Anisotropic double glass components

Is etching anisotropic?
This etching is anisotropicdue to the varying etching rates of the modied region and pristine glass . The modied region can be etched entirely away in just a few minutes. Subsequently,a hemispherical cave is formed on the glass surface through continuous isotropic etching initiated from the micro pit,as shown in Fig. A2a.

What is laser-guided anisotropic etching (lgae)?
Based on our discovery of a new phenomenon,where laser modified-lines transform isotropic pristine glass etching to an anisotropic process guided by directions along modified tracks,we develop a laser-guided anisotropic etching (LGAE) method,presenting a significant advancement in the efficient fabrication of micro-engineered glass components.

Does laser-guided anisotropic etching affect the final shape?
The initial laser-machined arc profile is fully etched away during the isotropic etching and does not affect the final shape. At the same time,the steady and continuous laser-guided anisotropic etching can create V-shape tips with stable angles,guaranteeing shape accuracy and thus confirming the robustness of the LGAE method.

Why is etching a quasi-anisotropic mechanism?
This phenomenon can be explained according to the quasi-anisotropic etching mechanism, as shown in Fig. 5e. The etching of the glass and the interfacial layer is isotropic in nature at the microscopic level. Therefore, the contour lines of the etched morphology are composed of isotropic etching tangents at different points.

We study glass behavior in a mixture of elliptic and circular particles in two dimensions at low temperatures using an orientation-dependent Lennard-Jones potential. The ellipses have a mild ...

In this paper, we studied the anisotropic etching behavior guided by laser modification and developed a laser-guided anisotropic etching (LGAE) method to transform the isotropic etching ...

There are various kinds of two-component glass formers. The simplest example is a mixture of two speciesofsymmetricdumbbells[15-17].Recently,westudied a mixture of spheroidal and spherical ...

The anisotropic glass etching in laser-induced selective etching is a commonly observed yet almost overlooked phenomenon. In the case of through glass via (TGV) processing, the modified ...

By exploring the competitive effects of the etching induced by interface between glass and the mask layer, the quasi-anisotropic wet etching mechanism is systematically investigated.

We found that in the case of large and anisotropic molecules, the breakdown of DSE relation depends on the component of anisotropic rotation contributing to the dielectric response. ...

Precision machining of micro-structured glass components is crucial for numerous applications, yet conventional machining methods face challenges in achieving customizable high ...

Micro-engineered glass components play a vital role in various domains, but their full potential remains untapped due to the lack of easily accessible high-precision machining methods for ...

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