

SPECIFICATION SHEET

SUPPLY, INSTALLATION AND COMMISSIONING OF “CRYOGENIC NON-MAGNETIC UHV NANOPositionERS WITH CAPACITIVE READOUT” FOR THE LABORATORY OF THE INSTITUTE OF PHOTONIC SCIENCES, BY MEANS OF A NEGOTIATED PROCEDURE WITHOUT PRIOR PUBLICATION DUE TO EXCLUSIVITY, NOT SUBJECT TO HARMONIZED REGULATION.

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CLAUSE 1. Object of the contract

The purpose of this contract is the supply, installation and commissioning of an “CRYOGENIC NON-MAGNETIC UHV NANOPositionERS WITH CAPACITIVE READOUT” for ICFO’s laboratory.

CLAUSE 2. Needs to satisfy

We are building a quantum twisting optical microscope (QTOM) system at ICFO. The system will be a combination of quantum twisting microscope and mid-infrared laser. In the microscope, there is a tip and a sample, both covered with two-dimensional materials. They are brought into contact and mid-infrared laser will be shined into the contact interface. A photo-induced tunnelling current between them is then recorded. Additionally, the sample stage is continuously rotated and, as a result, a current map that is equivalent to the convolution of two-dimensional materials electronic structure and laser spectrum is obtained. This new type of scanning microscope can be applied to layered quantum materials such as metals, semiconductors, superconductors, topological insulators, Weyl semimetals and magnets. Due to the nature of the physics that will be studied, the QTOM needs to operate with nanometric accuracy with the tip-sample position. All the motors will be fitted inside the cryostat insert and will therefore be brought to cryogenic conditions under exchange gas.

We are looking to purchase a set of cryogenic nanopositioners:

- M1. X, Y positioners for tip.
- M2. Z positioner for tip.

CLAUSE 3. Technical requirements

The system should guarantee:

- Compatibility between all the motor sets, they should be stackable.
- The motors should be non-magnetic, cryogenic (1K) and ultra high vacuum compatible.
- Motors should have capacitive readout and ball bearings.
- They should be fabricated with light materials (preferably titanium).
- Dimensions inside the cryostat are limited, check requirements below.

The system should include:

- External power supply
- Electronic control units and PC interface via ethernet

Motor requirements:

- Travel range >3mm. Position resolution <25nm. Hysteresis <250nm.
- For M1: 14.5mmx14.5mmx6mm.
- For M2: 14.5mmx14.5mmx12mm.

CLAUSE 4. Power distributions and safety

- The system should be configured for EU (Spain) power grid (voltage, sockets, etc.) and be CE marked.
- The system should be protected against unexpected power cuts and, in that case, should be fully safe for the operators. A quick and easy turning on of the system has to be possible after a power cut.

CLAUSE 5. System layout and services

- The proposal should include a complete set of pictures, drawings and layouts of the system, including dimensions, location and details of the different components.
- The proposal **should include start-up requirements** (**Unpack all system components; Assembly; Run system; Demonstrate scan range; Demonstrate resolution; During the installation process, instruction should be provided on proper procedures for operation and maintenance of the system**), clearly specifying temperature, pressure, humidity, vibration level, etc, for the specific configuration of the offered system.
- 1 copy of the Operating and maintenance manuals must be delivered in English.

CLAUSE 6. Transportation, installation, start-up and training

- The proposal will include transportation to ICFO's facilities including insurance and all export/import and customs duties. **DAP incoterm will apply.**
- The system will be placed in the selected location by ICFO. Contract winner will cover all costs, organization and coordination of system placement, including any required specialized equipment or vehicle, and any required component disassembly and reassembly for system unloading and transportation inside the building to the target lab location.

CLAUSE 7. Warranty and Follow-on Support

- **1-year Full Warranty** on all parts and components of the system irrespective of the manufacturer. The warranty will include the replacement of any faulty or damaged part(s) during normal use of the system, no matter the manufacturer of the component(s). It will cover any cost related with the disassembly, transportation, reparation and re-assembly of the damaged component(s), including all travelling and living costs of the required service engineer(s). An on-site repair, or a justified alternative to reduce the system down time to the minimum, will always be the first service option. A team of properly qualified and skilled service engineers will have to be available.

CLAUSE 8. Delivery and Installation Time

The system must be delivered at ICFO before the end of the 1st week of March 2026. The delivery timeframe shall include manufacturing, factory testing, international shipping, customs clearance, on-site installation, and final acceptance testing. Suppliers must ensure internal planning accommodates this deadline, regardless of the date of the purchase order.

CLAUSE 9. Target price

- The target price for the system is 95.000,00 € (VAT excluded).

Castelldefels, on the date of its digital signature

Prof. Dr. Frank Koppens
GL Quantum NanoOptoelectronics