



## TECHNOLOGY

# Plasmonics for Improved Bandwidth in Intra-chip and Inter-chip Communications and Advances in Computer Architecture

## OVERVIEW

In a multi processor organization the processors and some fast memories require chip connections through pins on the boundary of the electric chips in order to reach larger memories or other processors. Current technology does not provide satisfactory solutions for such connections. They limit bandwidth to values insufficient for applications and create a bottleneck or require large chips that limit the utility of the chip in other ways.

Researchers at the University of Maryland have invented a technology based on "Plasmonics", an emerging partner technology to electronics and photonics, to alleviate bandwidth problems among various components of a computer system. The proposed application should be able to drastically improve the performance of on-chip multiprocessors by providing better bandwidth and latency to memory. Also, the current all-electronic solutions for on-chip multiprocessing architecture require significant chip area which does not reduce while the miniaturization trend of CMOS VLSI continues to look promising. The proposed application may address this problem.

The new technology will give much greater memory scalability of the overall architecture, to a point where compact designs could outperform the most expensive and largest supercomputers built today for many more applications. More importantly, the memory architecture of the new technology will facilitate a much easier way to program parallel computers.

For further information, please contact the Office of Technology Commercialization, (301)405-3947 , E-mail: [otc@umd.edu](mailto:otc@umd.edu).

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## Additional Information

### INSTITUTION

University of Maryland, College Park

### PATENT STATUS

Patent(s) pending

### LICENSE STATUS

Contact OTC for licensing information

## **CATEGORIES**

- Microelectronics

## **EXTERNAL RESOURCES**

PS-2006-023