

MBE Process Control Software

CRYSTAL

Fully compatible with all RIBER solid-source and gas-source MBE machines



Crystal Eyes

Modular architecture

Easy to implement, operate and upgrade
Suitable for retrofitting most commercial and home-made MBE machines

User-friendly graphical interface

Run supervision, batch processing, growth data back-up, safety management, etc.

Realtime control

MBE sources, MBE accessories and in-situ instrumentation

Windows-NT™ based

Robust and proven operating system

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CRYSTAL is a powerful Windows-NT™ based process control software carefully designed for the real-time supervision of molecular beam epitaxy (MBE), gas-source MBE and chemical beam epitaxy (CBE) machines. This automation tool provides continuous precise information during the entire epitaxy process, from equipment configuration to growth data acquisition, storage and processing.

Features

- ▶ The CRYSTAL process control software consists of seven modules:
 1. "CRYSTAL Set-up" is intended to assist the operator in installing the application.
 2. "CRYSTAL Preferences" provides the edition tools to customise the process control software general parameters: i.e. default directories, default parameters, supervision mode, etc.
 3. "CRYSTAL Toolbox" enables describing the particular material configuration of the epi machine to be supervised (list of equipment, PID regulators and controllers, communication ports and interconnecting wiring, etc.).
 4. "CRYSTAL Schedule" enables editing recipes adapted to the configuration of the machine.
 5. "CRYSTAL Batch" enables editing production batches adapted to the configuration of the machine.
 6. "CRYSTAL Eyes" is an interactive graphical user interface and enables operators to supervise any epitaxy machine in operation.
 7. "CRYSTAL Analyser" enables extracting information from record sessions and producing reports that can be printed or exported to spreadsheet programs.
- ▶ The CRYSTAL process control software allows **Control** (setpoint, PID, ramp, etc.) over:
 - Effusion and cracker cells
 - Shutters
 - Gas injectors
 - Gas distribution systems
 - Platen manipulator
 - Flux gauge
 - Wafer handling system (batch processing).
- ▶ **Monitoring** of:
 - PID regulation rack
 - Pressure and flux gauges
 - In-situ instrumentation
 - Wafer handling system (batch mode).
- ▶ **Data management** of:
 - MBE machine & installed components
 - Unlimited epi growth recipe editor
 - Non-linear ramp editor to enable sophisticated grading functions development
 - Production batch of wafers
 - Interactive supervision command to allow users to modify process parameters during growth
 - Growth process to report editor.

Necessary computer package

Minimum configuration

- ▶ Pentium-III (or equivalent) CPU, 256MB RAM, 10GB HD (type SCSI2), and CD-ROM drive, SCSI ports
- ▶ WINDOWS NT 4.0 operating system
- ▶ RS 232 / RS422 / RS485 cards & cables, consult RIBER for approved list of card and drivers.

For more information

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