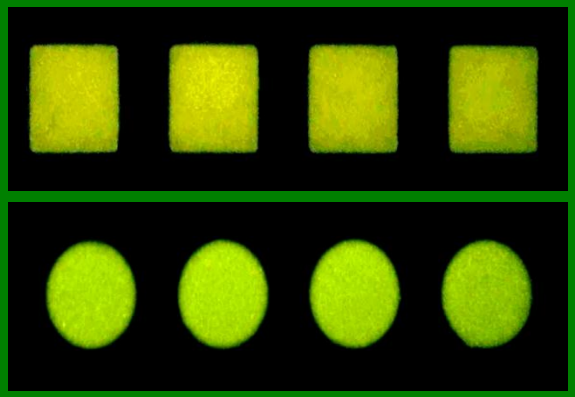
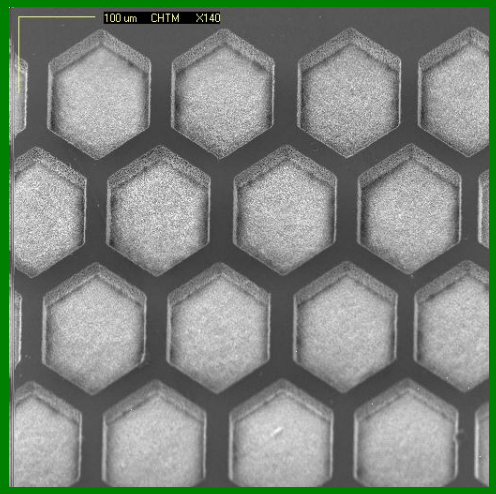
Custom OEM Design Rules for Microwell Fabrication in APEX™ Glass-Ceramic

Why microwells?

Microwells vastly improve a sample's spot morphology while reducing the volume of reagent required for assays. Microwells reduce evaporation rates and eliminate cross contamination and diffusion of probe sites.

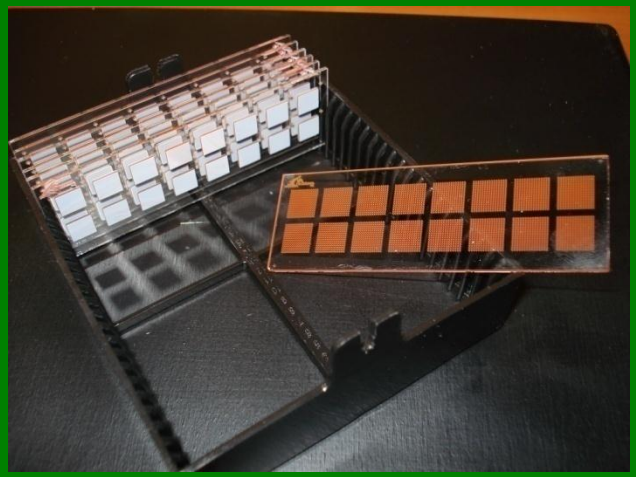
Life BioScience's APEX™ Glass-Ceramic material enables the precision engineering of shapes in well formats such as round, square, rectangle, channels, oval, diamond, triangle, hexagons, or other custom geometries in glass.

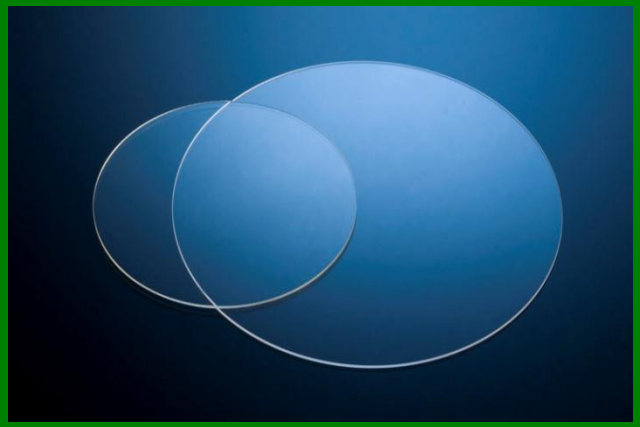




The standard substrate size is a 75mm X 25mm X 1mm microscope slide.

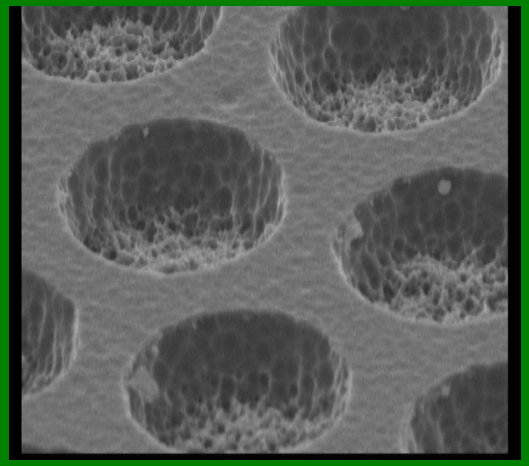
Other sizes are available.





Microwell diameters equal to or greater that 5µm are available.

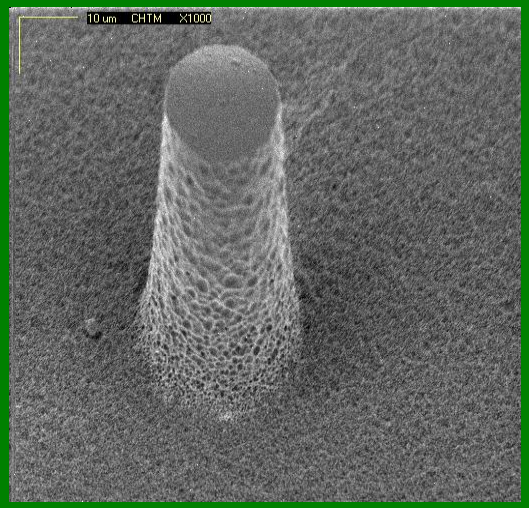
Microwell depths are fully customizable from equal to or greater than 5µm.

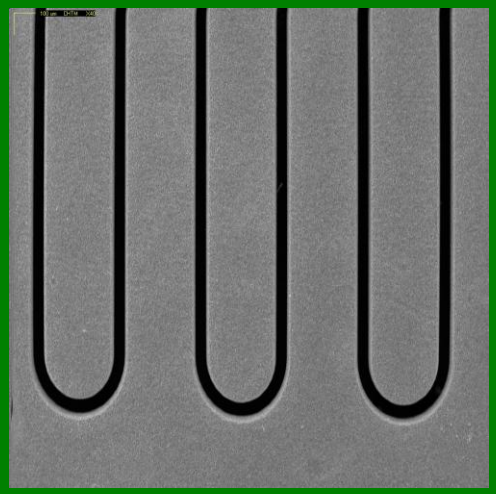


Shapes and sizes can be intermixed upon the same substrate. For example, 25µm circular wells may be mixed adjacently with 56µm square wells.

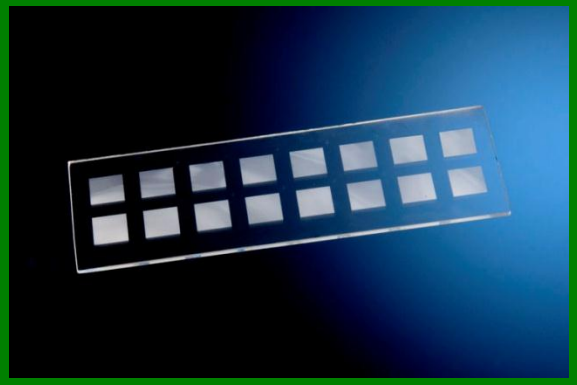
Microwell pitch and density designs are fully customizable, with feature densities in excess of 100,000 wells possible on a single microscope slide

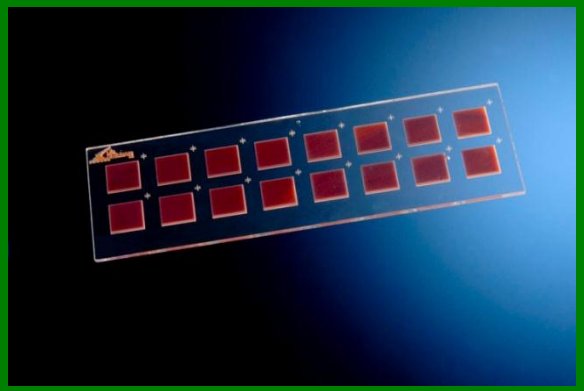
Microwell systems may be engineered for easy integration into a variety of secondary features such as microfluidics, reservoirs, micropillars and electronics among others.

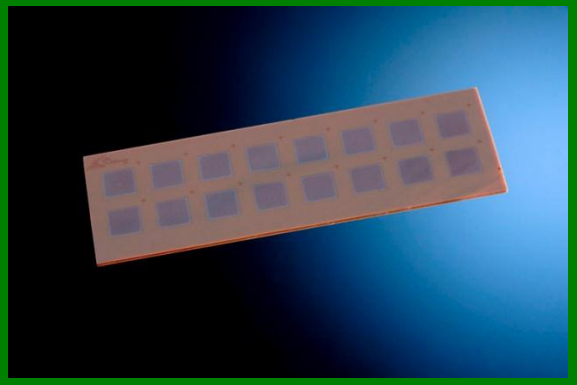




Transparent and opaque microwells are customizable upon request. In addition, the bottoms of transparent microwells can be optically isolated from each other with opaque sidewalls to prevent light scattering between adjacent microwells.





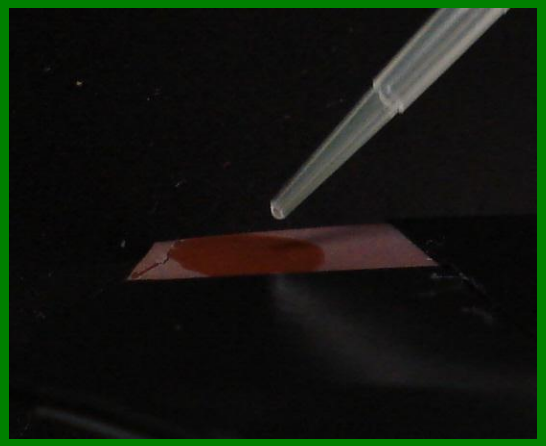


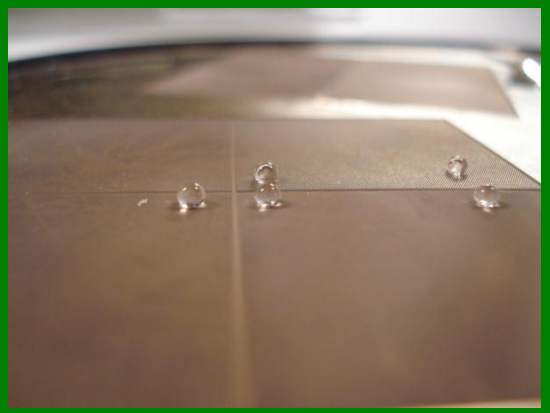
The APEX™ glass-ceramic material is:

a) designed to have low auto-fluorescence in the 488, 532, and 635 nm excitation channels.

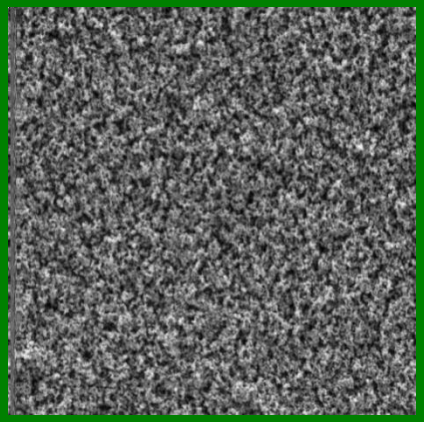
b) compatible with most functionalized surface treatments including, nitrocellulose, silane chemistries, and other 3D coatings.

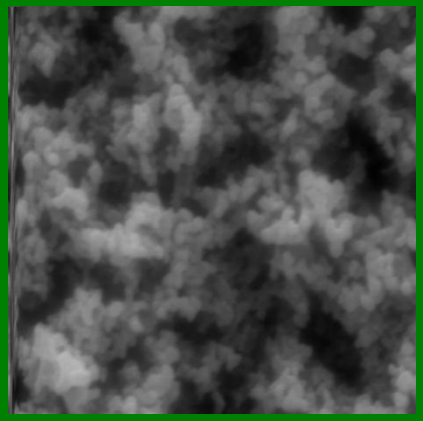
c) an advanced material that offers the ability to change the glass-ceramic surfaces from hydrophilic to hydrophobic regions by design to create extremely hydrophilic regions of ceramic surrounded by less hydrophilic regions of glass. In addition, silane chemistry can be used to enhance these two properties.





APEX™ Glass-Ceramic is non-porous material with a tailor-able surface roughness from smooth (~31 nanometers) to highly rough 3D surface that is repeatable from microwell to microwell.





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

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