Einladung

Es spricht: **Andrew Klump**
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Ort: **Otto-von-Guericke-Universität Magdeburg**
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Universitätsplatz 2, G16 / Raum 054

Thema: **„SIMS as a Quantitative Tool for III-Nitride Materials"**

Abstract:
Over the past twenty years there has been tremendous effort in the development of III-nitride materials for use in electronic and optoelectronic applications. As these materials continue to advance, there is an ever increasing need for analytical capabilities that can aid in the development of these systems. For instance, the electrical properties of $Al_xGa_{1-x}N$ compounds are strongly influenced by residual impurities in the epitaxial layers, along with the Al composition of the alloy. Quantifying these parameters is essential to understanding how a device performs. Thus, a technique like secondary ion mass spectrometry (SIMS) is invaluable because of its ability to measure impurity and lattice concentrations of the elements while retaining high layer resolution.
Along with the advance of the III-nitride materials, SIMS has undergone a dramatic increase in capability over the same time period. Studies have been undertaken that allow for the quantification of $Al_xGa_{1-x}N$ heterostructures that can vary over the full range of aluminum compositions ($0 \leq x \leq 1$). Also techniques have been developed to handle the deleterious charging effects in samples with high Al compositions ($x > 0.4$). Finally, understanding how surface contamination affects the background measurement concentrations has led to improvements in sample preparation. In all, these new methods have allowed for the detection limits of C, O, and Si to be pushed below 10^{+16} atoms/cm^3.

Gäste sind herzlich willkommen!
apl. Prof. Dr. Armin Dadgar