Allegato L2 - Rispetto dei requisiti essenziali (Lotto 2)

Nanoscribe GmbH & Co.KG

Elements		Essential requirements		Min. value	Max. value	VERIFICA COMMISSIONE (SI/NO)	NOTE
1	2-photon lithography 3D printer	1.1	** 2-photon lithography system able to 3D print objects for micro-optics, micromechanics and microfluidics components			SI	OK
		1.2	Printing area (mm2)	50x50	-	SI	the addressable volume is 50 x 50 x 20 mm^3
		1.3	Printing height (mm)	20		SI	the addressable volume is 50 x 50 x 20 mm^3
		1.4	Femtosecond laser source, with emission wavelength between (nm):	700	800	SI	laser wavelength is 780 nm
		1.5	Proved possibility with documentation to upgrade the system with a compatible commercial module for 3D printing of cellular constructs in a sterile and controlled environment (temperature and humidity), for better cells viability			SI	The bioprinting chamber creates a sterile environment with temperature and humidity control, a HEPA-filtered airflow and optional connection for pre-mixed air/CO2, ready to work with aqueous biomaterials and cells. Regarding sterility: • nearly all internal surfaces are made from stainless steel or aluminum and can be wiped with 70% ethanol for disinfection • autoclavable parts • For bioprinting, we offer sterile consumables by our sister company MatTek and sterile materials by the sister companies Advanced BioMatrix and Cellink. • Furthermore: we offer more bio-materials by our partner BioInx as photoresins for biosciences and engineering.
		1.6	Usage under standard laboratory conditions, without needing a clean room			SI	Dettagliato: No explicit clean room conditions required Installation in a clean room after consultation with Nanoscribe Support
		1.7	Proved possibility with documentation to upgrade the system with commercial availability of objectives (including accessories and parameters for use) for 3D printing also at low resolutions / higher speeds (objective magnification < 40x)			SI	The other objectives like 25x or 10x are already included in this offer and shown e.g. in the data sheet.
2	High-resolution 3D printing (magnification 40x or higher)	2.1	Scan/ writing speed (mm/s)	100		SI	maximum line speed 100 mm/s
		2.2	* Horizontal feature size in the xy plane (µm)		0.25	SI	it provides voxel sizes down to 200 nm in xy and 500 nm in axial direction
		2.3	* Vertical feature size along the z-axis (µm)		0.6	SI	it provides voxel sizes down to 200 nm in xy and 500 nm in axial direction
3	Software interface	3.1	Graphical interface for the definition of geometries and printing parameters			SI	NanoPrintX, as a graphical interface
		3.2	Compatibility with 3D CAD files from third-party software.			SI	Compatibility to 3D CAD files from third-party software via upload of a STL or OBJ File.
		3.3	Set of predefined parameters for best printing according to material and resolution included			SI	Ci sono ricette pronte per le diverse resine
		3.4	3D preview of the printing process, with process duration estimation			SI	OK
							Other compatible materials that are commercially available:

4	Printing materials	4.1	** Possibility to use non-proprietary commercial materials (including generic light- curable materials, such as SU-8 – albeit optimal printing resolution cannot be			SI	• SU-8: standard resin used in lithography • AZ MIR 701: thin-film resin used for high-resolution, high-speed patterning. • AZ 5214E: thin-film resin used for low-resolution, high-speed patterning. • AZ 9260: thick-film resin used for patterning with a high aspect ratio. • AZ 40XT: thick-film resin used for patterning with a low aspect ratio. • Ormocomp: hybrid polymer photoresin, protein-binding in general, most photoresists available for i-line UV lithography are compatible with Quantum X. For example, in which these photoresins were used with Nanoscribe systems: AZ9260: http://dx.doi.org/10.1016/j.matdes.2022.110836 SU-8: https://doi.org/10.1007/s10544-023-00665-z https://doi.org/10.1063/5.0066619 Ormocer: http://dx.doi.org/10.1680/jbibn.21.00042
		4.2	Supply of various printing materials with different chemical-physical properties (ml)	75		SI	OK, con dettaglio
		4.3	** Possibility of using biocompatible materials with low cito-toxicity (cell viability >80%)			SI	Hydrobio INX N400:
5	Accessories and add-ons	5.1	Objective (with accessories and printing parameters) for printing at high resolution	1		SI	4 objectives are included-so, the mentioned one for high-resolution as well.
		5.2	Supply of a PC/laptop to manage the design files and control the system			SI	Come da richiesta
6	Delivery, installation, commissioning, and acceptance	6.1	Time for the supply, including delivery, installation, commissioning, and acceptance certificate (months)		7	SI	7 mesi
7	Training	7.1	Training days onsite at installation for at least five users for the good and efficient use of the system (days, where one day is 8 working hours)	3		SI	Confermano 3 gg
8	Service and maintenance	8.1	Working days within which to receive onsite assistance (days)		14	SI	OK
		8.2	Hours within which to receive remote technical assistance on-call		24	SI	
		8.3	Duration (months)	36		SI	
9	Warranty	9.1	Warranty duration, comprising a substitution of failed and/ or malfunctioning components.	12		SI	Service Contract "Platinum"
###	Terms and conditions of supply	10.1	The supply must include all accessories and materials necessary for full operation of the equipment covered by this tender at the installation site			SI	Accessories - Substrate holders for standardized glass and silicon substrates* o Wafers with 2" diameter and 0,5 mm thickness, with primary flat o Rectangular substrates, size 76 x 26 x 1 mm³ - Calibration Standard - Processing accessories set including glassware, photoresin cartridge holder, utilities for preparation as well as post-processing, and substrates - Printed and digital user manual - Country-specific power cable and pressured air adaptors Please note, that we would expect, that cleaning materials like IPA or Acetone or washing bath materials like PGMEA are available onsite.
		10.2	The supply must include spare parts (e.g., filters) for routine maintenance of the instrument for at least 3 years			SI	Typical routine maintenance means switching on and off of the system and cleaning the objective. For these operations, no spare parts will be needed.

UpNano GmbH					
Elements	**Essential requirements**	**Min. value**	**Max. value**	**VERIFICA COMMISSIONE (SI/NO)**	**NOTE**

1	2-photon lithography 3D printer	1.1	** 2-photon lithography system able to 3D print objects for micro-optics, micromechanics and microfluidics components			SI	OK
		1.2	Printing area (mm2)	50x50	-	SI	Maximum printing area of 120 x 100 mm
		1.3	Printing height (mm)	20		SI	40 mm
		1.4	Femtosecond laser source, with emission wavelength between (nm):	700	800	SI	780 nm
		1.5	Proved possibility with documentation to upgrade the system with a compatible commercial module for 3D printing of cellular constructs in a sterile and controlled environment (temperature and humidity), for better cells viability			SI	Every NanoOne can be upgraded with a bioprinting module, commercial name BioUnit, which can be used to print cellular constructs in a sterile and controlled environment
		1.6	Usage under standard laboratory conditions, without needing a clean room			SI	The N1 250 can be used under standard laboratory conditions (natural white light, 21 ± 2°C) without the need for a clean room. Our proprietary resins do not polymerize under normal light conditions (white light, sunlight). The N1 250 is equipped with a HEPA-Filter, which establishes clean room ISO class 6 conditions inside of the printing chamber. The system is additionally equipped with an internal vibration isolation system that doesn't need compresses air supply.
		1.7	Proved possibility with documentation to upgrade the system with commercial availability of objectives (including accessories and parameters for use) for 3D printing also at low resolutions / higher speeds (objective magnification < 40x)			SI	The NanoOne 250 can be operated with a large number of microscope objectives in a wide range of magnifications and numerical apertures. The NanoOne has in the standard delivery a 40x, 20x and 10x objective. As the system is an open system it is possible to add other objectives for printing at lower resolutions / higher printing speeds and has been done before. Our service team can help with set up and software implementation of other objectives
2	High-resolution 3D printing (magnification 40x or higher)	2.1	Scan/ writing speed (mm/s)	100		SI	The NanoOne can print with a 40x objective with a typical scan/writing speed of 150 mm/s and 100 mm/s with a 60x objective. [T1, 2.1]
		2.2	* Horizontal feature size in the xy plane (µm)		0,25	SI	Frontal views of the surface features of face 1 are provided in the following images. Fig. 3 shows the feature size in xy-direction of 227 nm. [T1, 2.2], [T2, 2.2]
		2.3	* Vertical feature size along the z-axis (µm)		0,6	SI	Frontal views of the surface features of face 1 are provided in the following images. Fig. 5 shows the feature size in z-direction of 367 nm. [T1, 2.3], [T2, 2.3]
3	Software interface	3.1	Graphical interface for the definition of geometries and printing parameters			SI	Our proprietary data preparation software, Think3D, offers a graphical interface for the definition of geometries and printing parameters
		3.2	Compatibility with 3D CAD files from third-party software.			SI	The compatibility with 3D CAD files from third-party software is handled through Think3D by the data format STL
		3.3	Set of predefined parameters for best printing according to material and resolution included			SI	For every objective and standard material, a set of predefined parameters can be selected in the software for the best printing results. These custom parameters can also be changed and stored for next time usage
		3.4	3D preview of the printing process, with process duration estimation				Think3D offers a preview of the printing process where the stitching lines can be seen and moved if a stitching line goes through a critical element. The software can also estimate the print time duration
4	Printing materials	4.1	Possibility to use non-proprietary commercial materials (including generic light- curable materials, such as SU-8 – albeit optimal printing resolution cannot be optimal printing resolution			SI	It is also possible to use it to cure widely known materials such as SU-8 and AZ resists
		4.2	Supply of various printing materials with different chemical-physical properties (ml)	75		SI	UpNano offers as of now 8 proprietary printing materials, each with different chemical and physical properties
		4.3	** Possibility of using biocompatible materials with low cito-toxicity (cell viability >80%)			SI	Il our materials, except for UpBrix, show very high biocompatibility and low cytotoxicity. Especially UpPhoto, which was used to produce microfluidic devices for culturing cells inside
5	Accessories and add-ons	5.1	Objective (with accessories and printing parameters) for printing at high resolution	1		SI	The N1 250 will be supplied with four objectives for printing at different magnifications. One 60x and 40x objective for high resolution printing. Additionally, two objectives, one 20x and one 10x, for printing at intermediate resolutions will be supplied
		5.2	Supply of a PC/laptop to manage the design files and control the system			SI	An operator PC with a touchscreen monitor will additionally be supplied with the purchase to manage the design files, control the system, and control the printing processes. This PC can be, but does not have to, be placed directly next to the machine. [T1, 5.2], [T2, 5.2]

6	Delivery, installation, commissioning, and acceptance	6.1	Time for the supply, including delivery, installation, commissioning, and acceptance certificate (months)		7	SI	6 mesi
7	Training	7.1	Training days onsite at installation for at least five users for the good and efficient use of the system (days, where one day is 8 working hours)	3		SI	4 gg
8	Service and maintenance	8.1	Working days within which to receive onsite assistance (days)		14	SI	10
		8.2	Hours within which to receive remote technical assistance on-call		24	Si	OK
		8.3	Duration (months)	36		SI	48 mesi
9	Warranty	9.1	Warranty duration, comprising a substitution of failed and/ or malfunctioning components.	12		SI	12+12
###	Terms and conditions of supply	10.1	The supply must include all accessories and materials necessary for full operation of the equipment covered by this tender at the installation site			SI	OK
		10.2	The supply must include spare parts (e.g., filters) for routine maintenance of the instrument for at least 3 years			SI	Anche HEPA