-ray detector is fully integrated in vacuum without any additional window (no Beryllium or Kapton). The entire set-up (X-ray optics, collimation, instrument chamber, detector) is under vacuum during a SAXS measurement. The SAXSpoint 2.0 integrates a high power maintenance-free membrane vacuum pump and is equipped with all necessary equipment to generate, maintain and release vacuum.
2	The X-ray optics of the device does not require helium gas for regular operation.	Y	The ASTIX X-ray optics requires no helium or other gas for regular operation.
3	The electron beam of the X-ray source regularly operates at a min. power of 170W.	Y	The electron beam of the offered MetalJet source regularly operates at up to 175 W.
4	The X-ray beam parameters at the sample position are optimized for sample holder suitable for protein solution samples (capillary or flow cell).	Y	The motorized scatterless slits collimation system enables the user to optimize the beam parameters (dimension/flux) for the sample holders used for SAXS measurements of protein solution samples.
5	The generated X-ray beam is monochromatic with a minimum spectral purity of 99.5% of Gallium K□ line.	Y	The high quality of the customized ASTIX X-ray optics ensures an almost complete suppression of Ga K□, providing a spectral purity of > 99.9 %.
6	The minimum flux density of the X-ray beam at sample position is $1x10^9$ photons/s/mm² of the monochromatized Gallium K□ radiation.	Y	The offered set-up (C2+ MetalJet source with ASTIX optics) provides a flux of > 1×10^9 ph/s/mm².
7	The X-ray detector has an active surface area of minimum 5500 mm².	Y	The 2D EIGER R 1M HPC detector has an active surface area of 6168 mm².
8	The maximum size of each pixel of the X-ray detector does not exceed 172 x 172 µm².	Y	The 2D EIGER R 1M HPC detector stands out among hybrid pixel detectors for its highest spatial resolution: The size of each pixel is 75 x 75 µm² and ensures high-resolution SAXS data.
9	The relative number of the defective pixels of the X-ray detector is less than 0.03 %.		The high-resolution 2D EIGER R 1M HPC detector has less than 0.03 % defective pixels.

No.	Requirement	Comply	Comment
10	The instrument must allow automated rapid beam optimization.	Y	The instrument enables rapid beam optimization performed in the SAXSdrive control and measurement software. Depending on the sample (e.g. small or large proteins) and desired measurement conditions the user can quickly change between high flux or high resolution measurement settings.
11	The evacuation chamber enables full evacuation to operational level of vacuum in less than 10 minutes.	Y	The instrument chamber including X-ray optics, collimation system and detector is evacuated to the operational pressure level, i.e. 1 mbar, in 5 minutes.
12	The sample chamber is thermalized and allows to study samples at a constant temperature at least within the temperature range from 4 to 50 °C with a max. temperature instability of not more than ±1 °C.	Y	The temperature-controlled sample holder unit enables SAXS measurements from -10 °C up to +120 °C with high sample temperature control accuracy of ± 0.1 °C.
13	The automated thermalized sample loader (4-20 °C) accepts at least two standard 96-well trays and is able to reliably process liquid samples of volume 75 µl or less.	Y	The ASX-c autosampler accepts two standard 96-well trays. The ASX-c includes a cooling option (temperature selectable from +4 to +20 °C) for protecting sensitive samples in the measurement queue. The autosampler set-up enables processing of up to 192 liquid samples with precise and reliable sampling of 5 to 200 µl sample volume.
14	The sample loader enables programming of automated measurement sessions, including all the cleaning/washing steps in between measurements.	Y	Automated measurement series, including cleaning and washing steps with up to two different washing liquids can easily be designed and programmed in the SAXSdrive software.
15	The sample loader must be able to perform without breaking the instrument vacuum.	Y	The autosampler set-up, i.e. ASX-c with FlowCell is operated without breaking the vacuum of the instrument chamber.
16	A computer (at least one unit) for X-ray generator control, experiment control and design, and data acquisition must meet at least the following min. parameters: • At least one hard drive or SDD drive with capacity of at least 1 TB, RAM with a min. capacity of 8 GB, • at least two USB ports (excl. USB1/1.1), • LAN adapter, • a corresponding operating system, • at least one monitor with a minimum diagonal of 24 inches.	Y	The computer used for control of the entire system (X-ray source, SAXSpoint 2.0 camera, sample stages, autosampler and detector), experiment control and design, data acquisition exceeds the required specifications: • HDD drive: 2TB, SDD drive:120GB • RAM: 16 GB • USB ports: 6 USB 3.0 • Two Ethernet/LAN adapters • OS: Windows 7 Professional, 64Bit • Monitor: Full HD 24" monitor
17	The system control and data processing	Y	The SAXSpoint 2.0 system includes the

No.	Requirement	Comply	Comment
	software must enable: full control of the instrument, design, control and evaluation of SAXS experiments, preprogrammed unattended automated regime with use of the automated sample changer, advanced data processing and analysis, export of resulting SAXS data curve in formats fully compatible at least with the SAXS software suites ATSAS and Scatter, export of processed data in plain ASCII format.		following software packages: **SAXSdrive** is the single software interface for the SAXSpoint 2.0 system: • Full control of all hardware devices, • design and acquisition of automatic measurement series (single or multiple samples, temperature series, etc.). **SAXSanalysis** is a comprehensive data reduction and analysis package for SWAXS data: • Handling of 2D and 1D SWAXS data, • batch processing concept enabling handling of large number of data files (hierarchical binary hdf5 file format), • Automated calculation of Guinier, Porod, Kratky plots, etc. • Automatic data export routines to all major IFT/model fitting software packages: ATSAS, Scatter, SASfit, SASView, GIFT, BornAgain, etc. and to plain ASCII format.
18	Upgrades of the control and processing software delivered with the instrument are guaranteed free of charge for 60 months from the date of acceptance of delivery and subject matter of the public contract.	**Y**	Upgrades for the SAXSdrive and SAXSanalysis software packages are guaranteed free of charge for 60 months from the date of acceptance of delivery.
19	Minimum accessible q-range: 0.006 – 0.48Å^{-1}	**Y**	The offered SAXSpoint 2.0 system with MetalJet source and EIGER R 1M HPC detector offers an accessible q-range from 0.002 Å^{-1} to 4.07 Å^{-1}.
20	Warranty, service and maintenance of the device, including wear parts of the system due to wear and tear, are provided for all parts of the device (including the X-ray source) within the bid price for at least 24 months from the date of delivery acceptance of the subject matter of the public contract.	**Y**	Warranty, service and maintenance of the device, including wear parts of the system due to wear and tear, are provided for all parts of the device (including the X-ray source) within the bid price for 48 months from the date of delivery acceptance of the subject matter of the public contract.

II. Quality criteria

1	**Area of the active surface of the detector**	Specific value of the offered performance
	The area of the active surface of the detector is greater than or equal to 6000 mm² and at the same time less than 7000 mm²	Active area of the 2D EIGER R 1M detector: **6168 mm².**

2	**The size of the active pixel of the detector**	Specific value of the offered performance
	The size of the active pixel is less than 100 µm * 100 µm	Size of the active pixel of the vacuum-prove 2D EIGER R 1M detector: 75 µm * 75 µm.

3	**Technology for programmable, computer-controlled automated loading of samples**	Specific value of the offered performance
	Less than 15 µl	Minimum volume for sample loading: 10 µl

4	**Extended warranty, maintenance and service**	Specific value of the offered performance
	The tender, or the tender price of the contractor includes coverage of full warranty, service and maintenance with full coverage of expenses and costs for components (all parts incl. X-ray source) exchanged for wear & tear after the minimum of 24 months after acceptance of the subject matter of the public contract, with duration of:	Warranty, service and maintenance of the device, including wear parts of the system due to wear and tear, are provided for all parts of the device (including the X-ray source) within the bid price for 48 months from the date of delivery acceptance of the subject matter of the public contract.

5	**Equipment for "in-line" spectroscopy enabling simultaneous spectroscopic measurement along with SAXS measurement**	Specific value of the offered performance
	The tender includes an additional UV/VIS spectrophotometer attached to the sample chamber/holder so that the spectroscopic properties of the sample can be checked during the SAXS measurements either to provide true concentration estimates/changes or structure-related properties.	A UV/VIS setup is included which allows spectroscopic measurements at the sample during the SAXS measurement. Tracking concentration changes as well as structure related properties is possible.
	Contains a UV/VIS spectrophotometer	A UV/VIS spectrophotometer is included.

III. Delivery time

Within 26 weeks of the effective date of the contract, i.e. from the date of publication of the contract in the contract register.

Příloha č. 2

Dokumentace k plnění

Podrobný popis nabízeného plnění k nalezení v přiložené cenové nabídce.

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Příloha č. 3

Seznam poddodavatelů (příp. čestné prohlášení prodávajícího, že provede předmět této smlouvy bez poddodavatelů)

Poddodavatel:

Mateřská společnost firmy Anton Paar Czech Republic s.r.o.
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Nabídka č. 702000779

Referenční č. / Datum
[redacted]
03.10.2017

Zákaznické č.
747411

Platnost nabídky
03.10.2017 až 02.01.2018

Váš kontaktní partner
[redacted]

Vážená paní/vážený pane,
v návaznosti na Váš požadavek Vám posíláme následujcící nabídku.

Podmínky

Doprava:	Silniční
Termín doručení:	Přibližně 26 týdnů po obdržení objednávky. Dostupnost na dotaz.
Podmínky doručení:	CIP Vestec
Platební podmínky:	Splatnost do 30 dnů

Poz.	Mat. číslo / Kód celního sazebníku / Původ Popis	Množství / Jednotka Cena za jednotku	Měna	Cena
	SAXSpoint SYSTEM FOR METAL JET SOURCE			
000010	**P00068** / 90279050 / AT **VARIOUS PARTS**	1 PCS 3.475.346,00	CZK	**3.475.346,00**
	ENTRY LEVEL METAL JET SOURCE WITH OPTICS			
000020	**P00068** / 90279050 / AT **VARIOUS PARTS**	1 PCS 4.317.854,00	CZK	**4.317.854,00**
000030	**159266** / 84141089 / DE **VACUUM EQUIPMENT (SAXS)** High-performance oil-free membrane pump with connectors and accessories	1 PCS 196.094,00	CZK	**196.094,00**
000040	**165600** / 90229080 / CH **2D HPC DETECTOR (EIGER)**	1 PCS 2.590.713,00	CZK	**2.590.713,00**

Poz.	Mat. číslo / Kód celního sazebníku / Původ Popis	Množství / Jednotka Cena za jednotku	Měna	Cena
	2D Hybrid photon counting (HPC) Detector EIGER R 1M for SAXSpoint, vacuum tight: • Detector (vacuum tight) and controller, PC and software • Detector housing and flange • Drypoint air dryer with air filter unit • Refrigerated circulator for the EIGER detector			
	Temperature-controlled sample holder unit (-10°C TO 120°C)			
000050	**P00068** / 90279050 / AT **VARIOUS PARTS**	1 PCS 132.696,00	CZK	**132.696,00**
000060	**81709** / 90278017 / NL **ASX AUTOSAMPLER FOR LIQUIDS - COOL** The ASX Autosampler for liquids allows fully automated SWAXS measurements of up to 192 samples (using standard well plates) with intermediate cleaning routines and the cooling option to 4 °C. The autosampler comes with a starter kit including 10# well plates (96 positions) with cover foils and 50# vials (1.8 mL) with PE caps.	1 PCS 424.625,00	CZK	**424.625,00**
000070	**100725** / 90229080 / AT **FLOWCELL** Sample holder for automated SAXS measurement of liquid samples as well as for sedimenting samples and for reaction monitoring, including: • Quartz cuvette with PTFE hoses • Feed-through connectors • Luer connector • 20 syringes (1 mL) • Spare O-rings and discs	1 PCS 38.882,00	CZK	**38.882,00**
000080	**P00068** / 90279050 / AT **VARIOUS PARTS**	1 PCS 526.568,00	CZK	**526.568,00**
	MetalJet Consumables for 4 year's operation			
000090	**P00068** / 90279050 / AT **VARIOUS PARTS**	1 PCS 653.787,00	CZK	**653.787,00**
	Extension of warranty to 4 years total for entire system excl. MetalJet source			

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Poz.	Mat. číslo / Kód celního sazebníku / Původ Popis	Množství / Jednotka Cena za jednotku	Měna	Cena
000100	**P00068** / 90279050 / AT **VARIOUS PARTS**	1 PCS 631.881,00	CZK	**631.881,00**
	Extension of warranty to 4 years total for MetalJet source			
000110	**P00068** / 90279050 / AT **VARIOUS PARTS**	1 PCS 568.693,00	CZK	**568.693,00**
	Service Contract for 4 years (including all on-site visits and spare parts)			
000120	**P00068** / 90279050 / AT **VARIOUS PARTS**	1 PCS 526.568,00	CZK	**526.568,00**

Celková cena bez DPH		CZK	14.083.707,00
DPH	21,0 %	CZK	2.957.578,47
Celková cena		CZK	17.041.285,47
Celková cena CIP Vestec		**CZK**	**17.041.285,47**

Ceny jsou uvedeny bez DPH.

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Těšíme se na Vaši objednávku a zůstáváme se srdečným pozdravem.

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