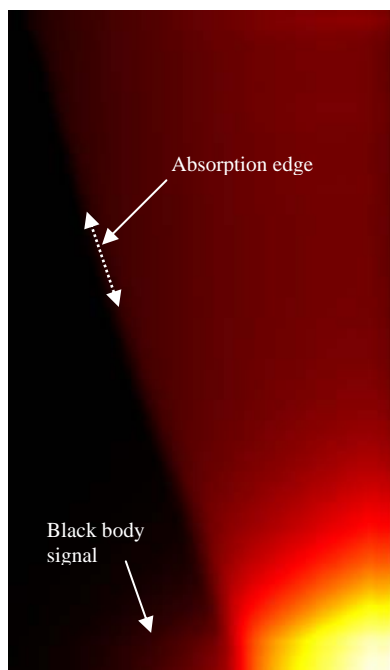


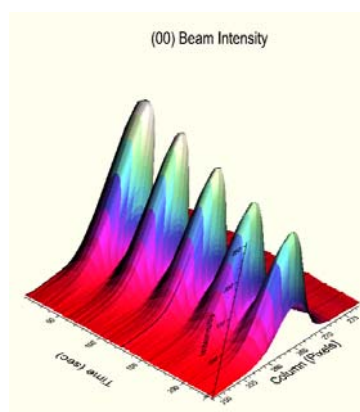


Simultaneous BandiT Band Edge and Pyrometry Measurement!

The kSA BandiT now supports the ability to simultaneously measure temperature via band edge measurement AND pyrometry. Because BandiT's solid-state spectrometer captures a full-light spectra for absorption edge measurement, pyrometry effectively comes along for the ride. The picture at right shows a "Scan Mode" image during the temperature ramp of a typical GaAs substrate. The spectra are "stacked" vertically, so as you go down the image the temperature increases. Only at higher (~450C) temperatures does the black body signal become noticeable. The contrast from dark to light in the image is the absorption edge shifting to longer wavelengths as the temperature increases. Note the Scan Mode image shown here is easily generated using BandiT!



Tech Tips: Real-Time Growth Rate Determination and Output With kSA 400



The kSA 400 (V4.72 and higher) can calculate growth rate in real-time AND output the growth rate to any available analog output channel for acceptance into MBE control software. In fact, any real-time parameter (intensity, lattice spacing, growth rate, etc.) may be mapped to any available analog output channel via the "Device Output Mappings" dialog in the kSA 400 software.

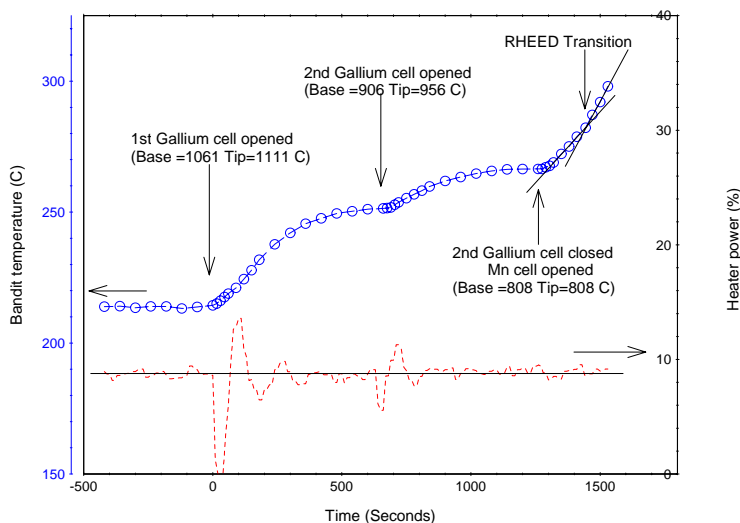
New kSA RateRat Pro Application Note

Recently, we installed a kSA RateRat Pro system onto an Aixtron multi-wafer MOCVD reactor and integrated it with the OEM triggering interface for real time growth rate, thickness, and optical constant (n,k) determination. Data for both initial buffer layer growth on sapphire and homoepitaxial growth of GaN for all wafers within the susceptor were captured and analyzed. Please refer to our website, www.k-space.com, for the full Application Note.



University of Nottingham Presents kSA BandiT Data at NAMBE 2005
BandiT clearly shows low-temperature effusion cell heating effects during MBE growth of GaMnAs for Spintronics.

Dr. Richard Campion of Nottingham University presented a poster paper at NAMBE 2005 that explained low-temperature experiments with both GEN II and GEN III MBE reactors using kSA BandiT in transmission mode. Dr. Campion found that sample temperature increases due to heating from the source cells were significantly affected by the type of backing plate used. The figure below shows typical BandiT temperatures during deposition using an open substrate backing plate. Note that during GaMnAs deposition the radiant load is actually reduced by closing the 2nd gallium cell when opening the lower temperature manganese cell. This suggests that with an open back plate the GaMnAs overlayer is absorbing more of the available radiation than the GaAs, from both the heater and the cells; the heater is the dominant radiation source. However, Dr. Campion found that by adding a PBN backing plate the BandiT temperature was very similar to the thermocouple temperature and the temperature increases due to the cells were small. The power to the heater is also reduced (~7% from 9%). Surprisingly, when using the PBN backing plate during GaMnAs deposition the temperature falls



rather than rises. Apparently, the PBN plate significantly improves the thermal coupling of the wafer to the heater. All analysis of wafer temperature was made possible with the kSA BandiT, as no other technique is able to measure temperatures so low.

k-Space Announces New Distributor in India

k-Space is pleased to announce that El Camino Technologies Pacific will be representing the k-Space product line in India. With offices located in Delhi, Bangalore, and Mumbai, El Camino specializes in serving the equipment needs for India's semiconductor, optoelectronics, and government R & D labs.