



Multibeam Unveils Major Initiative to Develop Full-Wafer, All-Maskless Patterning at 45nm and Larger Nodes on Its MEHL Production System

\$38 Million DoD Contract Awarded to Multibeam to Develop New MEHL Application

SANTA CLARA, CA – September 10, 2020 – [Multibeam Corporation](#) today confirmed it has embarked upon an ambitious project to apply its innovative Multicolumn E-Beam Lithography (MEHL) technology to pattern entire wafers at 45nm and larger nodes, without the use of any masks, for back-end-of-line (BEOL) processing. Funded by the Department of Defense (DoD) and program-managed by the Air Force Research Lab (AFRL), Wright-Patterson Air Force Base, the \$38 million contract award includes an option for the U.S. Government to purchase another MEHL production system from Multibeam.

“This contract award along with the [Secure Chip ID](#) application we have been developing under an earlier DoD contract highlights the versatility of our innovative MEHL platform,” said Dr. David K. Lam, Chairman/CEO of Multibeam. “Both applications are designed to run on our MEHL production systems.”

“Low-Volume, High-Mix” Chips Need Help

Assured and Trusted foundries typically produce a “low-volume, high-mix” of chips for the DoD. But optical lithography equipment leaders have little interest in such small quantities of chips with a large variety because their businesses are geared toward high-volume production. Moreover, there continues to be a need for early-generation chips with “mature” nodes. While masks for such nodes are less expensive, mask-related costs do add up. Masks in less demand often have long lead-times, negatively impacting fab productivity in production as well as cycles of learning in new-chip development.

IoT Chip Production Faces Similar Challenge

IoT chips are generally small, simple SoCs that perform specific tasks and are ubiquitous on the Internet. Such chips have been credited for the dramatic rise in IC content in most Government, commercial, industrial, and consumer products. As a whole, IoT chipmakers are high-volume producers. But their batch sizes are relatively small because IoT applications are diverse and the IoT market is fragmented. Competing in this cost-sensitive market is a real challenge. Yet, low-volume, mature-node IoT chipmakers get little support from optical litho equipment leaders focused on high-volume manufacturing at cutting-edge nodes. As a result, there have been scant advances in DUV (193nm ArF dry or immersion) litho systems since 2007 when optical resolution reached its limit.

“As ICs proliferate, legendary ‘killer apps’ such as PCs and cell phones are being eclipsed by a multitude of IoT applications, digital and analog,” noted Dr. Lam. “While litho equipment leaders ignore ‘low-volume’, Multibeam sees this segment as a huge opportunity. We support these underserved but fast-growing markets with our innovative, versatile MEHL platform. The full-wafer all-maskless patterning initiative announced today and the Secure Chip ID embedding already underway will lead the charge.”

About Multibeam Corporation

[Multibeam Corporation](#) is a leader in multicolumn electron-beam lithography (MEHL). With a robust IP portfolio comprising 43 patents, Multibeam is building MEHL production systems and developing major applications under DoD contracts. The company is led by Dr. David K. Lam, the founder and first CEO of Lam Research. Widely recognized as a key contributor to the growth of the semiconductor industry, Dr. Lam was inducted into the Silicon Valley Engineering Hall of Fame in 2013.

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