

Lithography and Photoablation

Large-Area, High-Resolution Patterning System for Electronic, Opto-Electronic and MEMS Devices

The Anvik HexScan® 2020 SXE patterning system represents a revolutionary advance in large-panel microlithography and photoablation systems. It offers the attractive combination of high-resolution *projection* patterning in photoresists and photoablation structuring of polymers, polymer composites and thin-film metals, making it the ideal patterning tool for high-volume, cost-effective production of advanced microelectronic modules, optoelectronic devices, communication electronics, and displays. With its unique variable-area substrate tiling (VAST™) technology, which enables processing of different substrate sizes using several convenient mask sizes, this low-cost system serves both as a volume-production lithography system, and as a versatile development tool for prototyping a wide range of microelectronic and optoelectronic devices. The modular design of the system also provides equipment upgradability and choice of user-specified system configurations suitable for different feature resolutions and panel sizes, including roll-to-roll processing.

Large-Format Substrate Handling

- Designed for projection patterning on substrates of sizes from 50 x 50 mm to 500 x 500 mm
- Capable of handling flexible and rigid substrates of a wide range of thicknesses
- Automatic, high-precision mask-substrate and layer-to-layer alignment

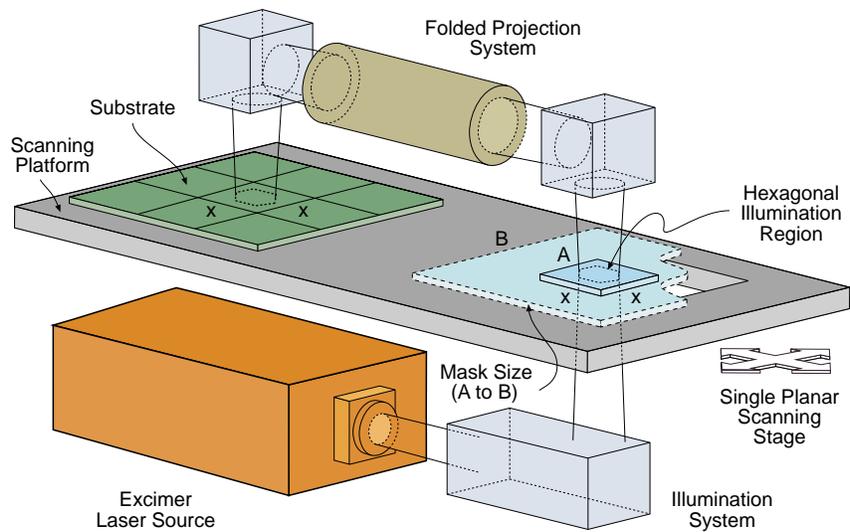


Superior Performance

- Patented seamless scanning technology delivers high resolution over entire panel
- High resolution (2 μm) enables excellent line-edge definition and ablation profiles
- Projection imaging eliminates limitations of contact/proximity printing and direct raster writing

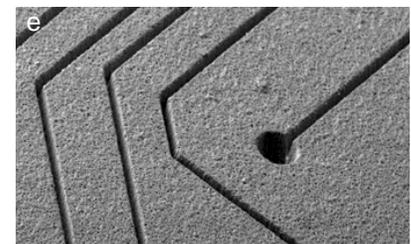
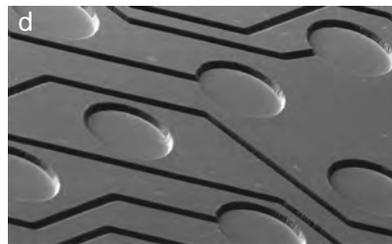
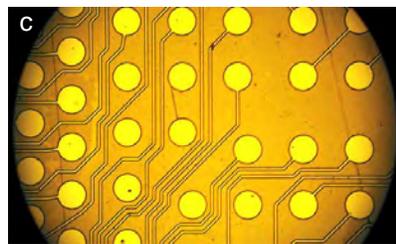
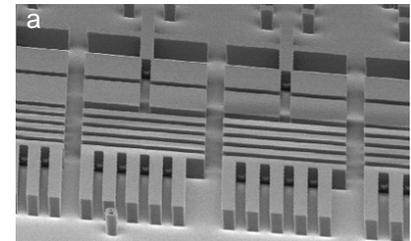
Versatility and Upgradability

- Ideal for process development and materials investigations for diverse applications
- Capable of patterning in conventional resists as well as photoablation in polymeric dielectrics
- Available with Anvik's patented Variable-Area Substrate Tiling (VAST™) technology
- Upgradability of key subsystems extends system life over multiple research frontiers



A technical schematic of the Anvik HexScan[®] 2020 SXE large-area projection lithography system, showing a single planar stage, an excimer laser illumination system, and a folded projection imaging system. Also illustrated is the variable-area substrate tiling (VAST[™]) capability, which allows different substrate sizes to be patterned using various mask sizes.

Demonstrated results: (a, b) Lithographically patterned images in conventional resists on large-area substrates. (c-e) Trenches and vias patterned in various polymeric dielectrics by high-speed photoablation.



HexScan[®] 2020 SXE Specifications

Imaging Technique	Seamless scanning projection
Resolution	2 μm for photolithography 5 μm for photoablation
Depth of Focus	33 μm for photolithography 80 μm for photoablation
Substrate Type	Rigid or flexible (50 μm to 2 mm thick)
Substrate Size	50 x 50 mm to 500 x 500 mm, any shape
Exposure Source	KrF excimer laser (248 nm)
Exposure Fluence	Up to 400 mJ / cm ²
Alignment Precision	1 μm
Alignment System	Automatic
Image Scale Compensation	Handles substrate distortions up to 1000 ppm
Substrate Handling	Variable-area substrate tiling (VAST [™]), handles various substrate and mask sizes



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