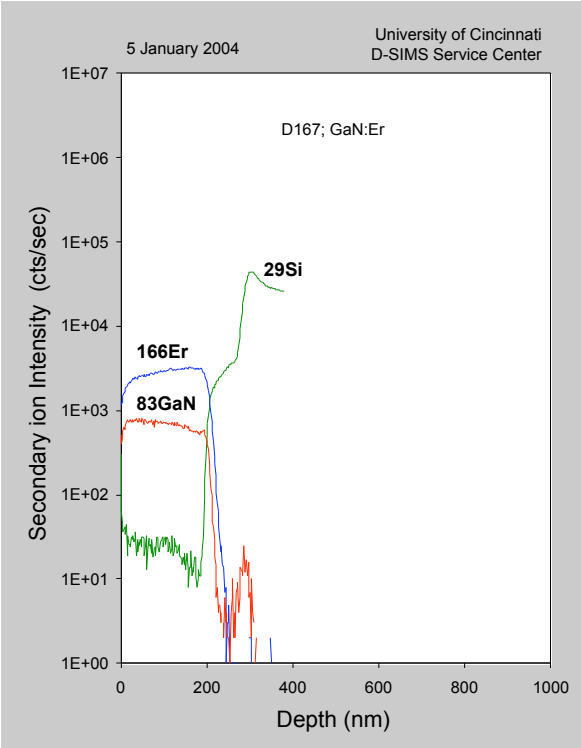
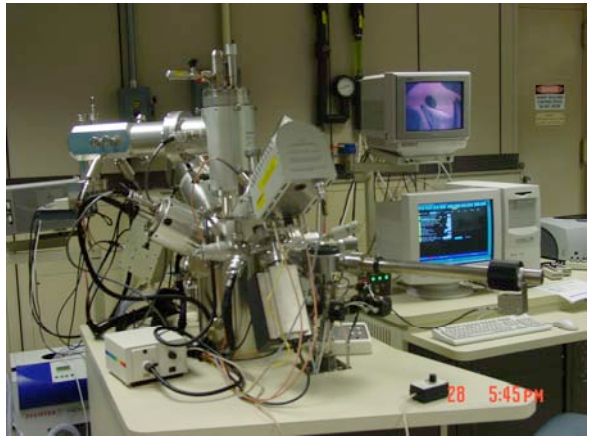
Depth Profiling of Trace Level Dopants



Above is a GaN sample doped with Erbium. Depth profiling is capable of spanning a dynamic range of 5 orders of magnitude and identifying dopant and contaminant concentrations. The 6600 D-SIMS system is equipped with Cs, O_2, Ar, and Xe ion sources for a full range of +SIMS and –SIMS profiles.



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SIMS ANALYTICAL SERVICES

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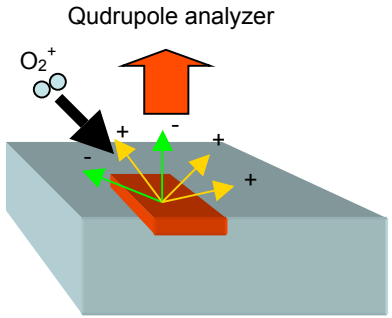
Services at a reasonable cost

Secondary Ion Mass Spectrometry (SIMS)



An energetic primary ion beam sputters a sample surface at an independently chosen impact angle. Positive or negative secondary ions formed in the sputtering process are extracted from the sample and analyzed in a quadrupole mass filter system. The low extraction potential allows for ease of analysis of insulating as well as conducting materials. Rastering of the primary ion beam and electronic gating of the signal to accept ions only from the central region of the sputter crater allows for depth profiling with excellent depth resolution.

Analytical Services Price List - USA

Using a Physical Electronics Model 6600 Dynamic Secondary Ion Mass Spectrometer

Rates are based on price per hour, in increments of an hour.

Routine Services	**$300**
Depth profile	
Cesium or oxygen	
Absolute dopant concentration	
(requires customer provided calibration sample)	
Device Structure Analysis	**Quoted Upon Request**

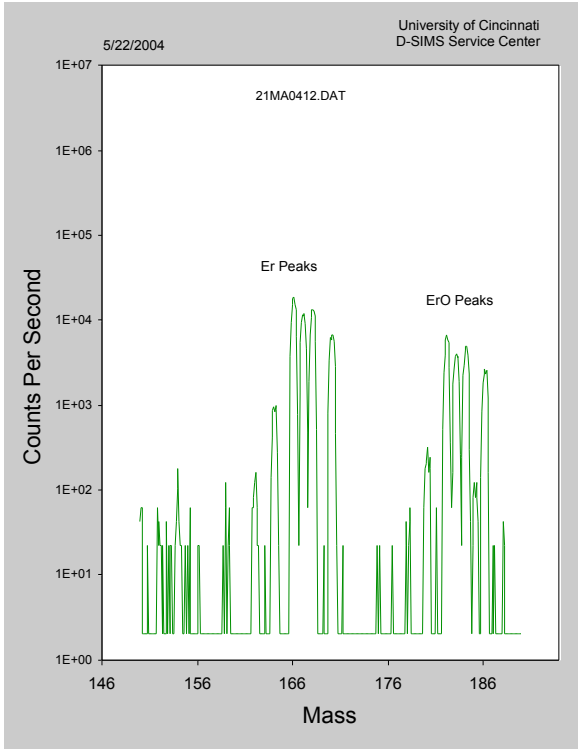
Most samples with thickness < 1 μm require approximately 1 hour of analysis

- Analysis is done on a first come first service basis with the exception of Priority work.
- Priority work is available for a 48 hour turnaround for a surcharge of 100% on weekdays only.

Samples will be retained for 6 weeks and then disposed. Return of large samples or containers will be billed to the client.

Rates are valid through December 31, 2004

Atomic Mass Survey



Above is a mass spectrum survey of heavy elements identifying the presence of five Er isotopes with atomic masses of 164, 166, 167, 168, 170. By analyzing the mass spectrum of unknown contaminants and known dopants the presence and identity of the species can be confirmed.