

UC SANTA BARBARA

# *THE* **Current**

December 17, 2003

Eileen Conrad

## **Boeing Donates Integrated Circuit Patents to UCSB**

The University of California, Santa Barbara has received a donation of four patents from the Boeing Company that are related to improving the performance of electronic circuits.

Boeing's research into stacked multi-chip modules along with their advanced cooling technology will be transferred to the University of California for further development and commercialization. Boeing decided to give the intellectual property to UCSB largely because of its faculty expertise in novel chip design and its recognized skill in technology transfer.

The patents are directly related to the research of Kaustav Banerjee, assistant professor of electrical and computer engineering at UCSB, who has worked extensively on three-dimensional (3-D) integrated circuits and thermal analysis of both 3-D integrated circuits and high-performance microprocessors.

Stacked multi-chip modules house integrated circuits in layers, rather than each integrated circuit being housed in its own ceramic or plastic package.

With the elimination of individual packages and their assorted parasitics, and the availability of smaller packaging size and shorter electrical connections, electronic circuits can be run at higher speeds to provide improved performance.

"UC Santa Barbara has some of the leading experts in the world in advanced 3-D packaging for integrated circuits," said Gene Partlow, vice president for the Boeing Intellectual Property Business.

"We are very excited about the research of Professor Banerjee and his colleagues and their plans for bringing this technology to fruition in new and exciting markets outside of Boeing's core business areas."

Banerjee will be collaborating with other UCSB faculty members and graduate students to commercialize the 3-D integrated circuit and advanced chip cooling technologies.

A focused development plan has been created to facilitate the commercialization process.

"The innovation achieved by Boeing has much wider potential application than the aerospace market for which it was initially developed," said Banerjee. "We are grateful to Boeing for its generous gift and support to advance this vital technology."

Additional applications for the technology include mainframe computers, computer workstations and servers, personal computers, telecommunications, cell phones, as well as automotive and military applications.

The recent gift illustrates how donations of this kind can create new opportunities for teaching, research, and future technology development.

---

## **About UC Santa Barbara**

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.