

## Book Review

### **New Applications for Wide-Bandgap Semiconductors**

**Editors: Jen-In Chyi, Stephen J. Pearton, Jung Han, Albert G. Baca, and Wayne H. Chang**

Materials Research Society, Warrendale, PA, USA; Symposium Proceedings Vol.764, 430 pages  
ISBN: 1-55899-701-6

These proceedings are papers presented at a Symposium "New Applications for Wide-Bandgap Semiconductors", held April 21-24, 2003 in San Francisco, CA, USA. The book starts with a Special Invited Session consisting of two overview papers: "Silicon Carbide Power Devices and Processing" by J. B. Casady et al., USA and "Challenges for High Temperature Silicon Carbide Electronics" by C.-M. Zetterling et al., Sweden. Key issues associated with SiC materials and device technology are discussed as well as solutions for contacts and dielectrics towards an application to achieve high temperature stable operations of SiC analog and digital circuits and other novel devices as JMOSFET's.

The next chapter "Growth, Processing, Devices" with 8 papers is mainly focused on the growth of AlGaIn/GaN layers and devices by Hydride Vapor Phase Epitaxy. The biggest chapter "Novel Applications For Wide Bandgap Semiconductors" consists of 31 presentations. In addition to the materials described above several studies are dedicated to the growth of ZnO thin films by MOCVD, Magnetron Sputtering Technique and Pulsed Laser Deposition. Other materials in this chapter are boron doped diamond, a-Se films, Bi<sub>2</sub>As<sub>2</sub> films. "Oxides, Heterostructures, Devices" (6 papers) collects a topic which discusses e.g. novel oxides, characteristics of devices for high performance flame detection, GaP based MIS Capacitors and Mg doped GaN Schottky Diodes.

The chapters "Processing and Devices" (3 papers) and "Emerging Areas" (4 papers) are dealing with electron injection-induced effects, optoelectronic devices, surface acoustic waves in AlGaIn films and free-standing wafers of AlGaIn (12mm in diameter, grown on SiC substrates by Hydride Vapor Phase Epitaxy) and GaN (50mm in diameter, grown on a (100) face of  $\gamma$ -Li Al O<sub>2</sub> by Hydride Vapor Phase Epitaxy).

The last chapter "Processing, Growth, Devices" shows 6 papers to different subjects, like 6H- and 4H- SiC large area photoconductive switches, GaN growth by Molecular Beam Epitaxy, Cathodoluminescence study of Gd-doped Yttrium Oxide thin films.

This conference book is an interesting and good overview to the topical subject with improved ongoing results also towards new applications. The book may be recommended to scientists and engineers working in this field of semiconductor application and semiconductor technology. It may be also used by advanced students of semiconductor materials science.

K.-W. Benz