

AccuFlux™ Process Monitor

Real-Time Flux and Composition Monitoring

Engines for Thin Film Innovation



Description

The AccuFlux Process Monitor is a non-intrusive atomic absorption based in-situ flux monitor. Using element specific lamps, the AccuFlux is designed to measure vapor flux density of both solid and gas sources. The element specific lamps allow for up to four materials to be monitored simultaneously. An innovative, proprietary optical and electronic design with on-board DSP provides sensitivity better than 0.002 nm/s. The self referencing and self aligning design provides drift free and low maintenance operation.

Typical Applications

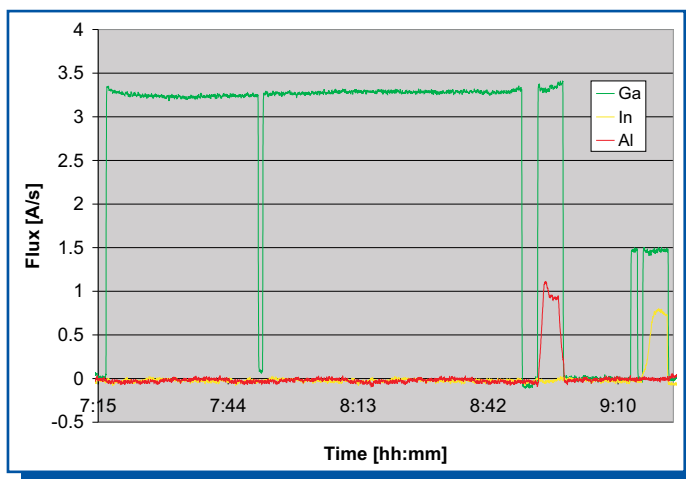
The AccuFlux process monitor can be used for a wide range of materials for both MBE and MOCVD. The optional remote control package is ideal for production applications, and allows AccuFlux to provide real-time feedback for automated shutter and source control. The AccuFlux can monitor materials in multiple source configurations, including linear and confocal arrangements. The material specific light sources allow for operation in an over pressure environment such as GaAs, CIGS, and Oxide deposition.

Specifications

Material System	Customer Specified
Deposition Rate Range	0.002 nm/s – 50 nm/s
Rate Equivalent Noise	0.001A/s RMS or 1% F.S.
Sampling Frequency	up to 10 Hz
Optical Path Range	25" Standard
Flange Mount	2¾" CF or Larger upon Request
Weight	6 lb (2.8kg)
Dimensions	4¾" x 12½" x 6½" (13 cm x 32 cm x 17 cm)
Light Source	Hollow Cathode Lamp Others available on Request
Wavelength Selection	Bandpass Filter (10 nm FWHM)
Computer Requirement	Windows XP
PC-Interface	RS-232

Features

- Innovative optical design for growth rates as low as 0.002 nm/s
- High intensity, element specific light sources
- Flux monitoring of solid and gaseous sources
- Remote control option for closed-loop control
- Control up to three materials simultaneously from a single unit

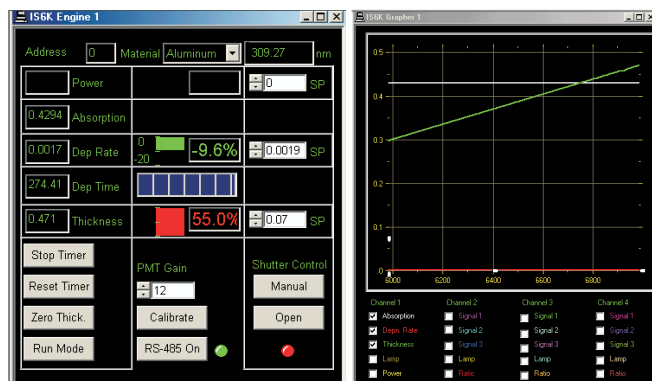


Data taken during production of a 7" x 6" HBT wafer deposition.



AccuFlux™ Process Monitor Software Applications

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Remote Control Interface

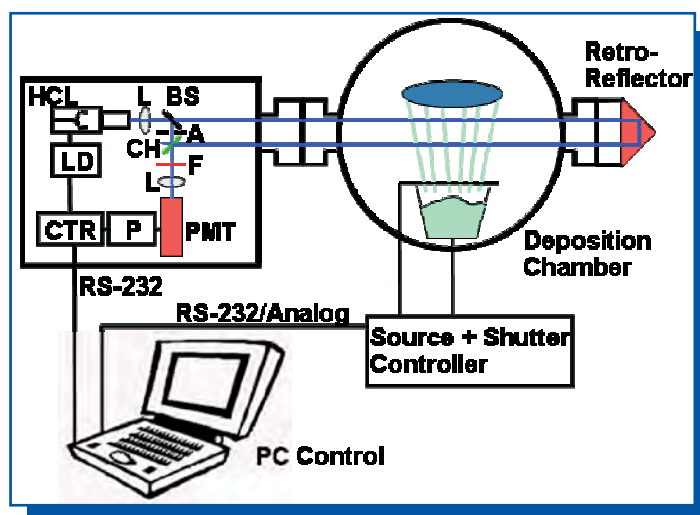
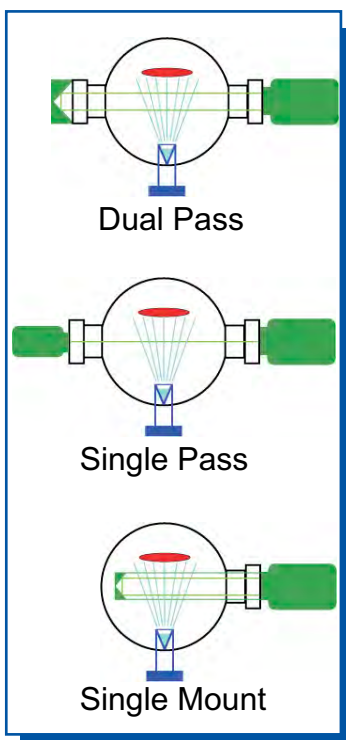
As an option, the Remote Control Interface allows for the data being taken by the AccuFlux system to be used for process control functions via the RS232 link. The AccuFlux uses USB linked Data Acquisition System to allow for source and shutter control. The Data Acquisition System can be interfaced with a wide array of deposition sources for MBE, CIGS, and MOCVD. As an automation tool, the Remote Control Interface can be used to increase reproducibility of the deposition process.

Software Description

The AccuFlux software application is fully integrated into SVT Associates' RoboMBE™ automation and control software. The AccuFlux application processes data collected by the optical head and provides realtime flux composition and growth rates. The user friendly graphical interface displays data in both a moving "strip-chart" as well as numerical values. The software is able to log data to a spreadsheet format compatible with other software platforms.

Monitor Configurations

With multiple Configurations, the AccuFlux can be incorporated into most deposition systems. The dual pass design is used for increased sensitivity. The single pass configuration is ideal for high density flux profiles. The single mount design can be integrated into deposition systems with only a single view port available.



Schematic of the AccuFlux integrated into a typical deposition system.

Model	Description
IS6K-01	1 Material Monitoring System
IS6K-02	2 Material Monitoring System
IS6K-03	3 Material Monitoring System
IS6K-06	Remote Control Interface

