

ESI Figure 1

Instantaneous (Inst.) relative intensities vs. counting time for K $K\alpha$ X-ray in BHVO-2G, CGSG-5, ATHO-G, CGSG-1, Obsidian, and CGSG-2 reference glasses respectively under 20nA beam current and 15kV accelerating voltage but different beam diameters. Solid lines are from quadratic polynomial fitting to instantaneous points collected at about 0.2 s interval by chart recorder function.

ESI Figure 2

Count rate vs. counting time for Na $K\alpha$ X-ray in BHVO-2G reference glasses under relative high beam conditions (U:15 kV, I:20 nA). Beam diameters are set to 0, 3.5, 7, and 10.5 μm for (a-d) respectively. points were collected at about 0.2 s interval by chart recorder function.

ESI Figure 3

Back-scattered images for BL-5 (a-b) and D2-6 (c-d) hydrous glasses. Compared to BL-5, which is synthesized with Tuttle pressure vessel, there are plenty of microcrystal inclusions, such as quartz, titanomagnetite, feldspar et al., in D2-6 (synthesized with piston cylinder press) matrix.