

RIBER Application Laboratories

INDIUM PHOSPHIDE

Phosphorus-containing semiconductor materials



Growth and characterization of sample wafers

Help customers evaluate critical MBE reactor requirements

Training in epitaxial growth & maintenance

Train customer's technical staff on state-of-the-art production MBE machine

Consulting on phosphorus process

Accompany customers from start-up to full production of P-containing materials

Field engineering of phosphorus tools

Continuously improve MBE components and maintenance procedures

R I B E R

Products and Services for the Compound Semiconductor Industry

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RIBER and the French "Centre National de la Recherche Scientifique" (CNRS) have signed a cooperation agreement, resulting in the creation of several technological research joint application laboratories. These application laboratories will enable RIBER to benefit from state-of-the-art epitaxy, characterization and back-end experience, to focus on the development and testing of new epitaxy machines and related services. For the CNRS, this agreement aims to expand its areas of knowledge and expertise through industrial application issues defined by RIBER.

A first RIBER application laboratory, devoted to phosphide epitaxy, has been established at the "Institut d'Electronique et de Microelectronique du Nord" (CNRS/IEMN Lille - France). The industry standard MBE 49, a multi-4" MBE production machine, is being used for epitaxial growth.



CNRS/IEMN Lille

Objectives

- ▶ Due to the intrinsic physical properties of the material, phosphorus-containing electronic devices, such as HBTs, PHEMTs and optoelectronic integrated circuits (OEIC's), excel in high frequency applications.
- ▶ A key objective of the RIBER application laboratory is to achieve state-of-the-art phosphorus-based heterostructures, and will focus on applications such as HBTs used in wireless telecoms and fiber optic networks.
- ▶ The laboratory will develop theoretical and experimental aspects of growth mechanisms, interface formation, atomic exchanges on lattice matched, strained or relaxed P-containing materials. For that purpose, epitaxy is co-ordinated with studies on structural and electronic properties.
- ▶ The MBE 49 machine serves as a test-bed for the development of new MBE components and maintenance procedures.

Areas of Expertise

- ▶ With over 400 research and production MBE systems worldwide, Riber provides a global service network for maintenance and customer support.
- ▶ Riber developed the industry's first phosphorus-dedicated MBE system and phosphorus valved cracker cell design that is now used by all major component manufacturers.
- ▶ 20 years of experience in solid- and gas-source MBE for lattice matched or strained phosphorus-containing heterostructures.
- ▶ Electron spectroscopy for surface chemical analysis (ESCA), Xray double diffraction with dynamic simulator, optical and electrical measurements (photoluminescence, photo-current, Hall effect, sheet resistivity, C[V]).

For more information

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