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Research Article

nm- and μm -Scale Surface Roughness on Glass with Specific Optical Scattering Characteristics on Demand

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Abstract

During maskless ion etching of amorphous glass, self-organization can arise in certain etch parameter ranges, which leads to dense-lying dots/cones with typical diameters and heights in the 30–300nm range. Another phenomenon, which results in cone sizes around 1 μm or more, is self-masking especially in the case of heterogeneous glasses like borosilicate glass as used in this contribution. Thus, a wide range of characteristic sizes and shapes of individual scatterers on the glass surface, jointly acting as a defined roughness, can be achieved resulting in specific optical scattering characteristics. This contribution gives results on borosilicate thin-glass dry etching. Certain surface morphologies are reported together with experimental results on their optical scattering characteristics.