

Luminescent set to replace resolution enhancement technology software with Inverse Lithography Technology (ILT)

New Explorer Product Now Shipping to Facilitate Transition to ILT

MOUNTAIN VIEW, Calif., Oct. 3, 2005—Luminescent Technologies, Inc., a provider of lithography enhancement products to the semiconductor industry, today launched its Inverse Lithography Technology (ILT) platform—a breakthrough replacement for Resolution Enhancement Technology (RET) software. ILT enables superior pattern fidelity, expanded lithography process windows and reduced mask preparation cycle time. It first evaluates the desired on-wafer pattern and then mathematically determines the mask features needed to produce the intended silicon outcome. Wafer results from multiple semiconductor manufacturers have successfully proven ILT's superior capabilities at 90nm, 65nm and 45nm nodes. Furthermore, as demonstrated on numerous full-chip runs, ILT can print features that RET software cannot.

The first product to deploy Luminescent's pioneering ILT—the Explorer—is now available. Multiple product orders have been received, with shipment to several sites already underway.

Existing resolution enhancement techniques are reaching their practical limits. Integrated circuit (IC) manufacturers are seeking alternatives to overcome the challenges of smaller process windows, higher mask costs and reduced yields, without changing today's design flow and lithography infrastructure. Lithography-related design constraints must be relieved and pattern fidelity must improve, while the unacceptable number of mask re-spins must be reduced or eliminated. Current RET software slows lithography yield ramps and negatively impacts time-to-market of today's ICs.

Inverse Lithography Technology: A Superior Approach

Luminescent's ILT provides a different approach to accelerate lithography yield ramps and reduce time-to-silicon. The most common RET software creates mask designs by moving design edges to approximate the intended on-wafer result. Requiring multiple iterations, this ad hoc technique is time consuming, labor intensive (extensive scriptwriting and verification) and fundamentally unreliable. Several mask file re-spins typically occur before chipmakers can confidently commit a design to mask and silicon.

In contrast, Luminescent's ILT methodology starts with the desired on-wafer result and reduces the photolithography process to a series of mathematical equations. By solving the equations, the on-wafer result is inverted to determine the optimal mask patterns needed to produce the desired outcome. Since ILT analyzes the entire image and not just the design edges, it generates a globally optimized mask design in a single pass that is pre-verified and correct by construction. By its nature, inversion is pattern-independent and can be applied off-the-shelf to any design, thereby eliminating the need for extensive scriptwriting that burdens existing RET software.

The Explorer

Luminescent's first product—the Explorer—combines sophisticated software and hardware to provide complete ILT capability for small blocks. In a radical improvement over conventional reticle correction, the Explorer creates masks that print well at nominal exposure/defocus and at multiple additional exposure/defocus anchor points. An intuitive topology-based specification of wafer image quality provides superior ease of use for lithographers. Featuring comprehensive process window analysis, the product has a simple interface for illumination optimization and lithographic exploration. It also includes integrated mask compliance features and a selectable e-beam or laser mask output format.

"Today's introduction of ILT marks an important milestone for lithography technology," said Luminescent's chief executive officer, David Fried. "ILT represents a breakthrough solution that is primed for immediate application and is easily extendible to future nodes. The semiconductor manufacturers using ILT report significant improvements over existing RET software—especially in the critical areas of process windows and pattern fidelity."

About Luminescent Technologies, Inc. Luminescent provides lithography technology to the semiconductor industry. The company's Inverse Lithography Technology (ILT) products turn design intent into production reality by improving on-wafer pattern fidelity, expanding process windows and accelerating time to silicon. Luminescent is a privately held, venture-backed company based in Mountain View, Calif.

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