

PREFACE

This volume contains Proceedings of the 2006 biennial Lester Eastman Conference (LEC), which was held on the Cornell University campus on August 2-4, 2006. Originally, the conference was known as the IEEE/Cornell University Conference on High Performance Devices. It was renamed Lester Eastman Conference (LEC) to honor Prof. Lester Eastman, a renowned device pioneer and leader, in 2002 and held at the University of Delaware. The next LEC was held at the RPI campus in 2004 before coming back to Cornell in 2006.

Just after the conference, on the afternoon of Friday, August 4, 2006 a terrible tragedy cast a great sadness over the week's events. Mr. Navan Parthasarathy, a participant and a presenter at the LEC conference, had drowned in Fall Creek on Cornell Campus. He was a graduate student at the University of California, Santa Barbara. We dedicate the LEC-06 Proceeding to Mr. Navan Parthasarathy to honor his memory.



Professor Lester Eastman



UCSB Ph.D. student
Navan Parthasarathy
Passed away on August 4, 2006

The Proceedings cover five emerging and traditional areas of advanced device technology: wide band gap devices, terahertz and millimeter waves, silicon and silicon-germanium devices, nanoelectronics and ballistic devices, and photoluminescence and photocapacitance characterization of advanced photonic and electronic devices.

The papers by M. Sugimoto et al. entitled “Wide-bandgap semiconductor devices for automotive applications” and by B. Green et al. “A GaN HFET device technology for wireless infrastructure applications” define existing and future applications of the wide band gap electronic devices and, hence, set the stage for many outstanding papers describing physics, chemistry, device design, fabrication, and modeling of these device.

Papers on terahertz and millimeter include papers describing terahertz emission and sensing (from the Delaware group), the paper from Marc Rodwell’s group on new millimeter wave phase array architecture, and the paper on millimeter wave heterostructure diode.

Papers dealing with Si and SiGe technology cover new device designs, fast trapping devices, and SiGeC/Si IR photonics. It is interesting to compare the paper on SiGeC/Si IR photonic with Stiff-Roberts’ paper on hybrid nanomaterials for IR photo detection.

A thought provoking paper from Lester Eastman’s and Brian Ridley’s group discusses ballistic electron acceleration and negative differential conductivity devices.

M. Wraback et al. describe how dependent time-resolved photoluminescence helps understand the physics of ultraviolet AlN/GaN/InN based emitters.

All in all, these proceedings will bring the reader to the forefront of advanced device technology.

The Editors would like to thank the authors, anonymous reviewers who were also the key contributors to the success of these proceeding.

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