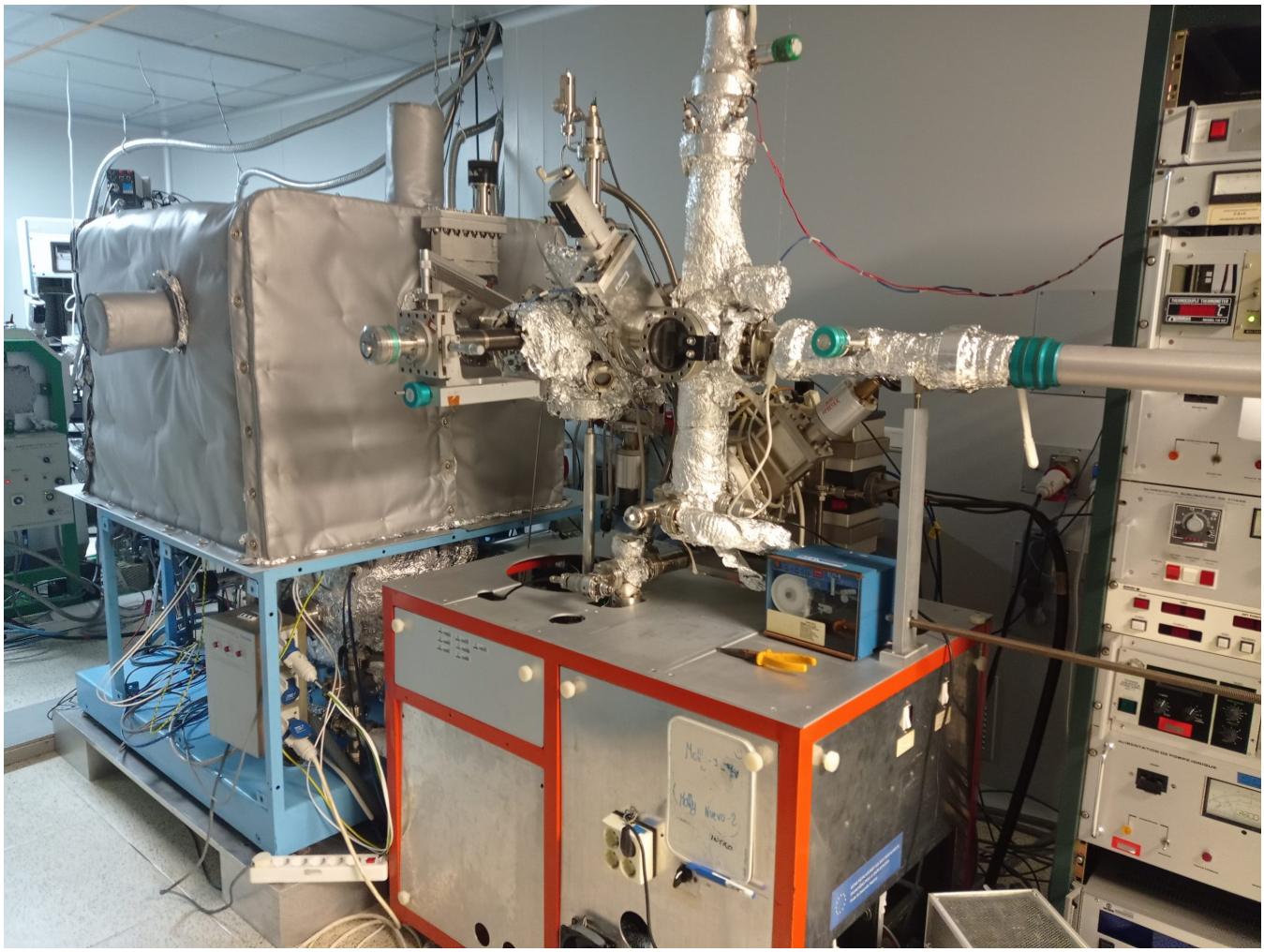
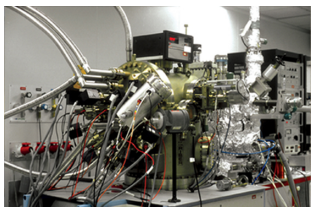
Molecular Bean Epitaxy (MBE) Team RIBER 32 for As-III-based semiconductors

ISOM Science and Technology Service within the framework of the field of Sample Growth research





Contact information

Address: ISOM, Universidad Politécnica de Madrid, E.T.S.I. Telecomunicación. Edificio López Araújo, Avenida Complu
Phone number: 910672118
Website: isom.upm.es
Email: alvarodeguzman.fernandez@upm.es

Technological Offers type

Technological scientific services

Research and innovation areas

- Digital Technologies, Artificial Intelligence, Cybersecurity, 5G, Robotics

- Industry, Materials and Circular Economy
- Science For Engineering and Architecture

ODS

Available from: 2015

Where?

ISOM Semiconductor Devices Group University Optoelectronics and Microtechnology Systems Institute

Keywords: | increase | lasers | LEDS | Materials | photodetectors | Semiconductors

Molecular Beam Epitaxy (MBE) Team
RIBER 32 for As-III-based semiconductors

Using this equipment, layer structures can be made for semiconductors based on group III arsenides [GaAs(N,Sb), InGaAs(N,Sb), AlGaAs(N,Sb)], with atomic resolution (individual atomic layers in various materials) and with highly precise control of flatness and thickness. This enables quantum well and quantum dot devices to be made.

Description of the services offered

The equipment enables many different devices to be developed, such as light emitters (LED, LASER, Single photon emitters), filters, modulators, diodes, transistors or light detectors. It is the basic equipment where material is made which is used in the remaining processes and, therefore, is the beginning of the entire manufacturing chain for any electro-optical device.

Needs requested and applications

Apart from making light emitters and photodetectors, the equipment is highly suited for use in quantum communications, as it is capable of making light emitting and detecting structures that are essential for this type of communications. Depending on the type of materials used, its wave length in use extends from 620nm up to approximately 20 µm in the IR-visible.

Sector or area of application

Electronics, Optics, Optoelectronics, Quantum communications.

Differential skills

The differential advantage of growth with MBE is that its resolution is +/- 1 atomic layer (approximately +/- 5 nm) It has several systems for monitoring material quality in-situ. Amongst them, one of the highlights is RHEED (Reflection High Energy Electron Diffraction) which enables analysis of the crystal¿s growth facet while progressing and assessing its quality, growth speed and thickness, as well as detecting the appearance of quantum dots on the surface.

Previous references for provision of services

Where it is

ISOM. HTSE for Telecommunications

Request for service

Protocolo de Acceso