

Table S1. EMP analyses of Ti-oxynitride inclusions

mount/grain	Ti weight %	Cr	V	Si	C	N	O	Total
Mt 1 1124/2-1	76.7	0.00	0.02	0.00	3.8	14.7	5.8	101.1
Mt 1 1124/2-2	77.0	0.08	0.35	0.01	8.0	11.9	4.2	101.5
Mt 1 1124/2-3	76.8	0.00	0.01	0.00	3.5	14.7	5.8	100.9
1124A/3	76.3	0.00	0.15	0.01	0.0	16.7	8.9	102.1
1124A/3	76.8	0.02	0.09	0.00	0.0	16.2	8.1	101.2
1124A/3	76.2	0.00	0.02	0.01	0.0	16.7	9.5	102.4
1124A/3	73.7	0.00	0.05	0.11	1.0	14.5	10.9	100.3
1124A/3	76.9	0.00	0.12	0.01	0.0	16.5	8.7	102.3
1124A/10	73.9	0.00	0.12	0.00	0.0	16.3	13.7	104.1
1124A/11	77.3	0.00	0.13	0.01	0.0	17.1	7.0	101.5
1124A/11	77.4	0.03	0.10	0.01	3.0	14.2	6.2	100.9
1124B/15	75.0	0.00	0.07	0.02	2.5	14.2	9.4	101.3
1124B/15	74.6	0.00	0.09	0.02	2.0	14.5	9.0	100.2
1124B/7	75.2	0.00	0.48	0.24	6.0	9.7	7.7	99.2
1124B/7	74.3	0.00	0.24	0.01	5.2	12.8	9.5	102.1
1124B/3	72.2	0.22	1.07	0.37	2.5	15.3	7.2	99.4
1124B/3	76.5	0.09	0.22	0.01	7.0	12.9	5.1	101.8
1124C/1	74.5	0.02	0.07	0.01	2.0	12.5	8.5	97.5
1124C/1	76.9	0.01	0.07	0.01	4.0	13.8	4.8	99.6
1124C/1	76.9	0.03	0.07	0.01	5.0	11.7	5.0	98.8
1124C/3	75.9	0.04	0.12	0.01	0.0	16.6	8.4	101.0
1124C/3	75.1	0.00	0.06	0.02	0.0	15.0	10.9	101.1
1124C/3	76.8	0.07	0.34	0.00	0.0	15.7	6.7	99.6
1124C/3	76.8	0.04	0.23	0.00	0.0	15.5	7.3	99.9
1124C/4	75.2	0.01	0.15	0.00	1.0	17.3	5.5	99.1
1124C/4	74.4	0.02	0.06	0.01	0.0	15.2	10.0	99.7
1124C/8	76.0	0.00	0.21	0.00	0.0	17.4	4.1	97.7
1124C/8	74.1	0.00	0.10	0.01	0.0	15.3	10.3	99.8
1124C/9	71.8	0.00	0.01	0.03	0.0	12.8	12.1	96.8
1124C/9	74.2	0.02	0.08	0.01	0.0	14.9	10.8	99.9
1124C/9	73.8	0.00	0.07	0.01	0.0	14.6	11.0	99.5
1124C/9	72.3	0.03	0.07	0.02	1.0	13.9	12.0	99.3
1124C/9	73.0	0.01	0.06	0.02	0.3	14.0	11.5	98.9
1124D/1	75.4	0.00	0.10	0.01	2.0	13.1	8.2	98.9
1124D/1	75.6	0.01	0.10	0.01	1.7	15.3	8.2	100.8
1124D/1	73.8	0.05	0.03	0.02	0.0	14.1	11.8	99.8
1124D/2	76.1	0.00	0.16	0.02	0.0	18.0	4.5	98.8
1124D/2	72.7	0.06	0.11	0.03	2.5	13.9	10.6	99.9
1124D/2	74.8	0.00	0.09	0.02	1.7	14.5	8.0	99.1
1124D/2	72.1	0.00	0.19	0.30	2.1	12.8	10.1	97.6

1124D/4	73.3	0.00	0.17	0.06	2.0	13.9	11.6	101.0
1124E/1	75.6	0.02	0.12	0.01	6.5	12.1	6.3	100.8
1124E/11	76.0	0.05	0.13	0.02	7.5	8.8	7.0	99.5
1124E/11	76.1	0.00	0.07	0.01	9.3	8.2	6.5	100.2
1124E/12	75.0	0.01	0.15	0.01	7.0	14.4	7.0	103.5
1124E/12	73.7	0.00	0.17	0.01	7.0	13.1	9.0	103.1
1124E/12	62.8	0.00	0.10	2.41	6.0	8.0	17.3	96.6
1124E/12	76.4	0.02	0.28	0.00	10.0	12.8	4.0	103.6
1124E/12	75.7	0.04	0.26	0.00	8.5	10.9	4.7	100.1
1124E/12	75.0	0.00	0.10	0.01	2.5	14.9	7.4	99.9
Crn18/479-2	72.2	0.09	0.51	0.67	5.6	12.5	5.4	97.9
Crn18/479-2	73.0	0.04	0.31	0.03	1.5	17.0	6.3	98.6
Crn18/479-2	72.2	0.00	0.28	0.80	1.6	18.8	6.1	99.8
Crn18/479-2	76.1	0.03	0.20	0.00	0.6	20.4	1.7	99.1
Crn18/479-2	71.3	0.00	0.00	0.08	0.8	11.9	14.8	99.0
Crn18/479-2	75.5	0.03	0.00	0.01	1.4	15.5	7.6	100.1
Crn18/479-2	73.3	0.00	0.04	0.09	1.0	13.4	14.2	102.1
Crn18/479-6	76.2	0.00	0.46	0.00	3.0	18.8	2.3	100.9
Crn18/479-6	74.6	0.03	0.50	0.00	3.6	17.3	4.0	100.1
Crn18/479-6	76.2	0.08	0.43	0.00	4.9	16.3	2.8	100.8
Crn18/479-6	76.1	0.00	0.39	0.00	4.4	15.5	2.8	99.2
Crn18/479-7	77.4	0.02	0.06	0.00	5.9	13.6	5.1	102.2
Crn18/479-7	77.2	0.00	0.11	0.01	5.5	12.7	5.4	100.8
Crn18/479-7	76.7	0.01	0.12	0.00	8.5	10.2	6.1	101.7
Crn18/479-7	76.0	0.01	0.12	0.00	7.5	10.1	7.9	101.6
Crn18/479-10	75.8	0.00	0.14	0.02	2.0	19.0	2.0	99.0
Crn18/479-10	76.5	0.00	0.15	0.00	1.5	19.5	1.8	99.5
Crn18/479-14	77.2	0.01	0.08	0.01	6.0	13.1	2.7	99.2
Crn18/479-16	76.4	0.05	0.05	0.01	6.4	13.1	3.3	99.3
Crn18/479-16	77.1	0.06	0.06	0.00	4.3	16.5	2.0	100.1
Crn18/479-19	75.9	0.04	0.23	0.00	6.2	12.5	6.0	100.8
Crn18/479-20	75.5	0.00	0.04	0.01	1.5	18.0	4.5	99.6
Crn18/479-23	76.3	0.00	0.00	0.00	0.6	19.1	3.1	99.1
Crn18/479-23	75.5	0.06	0.33	0.01	0.0	19.4	4.0	99.3
Crn18/479-23	76.7	0.02	0.00	0.01	1.0	18.9	3.8	100.4
Crn18/198-8	72.1	0.00	0.00	0.01	2.5	11.8	12.8	99.3
Crn18/198-5	76.9	0.00	0.11	0.00	5.3	12.2	3.5	98.1
Crn18/479-7	71.7	0.00	0.12	0.20	1.0	12.1	15.0	100.2
Crn18/479-7	74.7	0.00	0.09	0.00	1.2	16.0	7.4	99.4
Crn18/479-7	75.9	0.00	0.09	0.00	2.6	15.3	4.61	100.0
Mt 1/982B-1	75.5	0.00	0.04	0.00	3.5	12.4	9.2	100.6
Mt 1/982B-2	73.7	0.00	0.10	0.20	4.7	9.5	13.2	101.4
Mt 1/982B-3	75.8	0.01	0.17	0.53	7.0	11.1	7.5	102.2

Mt 1/982B-4	74.8	0.09	0.00	0.01	3.4	11.4	11	100.7
Mt 1/982C-5	74.4	0.04	0.30	0.09	0.0	19.0	8.8	102.7
Mt 1/982C-6	74.4	0.00	0.30	0.1	1.0	20.7	3.7	100.3

	Ti atomic %	Cr	V	Si	C	N	O	
Mt 1 1124/2-1	48.1		0.01		9.5	31.6	10.9	sg
Mt 1 1124/2-2	47.4	0.05	0.20	0.01	19.6	25.0	7.7	sg
Mt 1 1124/2-3	48.5		0.01		8.8	31.8	11.0	sg
1124A/3	47.7		0.09	0.01		35.6	16.7	lg
1124A/3	49.1	0.02	0.05			35.4	15.5	lg
1124A/3	47.1		0.02	0.01		35.3	17.6	lg
1124A/3	46.0		0.03	0.12	2.5	31.0	20.4	lg
1124A/3	48.2		0.07	0.01		35.4	16.3	lg
1124A/10	43.3		0.07			32.7	24.0	im
1124A/11	49.4		0.08	0.01		37.3	13.4	cross in pocket
1124A/11	49.4	0.02	0.06	0.01	7.6	31.0	11.8	lg
1124B/15	46.3		0.04	0.02	6.2	30.0	17.4	im +TiB2
1124B/15	46.9		0.05	0.02	5.0	31.1	16.9	cross in pocket+TiB2
1124B/7	48.2		0.29	0.26	15.3	21.2	14.7	silicide + TiB2
1124B/7	44.4		0.13	0.01	12.4	26.1	17.0	cross in pocket
1124B/3	45.6	0.13	0.64	0.4	6.3	33.0	13.6	lg in pocket
1124B/3	46.5	0.05	0.13	0.01	17.0	26.7	9.3	int
1124C/1	49.3	0.02	0.05	0.01	5.3	28.2	16.8	sg
1124C/1	49.8	0.01	0.04	0.01	10.3	30.5	9.3	sg
1124C/1	50.5	0.02	0.04	0.01	13.1	26.4	9.8	sg
1124C/3	48.1	0.02	0.07			35.9	15.9	cross
1124C/3	47.2		0.04	0.02		32.3	20.5	cross
1124C/3	50.9	0.04	0.21			35.5	13.3	cross
1124C/3	50.5	0.02	0.14			34.9	14.4	cross
1124C/4	48.6	0.01	0.09		2.6	38.1	10.6	cf
1124C/4	47.5	0.01	0.04	0.01		33.2	19.1	cf
1124C/8	51.4		0.13			40.1	8.3	cross
1124C/8	46.8		0.06	0.01		33.1	19.8	cross
1124C/9	47.3		0.01	0.03		28.8	23.8	cross
1124C/9	47.1	0.01	0.05	0.01		32.3	20.5	sg
1124C/9	47.2		0.04	0.01		31.8	21.0	sg
1124C/9	46.7	0.02	0.04	0.02		31.0	22.2	cf
1124C/9	46.7	0.01	0.04	0.02	0.6	30.7	22.0	sg

1124D/1	49.2		0.06	0.01	5.2	29.3	16.2	cf
1124D/1	47.5	0.01	0.06	0.01	4.3	32.8	15.3	cross
1124D/1	46.8	0.03	0.02	0.02		30.6	22.4	cf
1124D/2	50.3		0.10	0.02		40.6	8.9	cf
1124D/2	44.9	0.03	0.06	0.03	6.2	29.3	19.6	cross
1124D/2	48.2		0.05	0.02	4.4	31.9	15.4	cross
1124D/2	46.6		0.12	0.33	5.4	28.2	19.3	cross
1124D/4	44.8		0.10	0.06	4.9	29.0	21.2	cross
1124E/1	46.7	0.02	0.07	0.01	16.0	25.5	11.6	sil+TiB
1124E/11	48.3	0.03	0.08	0.02	19.0	19.2	13.3	sil
1124E/11	47.4		0.04	0.01	23.1	17.4	12.1	lg in pocket
1124E/12	42.5	0.01	0.08	0.01	15.8	27.9	13.6	sg
1124E/12	42.5		0.09	0.01	16.1	25.8	15.5	cf
1124E/12	36.9		0.06	2.42	14.1	16.1	30.5	cf
1124E/12	44.3	0.02	0.15		23.1	25.4	7.0	sil
1124E/12	46.7	0.02	0.15		21.0	23.2	8.8	sil
1124E/12	47.4		0.06	0.01	6.3	32.2	14.0	TiB2, sil
Crn18/479-2	45.8	0.05	0.3	0.71	14.1	27.1	10.2	lg
Crn18/479-2	46.6	0.05	0.19	0.03	3.8	37.2	12.0	inclti
Crn18/479-2	44.4		0.16	0.84	3.9	39.4	11.2	im
Crn18/479-2	49.5	0.02	0.12		1.6	45.4	3.3	im
Crn18/479-2	44.7			0.09	1.9	25.6	27.8	im
Crn18/479-2	48.2	0.02		0.01	3.6	33.8	14.5	im
Crn18/479-2	44.2		0.02	0.09	2.4	27.7	25.6	im
Crn18/479-6	47.6		0.27		7.5	40.2	4.3	inclti
Crn18/479-6	46.4	0.02	0.28		8.9	36.8	7.5	sg
Crn18/479-6	47.5	0.05	0.25		12.2	34.8	5.2	cf
Crn18/479-6	49.1		0.24		11.3	34.0	5.4	sg
Crn18/479-7	47.5	0.01	0.03		14.4	28.6	9.4	sg
Crn18/479-7	48.7		0.07		13.7	27.4	10.1	sg
Crn18/479-7	46.8	0.01	0.07		20.7	21.3	11.1	sg
Crn18/479-7	46.3	0.01	0.07		18.2	21.0	14.4	cf
Crn18/479-10	49.0		0.09	0.02	5.2	41.9	3.9	cf
Crn18/479-10	49.6		0.09		3.9	42.9	3.5	sg
Crn18/479-14	50.1	0.01	0.05	0.01	15.5	29.1	5.2	sil
Crn18/479-16	48.7	0.03	0.03	0.01	16.3	28.6	6.3	sil
Crn18/479-16	49.2	0.04	0.04		10.9	36.0	3.8	sil
Crn18/479-19	47.0	0.02	0.13		15.3	26.5	11.1	sil
Crn18/479-20	48.3		0.02	0.01	3.8	39.2	8.6	sg
Crn18/479-23	49.8				1.6	42.6	6.1	sg
Crn18/479-23	49.0	0.04	0.20	0.01		43.0	7.8	sg
Crn18/479-23	49.0	0.01		0.01	2.6	41.2	7.3	sg
Crn18/198-8	45.5			0.01	6.1	24.8	23.5	cf

Crn18/198-5	51.1		0.07		14.0	27.8	7.0	cf
Crn18/479-7	43.9		0.07	0.21	2.5	25.6	27.7	lg
Crn18/479-7	47.8		0.05		3.1	35.0	14.2	lg
Crn18/479-7	49.8		0.06		6.8	34.4	9.0	sg
Mt 1/982B-1	47.3		0.03		8.8	26.6	17.3	im
Mt 1/982B-2	44.7		0.06	0.21	11.4	19.7	24.0	im
Mt 1/982B-3	45.8	0.01	0.10	0.55	16.9	23.1	13.6	im
Mt 1/982B-4	46.7	0.05		0.01	8.5	24.3	20.5	sil
Mt 1/982C-5	44.8	0.02	0.17	0.09		39.0	15.9	sg
Mt 1/982C-6	46.4		0.18	0.01	2.5	44.0	6.9	sg

Type*

lg, large inclusion in corundum or melt inclusion

sg, small inclusions (3-5 μ) in corundum

cf, cavity fill in skeletal corundum

im, immiscible boundary to glass

sil, intergrown with silicide

int, interstitial; inclti, included in tistarite