

**The story of one diamond: the heterogeneous distribution of the optical centres within a diamond crystal from the Ichetju placer, North Urals**

**Vasilev E, Petrovsky V, Kozlov A, Antonov A, Kudriavtsev A., Orekhova K.**

**FTIR data**

Table S1. FTIR data on the traverse. Yellow colour highlights points in the core.

NN	distance, mm	a <sub>B</sub> <sup>*</sup> , cm <sup>-1</sup>	v <sub>B</sub> <sup>*</sup> , cm <sup>-1</sup>	a <sub>3107</sub> , cm <sup>-1</sup>	N <sub>B</sub> , %	N <sub>tot</sub> , ppm	*a <sub>1450-1350</sub> , cm <sup>-2</sup>	a <sub>1435</sub> , cm <sup>-1</sup>	**a <sub>B</sub> <sup>*</sup> , cm <sup>-2</sup>
1	0.09	1.0	1363.2	3.0	51	84	36	1	9
2	0.18	1.3	1362.1	3.7	56	90	44	1	8
3	0.27	4.3	1362.2	6.4	66	144	31	1	28
4	0.36	16.1	1364.1	11.0	85	482	241	2	141
5	0.45	36.4	1365.7	8.1	91	836	600	4	331
6	0.54	51.6	1366.8	4.7	93	1040	795	5	458
7	0.63	60.6	1367.6	3.5	95	1305	1107	8	591
8	0.72	62.7	1367.9	4.2	95	1576	1384	11	721
9	0.81	60.8	1368.5	6.4	95	1619	1532	12	762
10	0.9	62.5	1368.8	11.9	95	1771	1565	12	774
11	0.99	62.0	1368.6	25.2	96	1850	1618	13	776
12	1.08	63.3	1370.4	44.4	96	2372	2087	18	831
13	1.17	61.9	1372.5	61.4	97	2841	2440	23	795
14	1.26	63.0	1372.8	66.2	97	2890	2361	22	766
15	1.35	64.6	1373.0	61.8	98	2914	2413	22	844
16	1.44	64.5	1372.5	62.9	97	2992	2495	23	822
17	1.53	63.7	1372.1	65.6	97	3098	2456	24	771
18	1.62	61.3	1372.1	70.7	97	3330	2454	25	699
19	1.71	64.0	1373.5	66.6	97	3120	2366	23	741
20	1.8	64.1	1372.3	59.6	97	2835	2405	22	817
21	1.89	61.9	1370.7	44.1	97	2254	1952	17	761
22	1.98	62.0	1369.2	26.4	96	1822	1605	13	741
23	2.07	61.7	1368.5	17.4	96	1664	1490	12	724
24	2.16	60.4	1368.3	10.6	95	1630	1457	12	726
25	2.25	61.9	1368.3	8.5	95	1556	1455	12	738
26	2.34	61.9	1368.3	6.6	95	1522	1419	11	710
27	2.43	61.0	1368.0	8.4	95	1507	1395	11	703
28	2.52	58.7	1367.5	8.9	94	1369	1288	10	662
29	2.61	55.2	1367.3	9.1	94	1218	1141	9	591
30	2.7	48.3	1366.6	2.7	93	1039	853	6	478
31	2.79	18.3	1363.9	2.3	86	493	314	2	176

\* Without baseline subtraction

\*\* Linear baseline at 1350 – 1400 cm<sup>-1</sup> range subtracted

## EBSD Data

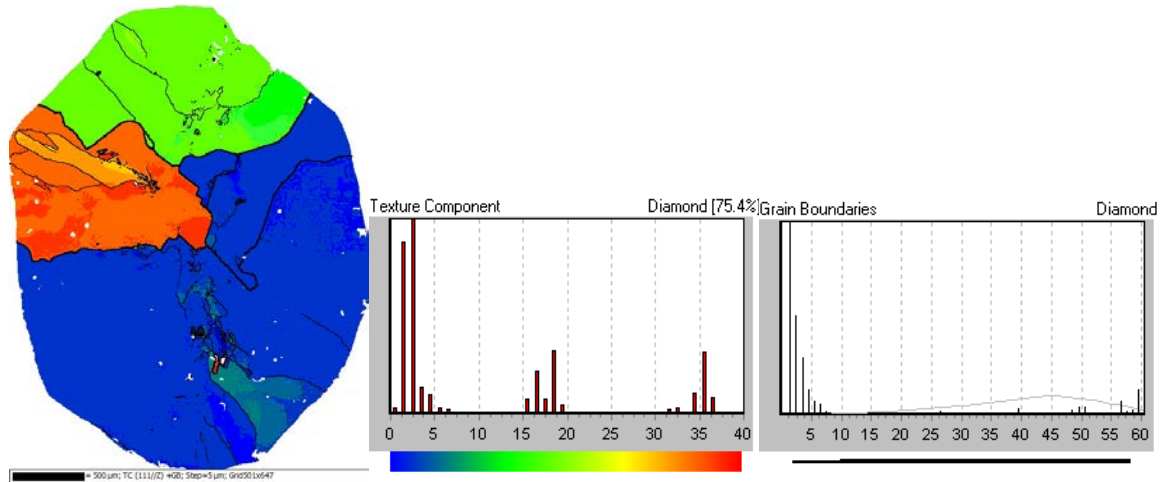


Fig. S1. Face 1. Texture Component (TC) Map +Grain boundaries (GB) (111//Z), distribution of subgrain misorientation angle, distribution of interfaces angle.

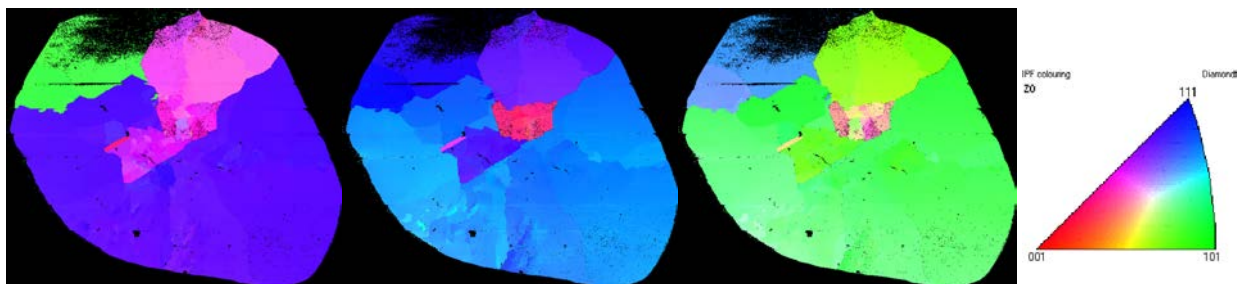


Fig. S2. Face 2: Inverse pole figure maps X, Y, Z respectively. Black spots correspond to pixels with unsolved orientation due to the plate polishing imperfection (slope, caverns) and acquisition artifacts.

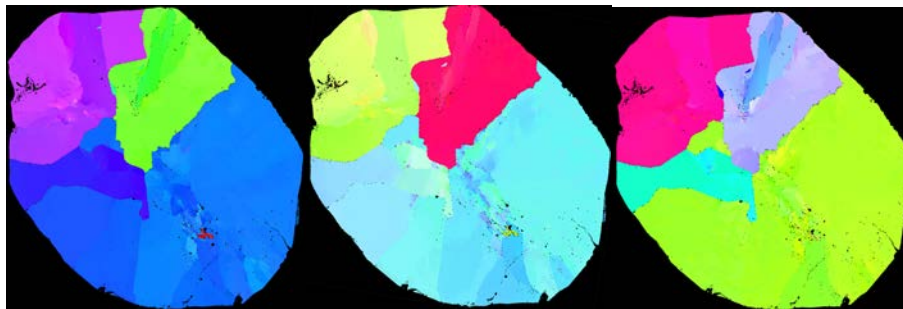


Fig. S3. Face 2: Inverse pole figure maps X, Y, Z respectively.

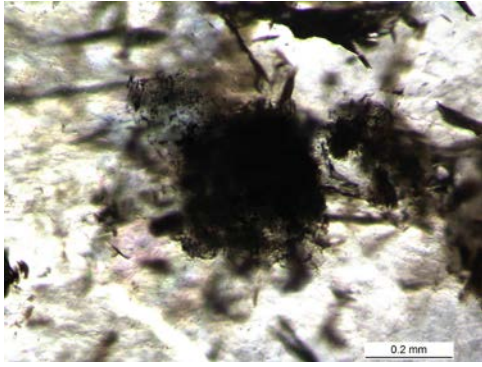


Fig. S4. Photo of the nucleus in transmitted light.