

Supplement 1. Analyses of NIST glasses and other standards. For session 1, measured ^{28}Si have been scaled to ^{30}Si using a mole fraction ratio of $^{28}\text{Si}/^{30}\text{Si}$ of 29.8 (De Laeter et al., 2003). BDL = below detection limit

Sample	Session	$^{47}\text{Ti}/^{30}\text{Si}$	σ_{mean}	$^{49}\text{Ti}/^{30}\text{Si}$	σ_{mean}	Ti (ppm)	1σ
NIST610	1	8.72E-03	1.32E-05	6.34E-03	9.61E-06	434	15
	1	7.82E-03	4.85E-05	5.68E-03	3.53E-05	434	15
	2	9.02E-03	8.12E-05	6.72E-03	4.11E-05	434	15
	2	9.11E-03	4.32E-05	6.69E-03	3.37E-05	434	15
	3	9.12E-03	3.60E-05	6.79E-03	2.92E-05	434	15
	3	9.12E-03	3.80E-05	6.67E-03	5.13E-05	434	15
NIST612	1	7.37E-04	1.62E-06	5.43E-04	1.96E-06	44	5
	1	7.21E-04	8.18E-06	5.49E-04	8.59E-06	44	5
	1	7.11E-04	8.58E-06	5.37E-04	8.26E-06	44	5
	2	7.40E-04	8.10E-06	5.57E-04	5.73E-06	44	5
	2	7.62E-04	6.03E-06	5.74E-04	6.81E-06	44	5
	2	7.50E-04	6.76E-06	5.53E-04	8.39E-06	44	5
	2	7.34E-04	1.06E-05	5.54E-04	8.89E-06	44	5
	2	7.16E-04	1.17E-05	5.08E-04	8.35E-06	44	5
	2	7.94E-04	1.11E-05	5.89E-04	1.27E-05	44	5
	2	7.06E-04	9.71E-06	5.07E-04	9.46E-06	44	5
	3	7.67E-04	1.18E-05	5.59E-04	9.87E-06	44	5
	3	7.44E-04	1.07E-05	5.63E-04	6.90E-06	44	5
QTip17_light	3	5.14E-04	5.43E-06	3.82E-04	4.39E-06	53	2.9
	3	5.30E-04	6.36E-06	3.98E-04	3.92E-06	53	2.9
QTip17_dark	3	4.18E-04	3.57E-06	3.08E-04	4.97E-06	40	2.4
	3	4.25E-04	5.87E-06	3.20E-04	4.27E-06	40	2.4
Herkimer	1	BDL	-	2.11E-07	2.91E-07	<0.006	-
	1	BDL	-	1.05E-07	1.46E-07	<0.006	-
	2	4.30E-08	2.44E-08	3.10E-08	2.35E-08	<0.006	-
	3	2.43E-08	1.71E-08	3.56E-08	2.03E-08	<0.006	-

Sample	ID	Type	Session	Area ID	Vein #	g.s.	g.b.?	²⁷ Al/ ³⁰ Si	1σ	⁴⁴ Ca/ ³⁰ Si	1σ	⁵⁶ Fe/ ³⁰ Si	1σ	⁴⁷ Ti/ ³⁰ Si	1σ	⁴⁸ Ti/ ³⁰ Si	1σ	⁴⁹ Ti/ ³⁰ Si	1σ	⁴⁷ Ti (ppm)	1σ	⁴⁹ Ti (ppm)	1σ	T (°C)	1σ	P (kbar)	1σ
148d	GBN48	q	4	-	-	246	n	6.36E-03	3.79E-04	7.35E-05	5.21E-06	-	-	1.52E-04	2.39E-05	-	-	1.16E-04	1.83E-05	16.13	2.59	16.83	2.72	500.0	8.2	5.5	0.48
148d	GBN49	q	4	-	-	267	n	3.13E-01	4.09E-02	6.30E-05	1.75E-05	-	-	8.89E-04	1.00E-04	-	-	6.42E-04	7.42E-05	94.14	11.07	93.46	11.23	694.0	9.0	7.6	0.53
148d	GBN50	q	4	-	-	49	n	1.17E-02	2.56E-03	2.92E-05	2.81E-06	-	-	1.92E-04	2.71E-05	-	-	1.51E-04	2.29E-05	20.31	2.94	22.01	3.42	523.0	8.1	5.7	0.47
148d	GBN51	q	4	-	-	267	n	6.28E-03	2.46E-04	2.98E-05	3.14E-06	-	-	3.35E-04	2.32E-05	-	-	2.53E-04	2.13E-05	35.52	2.72	36.88	3.33	577.2	5.0	6.3	0.30
148d	GBN52	q	4	-	-	41	n	1.13E-01	4.17E-03	9.96E-05	4.79E-06	-	-	6.39E-05	3.20E-06	-	-	4.78E-05	2.36E-06	6.76	0.40	6.96	0.41	429.1	2.5	4.7	0.15
148d	GBN53	q	4	-	-	267	n	7.12E-03	5.26E-04	3.01E-05	2.88E-06	-	-	2.26E-04	1.41E-05	-	-	1.68E-04	1.28E-05	23.94	1.68	24.51	2.03	536.0	4.2	5.9	0.25
148d	GBN54	q	4	-	-	267	n	6.36E-03	1.41E-03	3.09E-05	2.35E-06	-	-	2.59E-04	1.25E-05	-	-	1.93E-04	8.44E-06	27.45	1.59	28.13	1.54	549.6	3.2	6.0	0.19
148d	GBN55	q	4	-	-	246	n	8.78E-03	2.19E-04	3.30E-05	1.75E-06	-	-	2.05E-04	1.36E-05	-	-	1.54E-04	1.11E-05	21.71	1.60	22.43	1.77	527.0	4.1	5.8	0.24
148d	GBN56	q	4	-	-	-	n	2.77E-01	2.32E-02	1.52E-04	7.54E-06	-	-	1.31E-04	9.21E-06	-	-	9.97E-05	6.69E-06	13.92	1.08	14.52	1.08	487.1	3.7	5.3	0.22
148d	GBN57	q	4	-	-	103	n	1.09E-02	2.07E-04	4.61E-05	4.73E-06	-	-	1.16E-05	4.16E-07	-	-	7.42E-06	4.08E-07	1.23	0.06	1.08	0.07	318.5	1.7	3.5	0.10
148d	GBN58	q	4	-	-	103	n	2.20E-03	2.92E-05	2.54E-05	2.47E-06	-	-	3.63E-06	2.61E-07	-	-	2.34E-06	2.58E-07	0.38	0.03	0.34	0.04	263.7	2.5	2.9	0.15
148d	GBN59	q	4	-	-	246	n	8.69E-02	1.29E-02	4.15E-05	5.23E-06	-	-	4.10E-04	2.75E-05	-	-	2.97E-04	2.14E-05	43.38	3.24	43.30	3.42	597.1	4.8	6.6	0.28
148d	GBN60	q	4	-	-	246	n	5.01E-03	4.45E-04	3.84E-05	2.50E-06	-	-	3.97E-04	1.78E-05	-	-	2.92E-04	1.59E-05	42.06	2.33	42.52	2.70	594.3	3.7	6.5	0.22