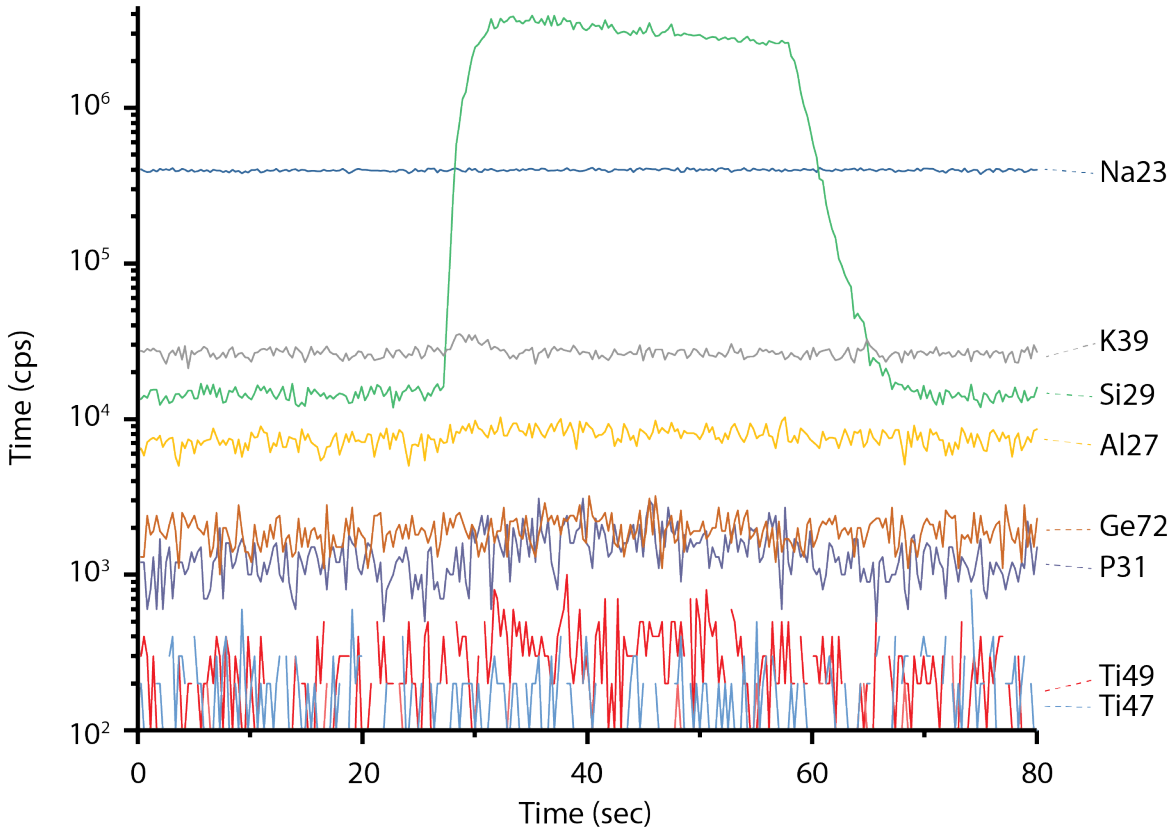
Supplement

LA-ICP-MS analyses of polished quartz slabs was carried out on a Photon Machines 193 nm eximer laser system attached to a Bruker 820-MS quadrupole mass spectrometer. The analytical method involves an 80 um square, a fluence of 8.3 J/cm^2 and a pulse rate of 10 Hz. The mass scan includes ^{7}Li, ^{11}B, ^{23}Na, ^{24}Mg, ^{27}Al, ^{29}Si, ^{31}P, ^{39}K, ^{43}Ca, ^{47}Ti, ^{49}Ti, ^{57}Fe, ^{71}Ga, and ^{72}Ge. The analytical technique employs a He carrier gas (flow rate = 0.7 liters/minute) to transport the analyte from the ablation cell, was mixed with N_2 and transported to the plasma. Dwell time for individual masses was set at 10000 microseconds and the time-resolved spectra was collected over 80 seconds. An ~20 second background counting period and ablation period of 30-40 seconds was used during each analysis. Standard glass NIST612 (Pearce et al., 2007) was used for calibration purposes while ^{29}Si was used as the internal standard. Data reduction was carried out in the Iolite software package (Woodhead et al. 2007; Paton et al., 2011). This technique incorporates a series of 4 quartz unknowns bracketed by a NIST612 standard, with intensity drift corrected using a spline regression.



Supplementary Figure 1: Time-resolved LA-ICP-MS spectra from analysis of the polished Westinghouse quartz starting material.