LASER DIAGNOSTICS

and photochemical processing for semiconductor devices

At this year's annual meeting, a new symposium entitled "Laser Diagnostics and Photochemical Processing for Semiconductor Devices" was organized by R.M. Osgood of Columbia University and S.R.J. Brueck of M.I.T. Lincoln Laboratory. The symposium featured eight invited and thirty-one contributed presentations. The meeting was international in scope, including representatives from seven nations. The meeting was well attended by members of the electronics community including industrial, academic and government researchers.

The symposium focused on two general areas: laser diagnostics for semiconductor devices and processing, and laser photochemical processing for microelectronics devices and components. Photochemical processing was covered in sessions highlighting photoetching of electronic materials, photoformation of insulators such as SiO_2 and Si_3N_4, and photodeposition of metals and both elemental and compound semiconductors. A wide range of photolytic, involving electronically excited species, and pyrolytic, involving thermally excited species, techniques were discussed. In general, these laser processing techniques offer new approaches to both large-area, low temperature, dry processing and to local, discretionary, direct writing of submicrometer structures. Several workers reported on the direct production of spatial features on a 0.2μm scale, finer than the laser wavelengths employed.

Optical microanalysis of small semiconductor devices and materials and *in situ* monitoring of conventional and laser processing were covered in the session on laser diagnostics. As for the case of laser processing, these techniques utilize both the spatial and spectroscopic specificity of laser radiation. Experiments probing the active species in CVD reactions, plasma etching, and laser photodeposition were reported. Also, spatially resolved laser luminescence and Raman scattering studies of electronic device materials were presented. These techniques rely on the use of lasers to nondestructively analyze specific lattice and electronic properties of materials.

R.M. Osgood (left) and S.R.J. Brueck, Co-Chairmen

R.M. OSGOOD
Columbia University
S.R.J. BRUECK
Massachusetts Institute of Technology
- Lincoln Laboratory

Principal Support

Air Force Office of Scientific Research (H. Schlossberg)

https://doi.org/10.1557/S0883769400051125 Published online by Cambridge University Press