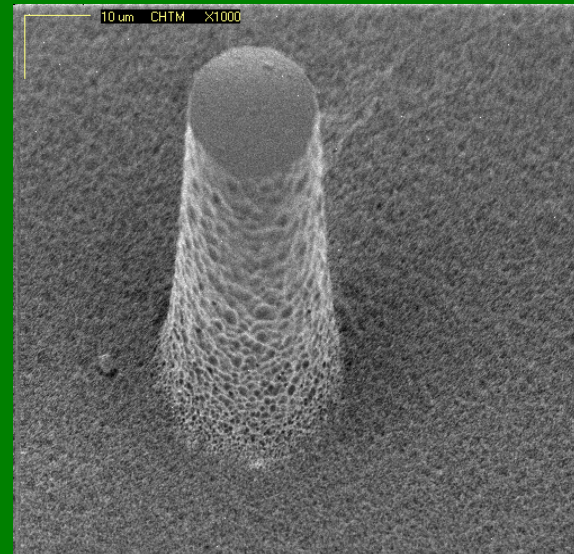
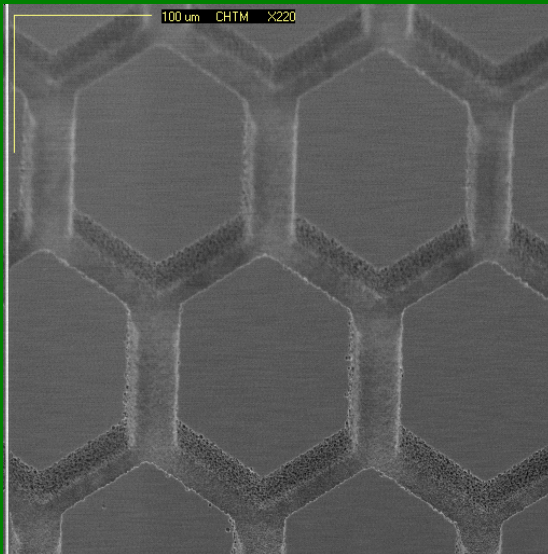


*Custom OEM Design Rules
for
Micropillar Fabrication in
APEX™ Glass-Ceramic*

Why Glass Micropillars?

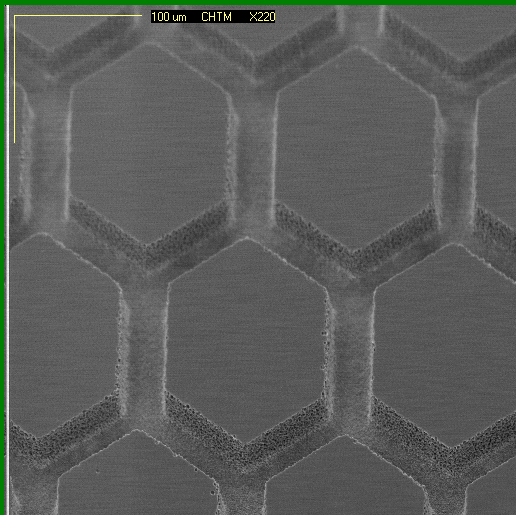
Micropillar technology allows for significantly improved solid phase kinetics by minimizing effects of diffusion. In Z-SLIDE™ assays, micropillars are placed into the center of the fluidic sample as opposed to traditional microarray approaches which place the assay on the bottom of the fluidic sample. This enables Z-SLIDES™ to be used for both high throughput and high content applications.

Life Bioscience's APEX™ Glass-Ceramic material enables the precision engineering of a wide variety of shapes in Micropillar formats such as round, square, rectangle, oval, diamond, triangle, hexagons, or other custom geometries in glass.



The tops of the Micropillars will all be at the same plane as the top of the 1mm microscope slide no matter what height they are.

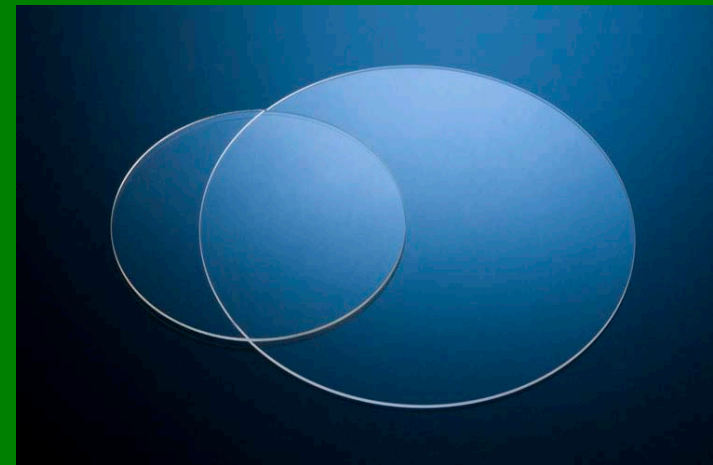
This allows you to create an array of Micropillars that control your reagents spot morphology and also set the top of the pillars in an separate plane from the rest of the slide to which enables an optically isolated interrogation of the sample.



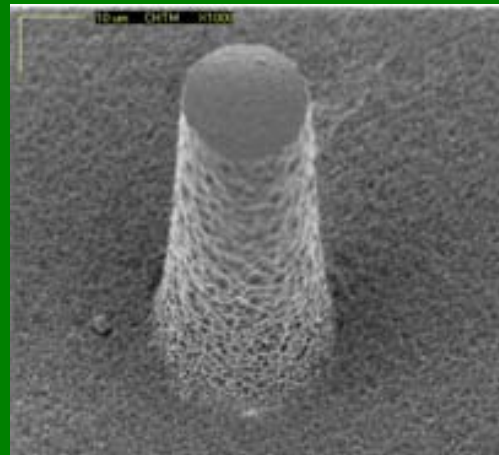
Here is an example of hexagon shaped Micropillars that are 100μm's wide and 25μm's tall. The top plane of the Micropillars are at 1mm above the bottom of the microscope slide.

The standard substrate size is a 75mm X 25mm X 1mm microscope slide.

Other sizes are available.



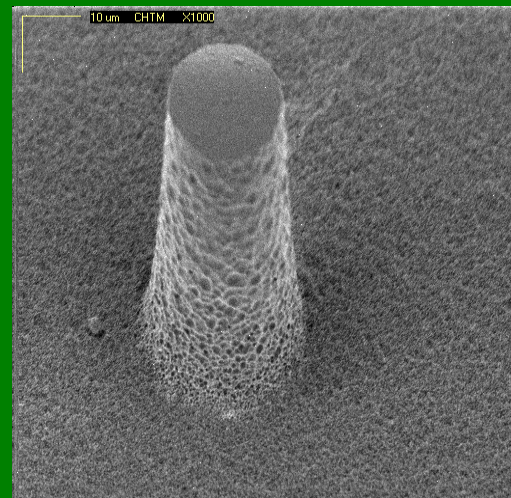
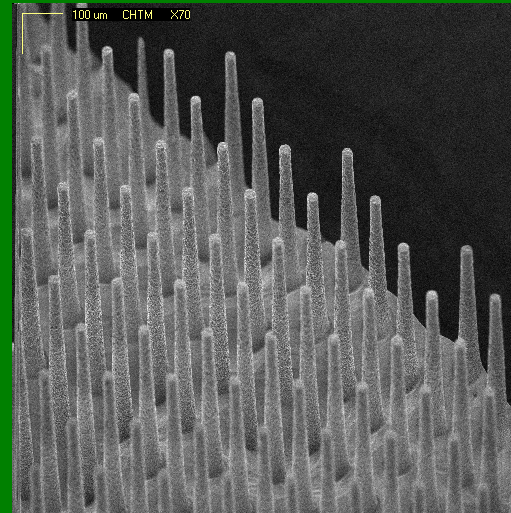
Micropillar diameters from equal to or greater than $10\mu\text{m}$.
(Note: Diameters are measured at the flat top of the micropillar.)
Heights are available from equal to or greater than $10\mu\text{m}$.



In addition, shapes and sizes can be intermixed upon the same substrate. For example, $25\mu\text{m}$ circular pillars may be mixed adjacently with $100\mu\text{m}$ square pillars.

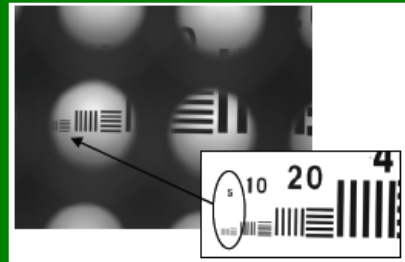
Micropillar pitch and density designs are fully customizable. Feature densities greater than 100,000 on a single microscope slide are possible.

The tip of the Micropillar is flat and smooth, average roughness ~ 31 nanometers, for a predictable surface area that allows for a confined area of immobilization chemistries.



10 μm diameter Micropillar

APEX™ Glass-Ceramic is compatible with most functionalized surface treatments including, nitrocellulose, silane chemistries, and other 3D coatings.

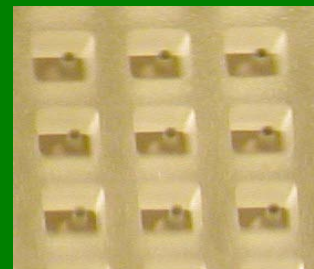
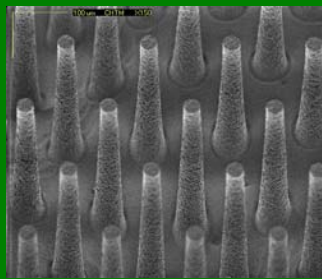
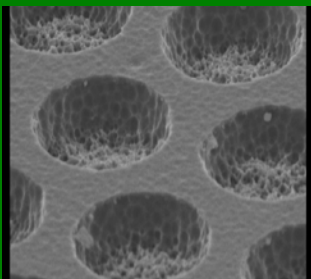


The Micropillar surface is 1mm above the slide base. All numbers shown are in microns.

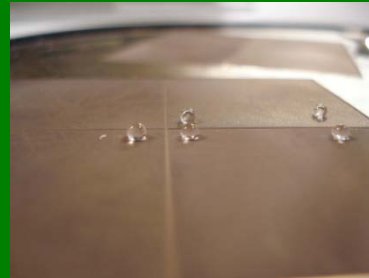
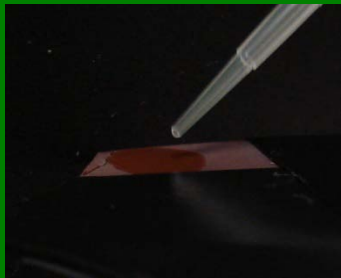
Transparent and opaque Micropillars are customizable upon request. In addition, transparent Micropillars can be optically isolated from each other to prevent optical cross-talk between adjacent Micropillars.

APEX™ Glass-Ceramic is designed to have low auto-fluorescence in the 488, 532, and 635 nm excitation channels.

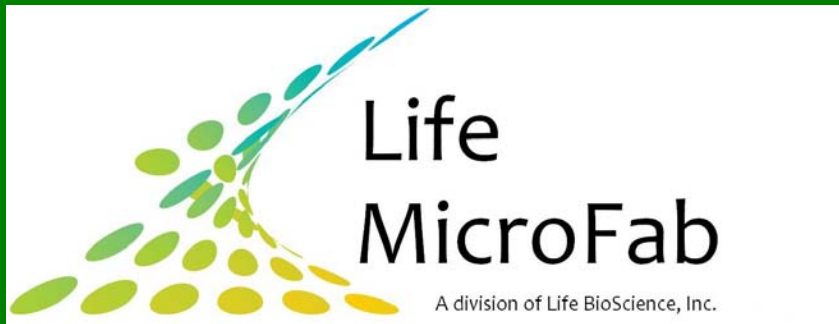
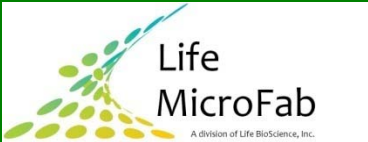
Micropillars may be combined with (-Z) axis features, such as Nanowells, to form complete systems. (LMF has designed the micropillar and nanowell slides to interlock together so assays can be performed.)



APEX™ Glass-Ceramic is an advanced material that offers the ability to change the glass-ceramic surfaces from hydrophilic to hydrophobic regions by design to create extremely hydrophilic regions of ceramic surrounded by less hydrophilic regions of glass. Furthermore, silane chemistry can be used to enhance these two properties.



Optional processing steps include: thin film metal (Au, Ag, Ti), dielectric, and paralyene depositions.



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