
SPECIFICATION SHEET

SUPPLY, INSTALLATION AND COMMISSIONING OF “CRYOGENIC NON-MAGNETIC INSERT WITH DIAMOND WINDOW AND CRYOGENIC NON-MAGNETIC UHV NANO-SCANNER AND ROTATOR” FOR ICFO, THROUGH A SIMPLIFIED ABBREVIATED OPEN PROCEDURE PROVIDED FOR IN ARTICLE 159.6 LCSP

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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 INSERT WITH DIAMOND WINDOW AND CRYOGENIC NON-MAGNETIC UHV NANO-SCANNER AND ROTATOR” 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 and milliradian precision in the rotation. All the motors will be fitted inside the cryostat insert and will therefore be brought to cryogenic conditions under exchange gas. This insert has to include a window transparent to both infrared and THz radiation, this broad-spectra requirement is fulfilled by a diamond window.

The system should include:

- I1. Windowed cryogenic insert with cage compatible with Attodry 2200.
- I2. Diamond window.

In addition, we are looking to purchase a set of cryogenic nanopositioners:

- M1. XYZ high precision scanners for sample.
- M2. Rotating stage for sample.

CLAUSE 3. Technical requirements

The system should guarantee:

- Compatibility with cryogenic system Attodry 2200 and Attodry software
- The motors should be non-magnetic, cryogenic (1K) and ultra high vacuum compatible.
- They should be fabricated with light materials (preferably titanium).
- Dimensions inside the cryostat are limited, check requirements below.
- Window material should allow for transmission in a broad range of wavelengths (1 μ m to 300 μ m).

The system should include:

- External power supply
- Electronic control units and PC interface via ethernet
- Breakout-box and cabling
- Titanium screws
- Kapton coated copper wires

Insert and window requirements:

- The insert should have dimensions of 1m and diameter of 49mm.
- Cage plate system for holding the sample at the center of the magnetic field.
- Window diameter of 12.5 \pm 5mm. Window material: diamond.

Motor requirements:

- Should not operate with high voltages (to avoid shielding).
- For M1: 15mmx15mmx13mm. Scan range at T=5K >15µm. Position resolution <1nm.
- For M2: 35mmx35mmx13.5mm. Aperture: 12.5±5mm. Angle range >360°. Resolution <1m°.

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 December 2025.

Delivery time is defined as the time elapsed since the PO until the system delivery at ICFO facilities. It includes the manufacture of the system, the transportation, the installation and the acceptance test at ICFO's premises.

CLAUSE 9. Target price

- The target price for the system is 55.000,00 € (VAT excluded).
- Payment terms:
 - Payment upon order - 30% total price
 - Payment after installation and acceptance - 70% total price

Castelldefels, on the date of its digital signature

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