Contract code SU710000CO2025037

Subject of the contract or need of the contracting authority

High Sensitivity Parallel Dipole Line Hall System with AC Magnetic Field.

The specifications detailed in this document are neither exhaustive nor limiting, so any other element that the company deems appropriate must be included and specified in the submitted offer. The required system must allow the measurement of conductivity type, carriers concentration, and carriers mobility of low mobility very thin films (high resistivity layers), and very low resistance (metals) films. Such a system is based on the Hall effect, and must include an AC magnetic field to allow to measure very low mobility and/or very low carriers concentration layers (mainly thin films based on oxides, chalcogenides, halides or the combination of these anions):

General specifications:

- High sensitivity – able to measure low mobilities & semi-insulating samples. Must include the capability to perform both alternating (AC) and traditional static field (DC) Hall measurements;
- Large magnetic field (~ 2 T pk-pk) and uniform (< 2% std for 5 x 5 mm sample);
- Signal processing & user interface (UI) software to extract low Hall signal using software based lock-in detection (eliminating need for hardware based lock-in amplifier);
- Table top setup, utilizing rotating Parallel Dipole Line magnets (no bulky electromagnet are allowed);
- Software controlled measurements and automated parameter extraction. System
- Low resistance option for the measurement of low resistance thin films
- Optical illumination through white LED for performing Photo Hall measurements

Equipment specifications:

- Two rotating magnets with at least 2T pk-pk magnetic field and uniform (< 2% std for 5x5 mm^2 sample).
- Lock-in amplifier detection for enhancing sensitivity of the measurement.
- The system must have a samples holder for samples of 5x5 m^2 at least.
- Must have access to a wide range of mobility + resistivity, Ohmic check, IV curves measurements
- Must give the information about Carrier Type, Carrier density, in AC & DC Hall measurement mode
- Must have High Sensitivity (mobilities < 0.1 cm^2/Vs) and measure carriers concentration below 10^{14} cm^{-3}
- Must have the option of low resistivity samples measurement (carrier concentration above 10^{20} cm^{-3}) for the measurement of metallic-like

Software specifications:

- The software must be able to control the complete system and provide the analysis of the data including carrier concentration, conductivity type and mobility.
- The software must display real-time data.

- The software must automatically record system configuration data.

Installation, support, maintenance and documentation :

- The supplier must provide hardware and software support.
- Manuals will be delivered at least in English.
- Optional installation of the system and user training (in-person or telematic).
- Basic set of spare parts.
- The system must be provided with operating, service & maintenance and technical manuals with full diagrams and drawings /soft and hard copies.

Compulsory general technical requirements of the provision and/or performance criteria or functional requirements of the provision

- Delivering to university lab (Barcelona) and shipping must be included. Optional installation and training will be evaluated
- Warranty: 12 months
- Maximum delivery time: 9 months after contract signature.

The inclusion of extra elements (see the specific list of criteria) will be evaluated with additional points.

Maximum price: 85.000 €

Person in charge of the contract,

Edgardo Saucedo

Barcelona, at the date of the signature