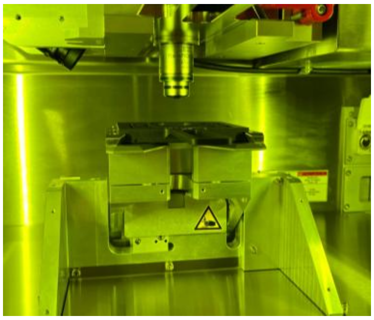
Institute for Bioengineering of Catalonia

Core Facilities

MicroFabSpace

Manufacturer
Nanoscribe GmbH & Co.KG

Model
QuantumX Bio

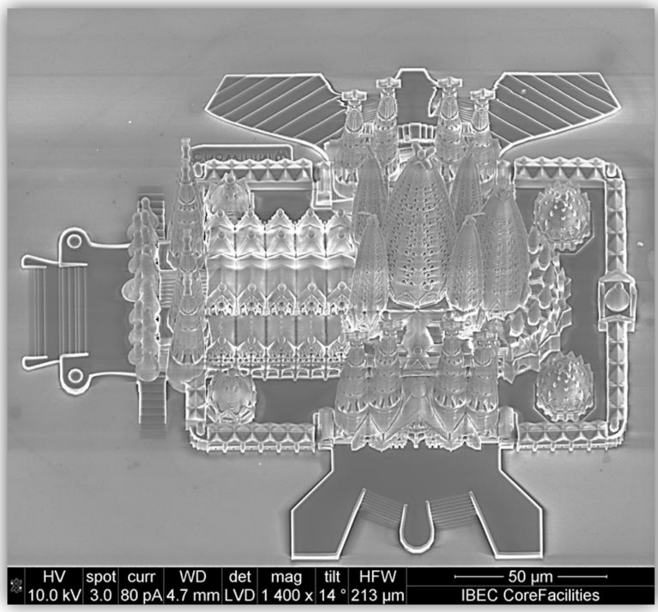


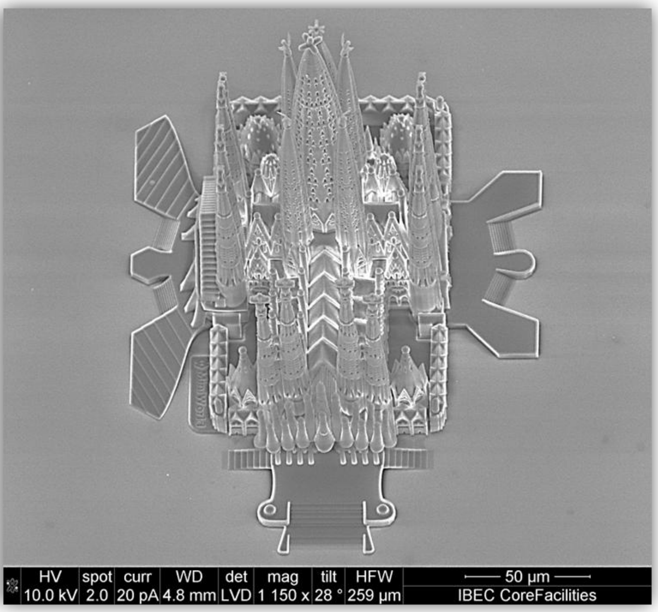
3D Bioprinter Nanoscribe

Fabrication of 3D nanometric bio-structures

The Bioprinter from Nanoscribe combines the Two-Photon Polymerization technology (2PP), with a unique printing configuration, that allows submerging the objective directly in the printing resin. These features allow to achieve a 200nm voxel size, and to print small volumes with high precision.

A wide variety of commercial and custom resins can be used, and moreover, ex-vivo experiments can be performed thanks to the Bio-chamber module, which provide incubation conditions.





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Technical specifications

Main Specifications			
Laser source	NIR femtosecond laser (780nm), avg. Power 250mW		
Voxel modulation rateAdaptive address grid	1,000kHz		
Positioning Volume	down to 100nm at full scan speed		
Adaptive address grid	50 x 50 x 20 mm3		
Substrates	Microscope slides (76 mm x 26 mm) 2" wafers MatTek plates (35 mm & 50 mm)		
Photoresins	Nanoscribe IP-2		
Print configuration	Upright platform with dip-in Laser Lithography (DiLL)		
Bioprinting chamber	Temperature and humidity control. Hepa filter airflow		
Magnification/NA	**63x/1,4**	**25x/0,8**	**10x/0,3**
Working distance	360 µm	380 µm	2600 µm
Field of view diameter (max.)	400 µm	800 µm	2300 µm
Calibrated printing field	270 µm	700 µm	1750 µm
Scan speed (max.)	100 mm/s	250 mm/s	625 mm/s
Autofocus precision	≤ 30 nm	≤ 30 nm	≤ 30 nm
Field-to field beam positioning accuracy	≤ 500 nm	≤ 750 nm	≤ 2000 nm
Voxel size (XY / z)	0,2 µm / 0,5 µm	0,6 µm / 3,6 µm	1,2 µm / 12 µm
Slicing distance	0,1 µm - 0,8 µm	0,5 µm - 3 µm	2 µm - 12 µm
Typical printing height	1 µm - 10 µm	10 µm - 150 µm	50 µm - 700 µm

Available resins:

- IP-Dip2 from Nanoscribe (for 63x Printing Head)
- IP-S from Nanoscribe (for 25x Printing Head)
- IP-Q from Nanoscribe (for 10x Printing Head)
- PhotoGel from Advanced Biomatrix (optimized for 25x Printing Head)

Equipment financed by:

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Plan de Recuperación, Transformación y Resiliencia

Next Generation Catalunya

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