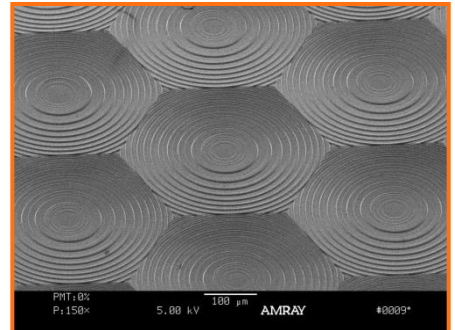
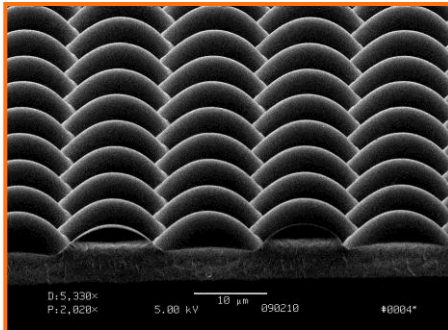
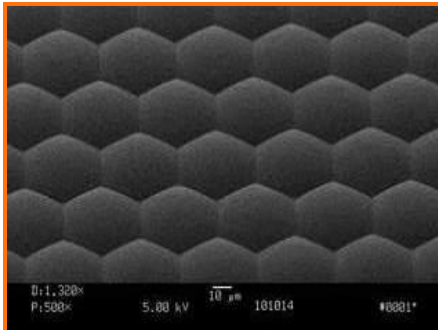


Microlens Arrays



Prototype to Production without Compromising Quality!

**Your single source for custom design, prototyping
and manufacturing.**

The Holographix Advantage:

- ▣ **Cost-Effective Solution:** *Proprietary replication material and processing technology is scalable for volume manufacturing.*
- ▣ **Lenslet Material:** *Refractive indices ranging from 1.4 to 1.68 are available.*
- ▣ **Wafer-Level Production:** *Up to 300mm diameter wafers are supported.*
- ▣ **Reflow Compatible:** *Suitable for assemblies requiring solder reflow.*

Capabilities and Resources

MicroLens Array Design and Development

Holographix possesses a solid foundation in the design, development and manufacture of nano- and micro-patterned surface relief structures. This knowledge allows us to help you design your microlens array component or sub-assembly for both optimum performance and manufacturability. To ensure that the most effective solutions are developed, Holographix uses several different design and analytical software tools to model and optimize microlens array designs.

MicroLens Array Master Patterning

Holographix works closely with patterning industry leaders, often pushing the boundaries of what is possible in microlens array mastering. We offer access to a full range of advanced mastering options including greyscale lithography, laser writing, and e-beam writing, ensuring that the proper technology is used for your application.

Quality Assurance

Over the past 25 years, Holographix has earned a reputation for providing our customers with outstanding development and manufacturing services for custom surface relief patterns. Custom binary and blazed gratings, microlens arrays, and diffractive waveguides are our main focus. With a company-wide emphasis on quality, Holographix maintains a rigorous ISO 9001:2008 certified Quality Assurance program.

Standard Microlens Array Properties

| | |
|-----------------------------|--|
| Array Size: | up to 300mm diameter or square |
| Individual Lenslet Size: | <1 μ m to >1mm |
| Individual Lenslet Profile: | refractive or diffractive aspheric, conic, or anamorphic |
| Individual Lenslet Sag: | <1 μ m to >100 μ m |
| Array Distribution: | square, hexagonal, randomized or unique |
| Fill Factor: | up to 99% |
| Optical Transmission: | >99% from 420 nm to 2.2 μ m |
| Temperature Range: | -50° C to 260° C (solder reflow compatible) |
| Chemical Resistance: | most common solvents |

Replication Benefits

Holographix offers high fidelity, custom replicated microlens array solutions. Our proprietary replication process provides a cost-effective alternative to competing manufacturing processes. The inherent repeatability of the replication process also eliminates inconsistencies associated with other forms of production.

Replication Facilities

Production of replicated components and assemblies requires a significant investment in capital equipment. Our 15,000 square foot facility in Hudson, MA is equipped with:

- 5 Class 1000 cleanrooms
- 4 Custom UV replication labs
- March AP-1000 plasma treatment system
- Denton Infinity 22 thin-film box coater
- 2 Denton sputtering systems
- 4 ADE and Zygo phase shifting interferometers
- Cary 500 UV-Vis-NIR spectrophotometer
- 2 Mitutoyo Vision Systems
- Amray 3600 Scanning Electron Microscope (SEM)
- AFM Workshop TT - Atomic Force Microscope (AFM)
- ADT 7100 Dicing System

Production Capabilities

Holographix specializes in the manufacture of custom replicated components and assemblies in production quantities. The inherent speed of our cold-forming replication process allows us to offer economical volume pricing without the associated high tooling costs. Whether your production requirements call for 100 individual components or 100,000 wafers, we can offer you a cost-effective solution.

Please contact us via phone, e-mail, or fax with any inquiries you may have regarding our services. We will be happy to assist you!

For a more comprehensive overview of Holographix and our technology, please visit our website below.

www.holographix.com

