

## SESSION X

### Advanced Lithography – Special Session

*Chair: P. Chao, Sanders, A Lockheed Martin Company*

Manufacturing of high performance GaAs MMICs depends heavily upon the lithography technique used to fabricate submicron gates. The challenge of this gate lithography technology is to achieve small gate dimensions with high yield, good reproducibility, and acceptable throughput. The papers selected for this special lithography session address the above challenge. They cover a wide range of fine line gate lithography techniques – from traditional e-beam lithography to the emerging optical phase-shift and the X-ray lithography techniques.

Larry Hanes of Raytheon Company kicks off the Session with a presentation on high throughput manufacturing of 0.15-micron T-gate MMICs using the e-beam lithography with a multi-layer resist technique. Theo Jakobus of Fraunhofer Institut für Angewandte Festkörperphysik describes a very high yield 0.15-micron T-gate process using E-beam lithography on 3-inch GaAs PHEMT wafers. The third paper, by Jerry Leonard of TriQuint Semiconductor, reports the development of a 0.25-micron T-gate lithography process for GaAs devices using the chromeless phase-shift technology. Tamotsu Kimura of Oki Industry discusses a 0.17-micron gate fabrication technique for self-aligned ion-implantation GaAs MESFETs using the phase-shifter edge line (PEL) mask technique. This session is completed with the presentation from Niru Dandekar of Lockheed Sanders on the use of an innovative X-ray lithography technique to fabricate 0.15-micron T-gate PHEMT MMICs for both military and commercial applications.