



## TECHNOLOGY NEWS - Vol. 5

### *Ultra-Thin Glass, Fused Silica, Ceramics and Sapphire*

Building on nearly 40 years of experience in processing materials to ultra-thin thicknesses, Valley Design has leveraged this knowledge to now produce thinner parts than have previously been available. In 1cm geometries, Silicon can be thinned and polished to 15-20um thick, Fused Silica to 10um thick, Aluminum Nitride to 15-20um thick, Glass to 15-20um thick and 96%-99.8% Alumina to 25um thick. In Sapphire, A-plane can be processed to 25um thick, R-plane to 50um thick, and C-plane to 75um thick. Also, Valley has available standard and custom sized optical glass wafers and substrates, many from stock. Sized from 1" square or diameter up to 450mm diameter, these glass materials include Borofloat, B270 glass, D263, Eagle XG, Gorilla Glass, Schott Supremax and Xensation.

[www.ultra-thin.com](http://www.ultra-thin.com)

[www.valleydesign.com/ultra-thin-sheet-glass.html](http://www.valleydesign.com/ultra-thin-sheet-glass.html)

[www.valleydesign.com/opglass.html](http://www.valleydesign.com/opglass.html)



### *Precision Lapping and Polishing of HVOF WC-Co Gates and Valves*

Tungsten Carbide Cobalt (WC-Co) coatings deposited by High Velocity Oxy-Fuel (HVOF) produce very dense porosity and wear resistant surfaces making them ideal for high pressure valve applications. However, as coated, the WC-Co surfaces are not flat, smooth or parallel. These coated gate and valve surfaces can be lapped and polished by Valley Design, thereby improving the performance, wear resistance and longevity of the parts. Achievable specifications are flatness to 1-2 light bands depending on geometry, polished to 1-2u" Ra, virtually scratch-free, and parallel to 0.0005" (12.5um).

For more details, go to [www.valleydesign.com/HVOF-WC-Co.html](http://www.valleydesign.com/HVOF-WC-Co.html)



## 4 Axis CNC Micromachining Update

NEW! With an optical transmission part probing measurement system installed in our 4 Axis Haas CNC equipment, in cycle gauging, component setting and inspection can be performed directly on-machine. Unidirectional repeatability is 1 um.

Our CNC department has recently produced some difficult and complex parts:

- 99.7% Alumina calibration plates 12" diameter x .200" thick, polished both sides flat and parallel to 2um over the entire 12" diameter surface, with a central 6" square cut out and holes positioned and drilled within 2um
- Aluminum Nitride electrical insulators .500" thick with .025" diameter holes .250" deep
- Silicon 6" diameter with 5.96" inside diameter x .040" deep pockets, creating a .020" wide outer diameter rim

With our 4 Axis Haas CNC equipment, we can machine complex shapes and features with tight tolerances, which if needed, can then be lapped or polished all under the same roof. Features include pockets, channels, slots, cavities, grooves, holes, edge and corner chamfers, radii and steps. In addition, Valley's process produces the most chip-free edges, holes and features available.

Contact us for all your CNC micromachining needs:

[www.valleydesign.com/micro-machining.htm](http://www.valleydesign.com/micro-machining.htm)

[www.aln-cnc-machining.com](http://www.aln-cnc-machining.com)

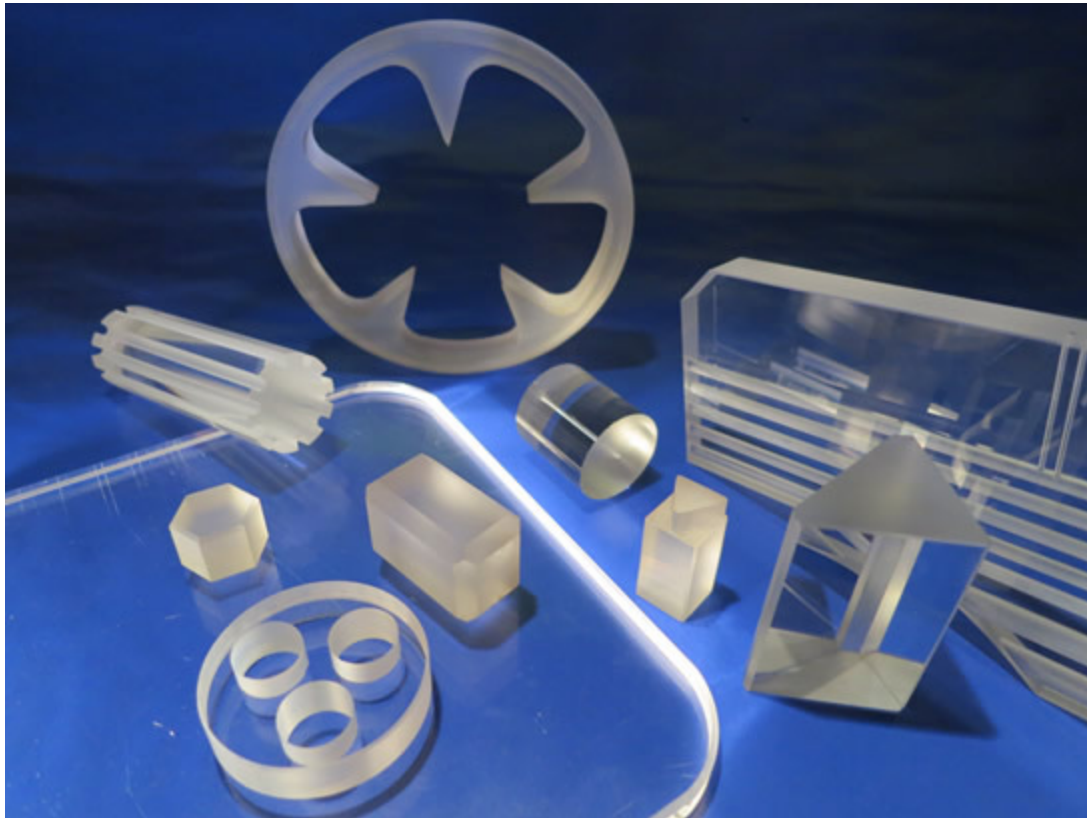
[www.ceramic-cnc-machining.com](http://www.ceramic-cnc-machining.com)

[www.custom-cnc-machining.com](http://www.custom-cnc-machining.com)

[www.fused-silica-cnc-machining.com](http://www.fused-silica-cnc-machining.com)

[www.glass-cnc-machining.com](http://www.glass-cnc-machining.com)

[www.quartz-cnc-machining.com](http://www.quartz-cnc-machining.com)



To learn more about our diverse technical capabilities, visit [www.valleydesign.com](http://www.valleydesign.com).