

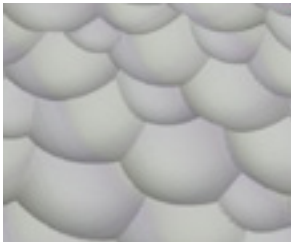
NanoSculpt™ Solution Suite

3D Microstructures and Sculpted Patterning

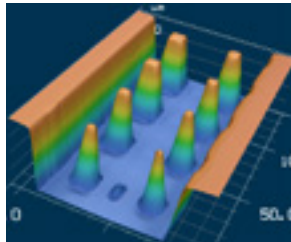
Many new products require innovative 3-Dimensional patterning to create unique surface properties and textures. The IGI NanoSculpt™ Solution Suite can be used to produce a wide range of micro-optic and nano-texture products. Diverse pattern characteristics are created using a variety of techniques.

NanoSculpt Technology

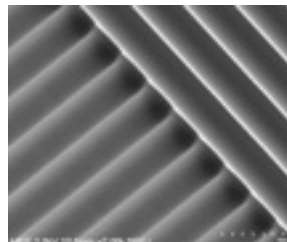
- Laser, E-Beam, DUV, & Other Lithography Processes
- Thermal & Imprint Technologies
- Unique Material Applications & Combinations
- Coatings & Oxides



Random Diffuser



40 Micron Posts



Lenticular Lens



Rotated Lens

Industries That Use NanoSculpt Solutions

- MEMS
- Life Sciences
- Security
- Semiconductor
- Optics
- Aerospace
- Roll-to-Roll Materials
- Biotechnology

NanoSculpt Applications

Surface Textures - anti-reflective, self cleaning, self sticking, and other textures both functional and decorative

Micro-Optics - both spherical and aspherical micro lenses, micro mirrors, gratings, and light diffusers.

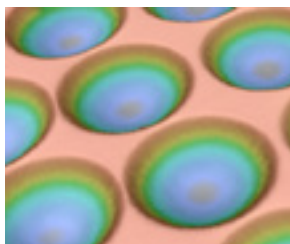
Gratings - unique configurations can be achieved.

Bio-Mimicking Structures - imitate nature to create complex microfluidic and biological surface treatments

Microtext - embed text in structures for tracking and security



Aspherical Lens



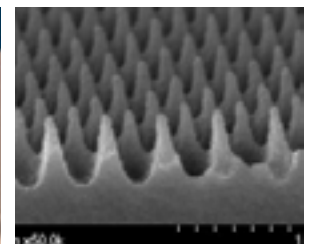
Spherical Lens



Micro Text



Micro Mirror



Moth's Eye Structure



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NanoSculpt Specifications

IGI collaborates with our customers across many industries to take advantage of the power of NanoSculpt™ technology. Your project may utilize lenses, prisms, mirrors, posts, peaks, or other structures. We can share reference designs that made seemingly impossible applications possible. IGI supplies shims, molds, inserts, and stamps, which are used for embossing, injection molding, imprinting, and other applications.

The NanoSculpt Solution Suite capabilities will vary dependent on the structure of the 3D pattern, resolution required and materials used. The first step to effectively use NanoSculpt Solutions is to conduct a project consultation with the IGI Team. The NanoSculpt Solutions Suite encompasses the following features and specifications:

Features	Micro-structures	Nano-structures
Minimum Structure	1um	200nm
Structure Height	to 100um	to 500nm
Surface Roughness	to 30nm	to 5nm
Deviation from Nominal Shape	250nm or better	25nm or better
Patterned Area	to 800mm	To 700mm
Structures	Polymers of specific characteristics or in nickel 100-300um	
Substrates	Flat - imaged cylinder - and other 3D shapes	
3D Products	Stamps & Molds - Shims - Masters - Sleeves - Rolls	

NanoSculpt Consulting

IGI works closely with our customers around the world to supplement their engineering skill sets to accelerate project schedules and reduce risk. Utilize our expertise in various project phases: ideation, product design, manufacturing of prototypes, and high volume reproduction.

To realize your new product innovation contact sales@igi.com to get started.

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