
SPECIFICATION SHEET

SUPPLY, INSTALLATION AND COMMISSIONING OF A MOTORIZED TRANSFER STAGE” FOR ICFO

FILE NUMBER: ICFO-2026-011

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CLAUSE 1. Object of the contract

The purpose of this contract is the supply, installation and commissioning of a "motorized transfer stage" for ICFO.

CLAUSE 2. Needs to satisfy

In the field of 2D materials, it's instrumental to fabricate high-quality devices. To make these structures, the individual atomic monolayers are stacked on top of each other, and the rotational degree of freedom plays an important role. In fact, it was shown in 2018 that when two graphene layers are placed on top of each other misaligned exactly 1.1 degrees, the bilayer becomes superconducting. This gave rise to a new research field in which ICFO plays an important role. The rotational degree of freedom is key and high-quality transfer stations are needed to control it down to the millidegree.

The objective of this proposal is to install an automatic transfer stage. The state-of-the-art transfer station will advance the research of several directly interested ICFO groups.

We are looking to purchase a fully automatized transfer state to fabricate twisted 2D devices. For this purpose, it is necessary that the transfer stage has fully motorized X, Y, Z and rotator motors. The system should include:

1. Fully motorized system, standalone instrument
2. High-resolution optical microscope
3. Heating and cooling stage
4. X, Y, Z Rotation stages
5. Tilt stage
6. Motorized autofocus

CLAUSE 3. Technical requirements

- Fully motorized, fully controlled with computer
- Modular, possibility to add Raman or photoluminescence stage in the future
- Independent mask holder with XY and rotation motors
- Sample stage movement up to 50 mm
- Rotational sample stage rotation up to 180 degrees
- Motorized autofocus
- XY stage resolution of 0.1 μm
- Rotational stage resolution of 0.0003 degrees
- High-resolution microscope with objectives of 5x, 10x, 20x, 40x, 50x, 100x with long working distance (>5 mm except for the 100x objective)
- Dual camera
- Microscope with Dark field and Bright field
- LED lamp for microscope
- Maximum size 60x45x75 (WxDxH)
- Cooling and heating sample stage
- Temperature stability of 0.1 degrees
- Temperature control rate of 0.1 degrees per second to 1 degree per second
- Software for imaging control
- Included PC

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 will be fully protected against unexpected power cuts and, in that case, will 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 will include a complete set of pictures, drawings and layouts of the system, including dimensions, location and details of the different components.

The proposal will include full installation and start-up requirements (power, water, compressed air, process gases, etc), clearly specifying connection type, tubing materials, pressures, flows, etc, for the specific configuration of the offered system.

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

The supplier shall be responsible for transport, customs clearance, insurance, and final delivery of the system to ICFO under DAP incoterms. Installation shall be performed at the final laboratory location specified by ICFO, and all logistics, including any necessary lifting or disassembly operations, shall be handled by the supplier.

The supplier must perform full installation, calibration, and system start-up, followed by user training. The training must be conducted on-site and cover system operation, imaging and spectroscopy techniques, maintenance routines, and troubleshooting. Instruction must be provided in English and include both theoretical and hands-on sessions.

CLAUSE 7. Acceptance test

The acceptance test will be performed remotely. A qualified software technician will carry out a dedicated automated test to verify that the system operates within the specified parameters. The results of this test will be documented in a report of approximately two pages, which will be provided to ICFO.

CLAUSE 8. Warranty and Follow-on Support

The supplier shall provide a minimum full warranty of one (1) year, starting from the date of successful installation and acceptance of the equipment at ICFO. This warranty shall include all parts and components of the system, irrespective of whether they are manufactured by the supplier or sourced from third parties.

The warranty shall cover all costs related to the repair or replacement of any defective part, including labor, travel expenses, transport, and insurance. The supplier must provide on-site service whenever possible, or offer a suitable temporary replacement or solution to minimize system downtime.

The supplier guarantees a response time of no more than five (5) working days from the receipt of a service request and a repair or resolution time of no more than fifteen (15) working days, unless otherwise agreed upon in writing with ICFO.

Availability of spare parts must be guaranteed for a minimum period of five (5) years following delivery. Software and firmware updates that address security, functionality, or performance issues must be provided free of charge during the warranty period.

The warranty shall not exclude liability for failures due to manufacturing or design defects and must remain valid even if minor hardware adjustments or maintenance are performed by ICFO personnel, following supplier instructions.

CLAUSE 9. Delivery and Installation Time

The system must be delivered and installed at ICFO within a maximum period of 16 weeks.

Delivery time is defined as the time elapsed since the signature of the contract 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 10. Target price

The target price for the system is 73.000,00 € (VAT excluded).

Payment terms:

- 100% after installation, training and acceptance.

Castelldefels, on the date of its digital signature

Prof. Dr. Carmen Rubio Verdú
GL STM on 2D Quantum Materials