

Temperature dependence of the OH⁻ absorption in SiO₂ glass and melt to 1975 K

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ABSTRACT

FTIR absorbance spectra of SiO₂ glass containing 1200 ppm OH⁻ groups were recorded in situ to 1975 K. There are only minor changes in peak height to 1700 K, indicating that the molar extinction coefficient measured at ambient conditions, at the peak maximum, is applicable for OH⁻ determination at high temperature. However the integrated peak intensity shows a slight decrease with increasing temperature over the entire temperature range, due to changes in the band shape associated with small modifications to the hydrogen bonding environment and loss of hydrous component at the highest temperatures.