AccuTemp Process Monitor

Real-Time Measurement of Temperature and Growth Rate

Features

- **Real-time Measurement of Temperature and Film Thickness on a Single View-port**
- **Dual Wavelength for Window Coating and Substrate Transparency Compensation**
- **Emissivity Compensation for "True" Temperature**
- **Closed-Loop Control of Temperature and Film Thickness**
- **Optional Bandgap Module for Low Temperature Measurement and Calibration**

Description

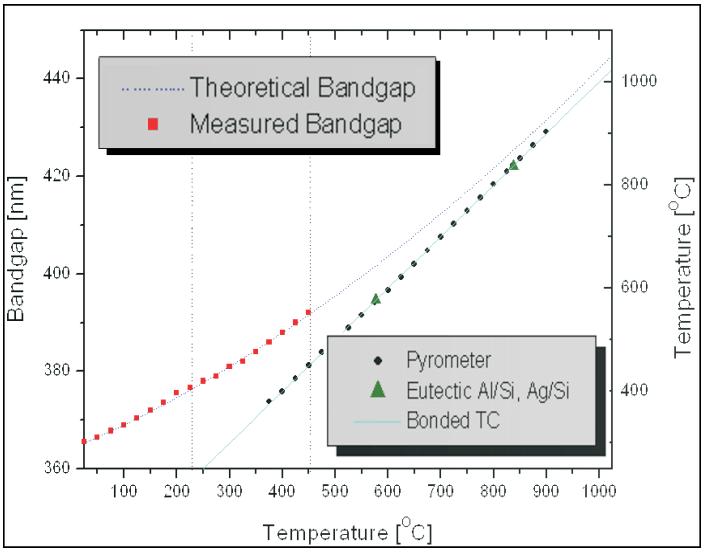
The AccuTemp (In-Situ 4000) process monitor is an ideal solution for closed-loop monitoring and control of multilayer thin film growth applications such as MBE, MOCVD, and CIGS. The AccuTemp system provides real-time and accurate information on the substrate temperature, film thickness, and growth rate using a single normal incidence view-port. Temperature is measured using a two color infrared pyrometer specifically designed to be insensitive to window coating and alignment errors. The radiometer compensates for changing emissivity and corrects the pyrometry measurements. An optional Bandgap Module allows for monitoring of low substrate temperatures, and easy calibration of the pyrometer. Two independent optical reflectometer signals are analyzed to provide thickness, growth rate, and refractive index in real-time.

Specifications

Temperature Ranges Pyrometer.....450°-1300°C
Bandgap Module..... RT-700°C
Compatible Substrates.....Si, GaAs, InP, Sapphire
STO, GaSb, MCT, ect.
Radiometer Wavelengths.....950, 850 nm
Temperature Equivalent Noise.....<0.5C @450C Si
Reflectometer Wavelengths.....950, 470 nm
Reflectometer Equivalent Noise.. <1 nm @ Films > 100 nm
Target Distance Range.....400 mm to infinity
Measurement Spot Size..... >7 mm Ø
Viewport.....2.75" CF(4.5" CF for Bandedge Add-on)
Dimensions.....100 x 140 x 130 mm
Alignment.....Video Monitor
Computer Requirement...Windows XP, Serial Port Interface

Typical Applications

Typical application materials for the AccuTemp include but are not limited to GaN, GaAs, ZnO, CIGS, Si, ZnTe, SiC, MCT, and STO. The AccuTemp is used to collect temperature and growth rate data for reproducibility in the R&D setting, yet is versatile enough to be use as a monitoring and automation tool in the production environment. The Bandgap Module allows for temperature monitoring at temperatures below the range of a pyrometer such as GaAs, GaSb and Si applications.



Pyrometer and Bandgap Module Temperature Data for GaN Substrate