

Infrared Spectroscopy of Disilicon-Carbide, Si_2C :

The ν_3 Fundamental Band

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Linelist

Table S1: Measured ro-vibrational transitions of ν_3 fundamental band of Si₂C

J'	K'_a	K'_c	J''	K''_a	K''_c	ν_{Obs} [cm ⁻¹]	$\nu_{\text{Obs}} - \nu_{\text{Calc}}$ [cm ⁻¹]	E_{lower} [K]
5	0	5	6	0	6	1200.567 03(47)	0.000 06	8.56
3	0	3	4	0	4	1201.098 12(17)	-0.000 03	4.08
1	0	1	2	0	2	1201.645 40(45)	0.000 09	1.22
3	0	3	2	0	2	1203.081 76(60)	0.000 08	1.22
5	0	5	4	0	4	1203.683 34(42)	0.000 83	4.08
7	0	7	6	0	6	1204.297 60(59)	0.000 17	8.56
9	0	9	8	0	8	1204.927 03(192)	0.001 40	14.66
11	0	11	10	0	10	1205.566 82(99)	0.000 60	22.39
13	0	13	12	0	12	1206.218 22(141)	0.000 04	31.74
15	0	15	14	0	14	1206.880 78(99)	0.000 26	42.70
17	0	17	16	0	16	1207.552 07(84)	-0.000 21	55.26
19	0	19	18	0	18	1208.232 25(72)	-0.000 38	69.42
21	0	21	20	0	20	1208.921 02(53)	0.000 07	85.18
23	0	23	22	0	22	1209.616 25(29)	-0.000 63	102.52
25	0	25	24	0	24	1210.320 59(37)	0.000 40	121.44
27	0	27	26	0	26	1211.029 82(20)	0.000 47	141.93
29	0	29	28	0	28	1211.761 59(20)	-0.000 09	163.99
31	0	31	30	0	30	1212.485 79(84)	-0.000 92	187.60
33	0	33	32	0	32	1213.225 24(69)	-0.000 64	212.78
35	0	35	34	0	34	1213.975 66(105)	-0.000 62	239.51
37	0	37	36	0	36	1214.736 63(69)	-0.001 49	267.79
39	0	39	38	0	38	1215.509 42(102)	-0.002 40	297.62
41	0	41	40	0	40	1216.298 78(69)	0.001 10	328.99
43	0	43	42	0	42	1217.096 35(37)	0.000 44	361.91
6	1	6	7	1	7	1200.192 90(23)	-0.000 61	14.09
5	1	4	6	1	5	1200.404 72(23)	-0.000 22	11.58
4	1	4	5	1	5	1200.712 01(47)	-0.000 30	8.88
3	1	2	4	1	3	1200.943 17(47)	0.000 35	7.02
2	1	2	3	1	3	1201.245 39(17)	0.000 25	5.27
1	1	0	2	1	1	1201.498 62(45)	0.000 56	4.11

Table S1: *continued*

J'	K'_a	K'_c	J''	K''_a	K''_c	ν_{Obs} [cm ⁻¹]	$\nu_{\text{Obs}} - \nu_{\text{Calc}}$ [cm ⁻¹]	E_{lower} [K]
2	1	2	1	1	1	1202.638 31(31)	0.000 15	3.27
3	1	2	2	1	1	1202.961 08(31)	-0.000 32	4.11
4	1	4	3	1	3	1203.219 82(60)	0.000 41	5.27
5	1	4	4	1	3	1203.576 57(60)	0.000 17	7.02
6	1	6	5	1	5	1203.814 72(42)	0.000 57	8.88
7	1	6	6	1	5	1204.208 40(59)	0.000 36	11.58
8	1	8	7	1	7	1204.422 07(59)	-0.000 10	14.09
9	1	8	8	1	7	1204.857 60(192)	0.001 54	17.80
10	1	10	9	1	9	1205.044 50(192)	0.001 24	20.90
11	1	10	10	1	9	1205.521 00(99)	0.000 83	25.67
12	1	12	11	1	11	1205.677 87(99)	0.000 70	29.30
13	1	12	12	1	11	1206.199 63(141)	-0.000 39	35.20
14	1	14	13	1	13	1206.324 12(141)	0.000 47	39.31
15	1	14	14	1	13	1206.895 26(99)	0.000 07	46.38
16	1	16	15	1	15	1206.983 08(99)	0.000 62	50.91
17	1	16	16	1	15	1207.605 22(84)	-0.000 01	59.21
18	1	18	17	1	17	1207.653 51(84)	0.000 16	64.10
19	1	18	18	1	17	1208.329 30(72)	-0.000 31	73.68
20	1	20	19	1	19	1208.335 91(72)	-0.000 21	78.89
22	1	22	21	1	21	1209.030 61(53)	0.000 07	95.26
21	1	20	20	1	19	1209.067 83(53)	0.000 13	89.79
24	1	24	23	1	23	1209.736 27(29)	-0.000 18	113.22
23	1	22	22	1	21	1209.818 27(29)	-0.000 56	107.54
26	1	26	25	1	25	1210.453 85(37)	0.000 15	132.75
25	1	24	24	1	23	1210.582 27(37)	0.000 05	126.92
28	1	28	27	1	27	1211.182 38(20)	0.000 21	153.87
27	1	26	26	1	25	1211.357 10(20)	0.000 10	147.93
30	1	30	29	1	29	1211.921 33(20)	-0.000 44	176.57
29	1	28	28	1	27	1212.142 41(84)	0.000 15	170.56
32	1	32	31	1	31	1212.671 51(84)	-0.000 95	200.83
31	1	30	30	1	29	1212.935 83(84)	-0.001 19	194.80
34	1	34	33	1	33	1213.435 27(69)	0.001 05	226.67
33	1	32	32	1	31	1213.739 48(57)	-0.000 81	220.65
36	1	36	35	1	35	1214.206 84(105)	-0.000 19	254.07
35	1	34	34	1	33	1214.550 43(105)	-0.000 66	248.10
38	1	38	37	1	37	1214.989 80(97)	-0.001 13	283.03
37	1	36	36	1	35	1215.367 95(97)	-0.000 57	277.14
40	1	40	39	1	39	1215.786 00(9)	0.000 07	313.55

Table S1: *continued*

J'	K'_a	K'_c	J''	K''_a	K''_c	ν_{Obs} [cm ⁻¹]	$\nu_{\text{Obs}} - \nu_{\text{Calc}}$ [cm ⁻¹]	E_{lower} [K]
39	1	38	38	1	37	1216.191 16(97)	-0.000 69	307.76
42	1	42	41	1	41	1216.590 23(102)	-0.001 86	345.63
41	1	40	40	1	39	1217.020 53(9)	-0.000 01	339.96
44	1	44	43	1	43	1217.407 37(102)	-0.002 07	379.26
46	1	46	45	1	45	1218.237 99(9)	-0.000 02	414.44
45	1	44	44	1	43	1218.693 18(9)	0.000 01	409.06
48	1	48	47	1	47	1219.077 85(9)	0.000 00	451.16
4	2	3	5	2	4	1200.279 62(23)	-0.000 28	17.58
3	2	1	4	2	2	1200.547 81(47)	-0.000 25	15.54
2	2	1	3	2	2	1200.820 73(47)	0.000 09	13.91
2	2	1	2	2	0	1201.671 43(45)	-0.000 17	12.69
3	2	1	3	2	2	1201.682 66(45)	-0.000 54	13.91
4	2	3	4	2	2	1201.697 21(45)	-0.000 30	15.54
5	2	3	5	2	4	1201.718 27(45)	-0.000 16	17.58
6	2	5	6	2	4	1201.737 00(45)	0.000 23	20.04
4	2	3	3	2	2	1202.832 39(31)	-0.000 26	13.91
5	2	3	4	2	2	1203.135 95(60)	-0.000 09	15.54
6	2	5	5	2	4	1203.441 14(60)	0.000 23	17.58
7	2	5	6	2	4	1203.754 10(42)	0.000 60	20.04
8	2	7	7	2	6	1204.063 09(42)	0.000 17	22.89
9	2	7	8	2	6	1204.386 05(59)	0.000 62	26.16
10	2	9	9	2	8	1204.695 88(192)	0.002 10	29.82
11	2	9	10	2	8	1204.997 62(192)	-0.002 46	33.92
12	2	11	11	2	10	1205.388 03(192)	0.001 76	38.38
13	2	11	12	2	10	1205.727 78(99)	-0.000 05	43.32
14	2	13	13	2	12	1206.034 64(99)	-0.000 53	48.57
15	2	13	14	2	12	1206.413 27(141)	0.000 23	54.37
16	2	15	15	2	14	1206.714 60(141)	0.000 83	60.38
17	2	15	16	2	14	1207.122 08(99)	0.000 54	67.05
18	2	17	17	2	16	1207.407 13(84)	-0.000 85	73.82
19	2	17	18	2	16	1207.850 80(84)	-0.000 33	81.39
20	2	19	19	2	18	1208.116 65(72)	0.000 34	88.88
21	2	19	20	2	18	1208.601 39(72)	-0.000 20	97.37
22	2	21	21	2	20	1208.838 05(53)	-0.000 13	105.55
23	2	21	22	2	20	1209.372 47(53)	-0.000 27	115.01
24	2	23	23	2	22	1209.572 84(29)	-0.000 37	123.84
25	2	23	24	2	22	1210.163 66(37)	-0.000 50	134.30
26	2	25	25	2	24	1210.320 55(37)	-0.000 53	143.74

Table S1: *continued*

J'	K'_a	K'_c	J''	K''_a	K''_c	ν_{Obs} [cm ⁻¹]	$\nu_{\text{Obs}} - \nu_{\text{Calc}}$ [cm ⁻¹]	E_{lower} [K]
27	2	25	26	2	24	1210.975 17(20)	0.000 02	155.24
28	2	27	27	2	26	1211.081 70(20)	0.000 22	165.25
29	2	27	28	2	26	1211.805 16(20)	0.000 40	177.84
30	2	29	29	2	28	1211.854 58(20)	0.000 44	188.36
32	2	31	31	2	30	1212.638 84(84)	0.000 05	213.07
31	2	29	30	2	28	1212.651 56(84)	-0.000 34	202.09
34	2	33	33	2	32	1213.435 26(69)	0.000 06	239.38
33	2	31	32	2	30	1213.516 06(69)	0.000 67	227.99
36	2	35	35	2	34	1214.243 35(105)	0.000 23	267.28
35	2	33	34	2	32	1214.395 09(25)	0.001 04	255.54
38	2	37	37	2	36	1215.062 73(15)	0.000 37	296.76
37	2	35	36	2	34	1215.288 41(13)	0.001 63	284.72
3	3	0	3	3	1	1201.007 56(17)	-0.000 23	28.19
6	3	4	6	3	3	1201.064 49(17)	0.000 03	34.32
8	3	6	8	3	5	1201.121 03(17)	-0.000 19	40.45
6	3	4	5	3	3	1202.768 63(31)	0.000 51	31.87
7	3	4	6	3	3	1203.078 43(111)	-0.000 09	34.32
8	3	6	7	3	5	1203.393 44(60)	0.000 78	37.18
9	3	6	8	3	5	1203.711 22(42)	0.000 53	40.45
10	3	8	9	3	7	1204.032 41(42)	0.000 03	44.12
11	3	8	10	3	7	1204.358 45(59)	0.000 29	48.21
12	3	10	11	3	9	1204.688 00(192)	0.000 70	52.70
13	3	10	12	3	9	1205.022 49(192)	0.001 45	57.60
14	3	12	13	3	11	1205.357 71(192)	0.000 21	62.91
15	3	12	14	3	11	1205.700 53(99)	0.000 98	68.62
16	3	14	15	3	13	1206.043 10(99)	0.000 10	74.75
17	3	14	16	3	13	1206.395 03(141)	0.001 12	81.28
18	3	16	17	3	15	1206.744 90(141)	0.001 08	88.22
19	3	16	18	3	15	1207.105 91(99)	0.001 48	95.57
20	3	18	19	3	17	1207.459 87(84)	-0.000 12	103.32
21	3	18	20	3	17	1207.832 11(84)	0.000 61	111.49
23	3	20	22	3	19	1208.577 18(72)	0.001 61	129.04
24	3	22	23	3	21	1208.939 07(53)	0.000 88	138.40
25	3	22	24	3	21	1209.337 77(53)	0.000 62	148.23
26	3	24	25	3	23	1209.700 44(29)	0.000 37	158.39
27	3	24	26	3	23	1210.116 83(37)	-0.000 04	169.04
28	3	26	27	3	25	1210.476 79(37)	-0.000 17	179.99
29	3	26	28	3	25	1210.915 10(20)	-0.000 26	191.48
30	3	28	29	3	27	1211.268 48(20)	-0.000 20	203.22

Table S1: *continued*

J'	K'_a	K'_c	J''	K''_a	K''_c	ν_{Obs} [cm ⁻¹]	$\nu_{\text{Obs}} - \nu_{\text{Calc}}$ [cm ⁻¹]	E_{lower} [K]
31	3	28	30	3	27	1211.732 01(61)	-0.001 31	215.56
32	3	30	31	3	29	1212.073 36(84)	-0.001 64	228.07
33	3	30	32	3	29	1212.568 15(21)	-0.003 28	241.27
9	4	5	8	4	4	1202.784 97(31)	0.000 17	60.37
10	4	7	9	4	6	1203.107 23(82)	0.001 07	64.05
11	4	7	10	4	6	1203.430 39(82)	-0.000 84	68.14
12	4	9	11	4	8	1203.760 13(42)	0.000 13	72.64
13	4	9	12	4	8	1204.092 38(42)	-0.000 11	77.54
14	4	11	13	4	10	1204.427 90(59)	-0.000 80	82.86
15	4	11	14	4	10	1204.769 76(192)	0.001 11	88.58
16	4	13	15	4	12	1205.113 16(192)	0.000 86	94.71
17	4	13	16	4	12	1205.459 84(82)	0.000 09	101.25
18	4	15	17	4	14	1205.811 19(99)	0.000 31	108.19
19	4	15	18	4	14	1206.165 89(99)	0.000 01	115.55
20	4	17	19	4	16	1206.525 43(82)	0.000 95	123.31
21	4	17	20	4	16	1206.886 80(99)	-0.000 31	131.48
22	4	19	21	4	18	1207.254 13(82)	0.000 94	140.06
24	4	21	23	4	20	1207.996 78(82)	-0.000 31	158.43
25	4	21	24	4	20	1208.374 59(82)	-0.000 79	168.23
26	4	23	25	4	22	1208.755 49(53)	-0.000 76	178.44
27	4	23	26	4	22	1209.142 05(82)	-0.000 65	189.05
28	4	25	27	4	24	1209.530 87(29)	0.000 11	200.07
29	4	25	28	4	24	1209.925 24(29)	-0.000 45	211.49
30	4	27	29	4	26	1210.320 58(82)	-0.000 12	223.32
31	4	27	30	4	26	1210.724 66(82)	0.000 08	235.56
32	4	29	31	4	28	1211.126 22(20)	0.000 08	248.20
33	4	29	32	4	28	1211.539 96(20)	0.000 36	261.25
34	4	31	33	4	30	1211.946 81(20)	-0.000 31	274.69
35	4	31	34	4	30	1212.371 32(82)	0.000 29	288.56
36	4	33	35	4	32	1212.783 98(84)	0.000 27	302.80
37	4	33	36	4	32	1213.219 85(69)	0.000 65	317.48
38	4	35	37	4	34	1213.635 84(82)	-0.000 07	332.53
39	4	35	38	4	34	1214.085 68(82)	0.001 20	348.02
40	4	37	39	4	36	1214.504 38(82)	0.000 65	363.87
41	4	37	40	4	36	1214.967 64(82)	0.000 38	380.18
42	4	39	41	4	38	1215.385 39(82)	-0.001 76	396.82
43	4	39	42	4	38	1215.869 33(82)	0.001 30	413.94
44	4	41	43	4	40	1216.285 14(82)	-0.000 97	431.37

Table S2: Measured pure rotational transitions of Si₂C

J'	K'_a	K'_c	J''	K''_a	K''_c	ν_{Obs} [MHz]	ν_{Calc} [MHz]	E_{lower} [K]
13	2	12	12	1	11	278634.232(171)	-0.052	35.20
16	2	14	15	1	15	336467.801(108)	-0.249	50.91
5	3	3	5	2	4	297761.591(101)	-0.049	17.58
8	3	5	8	2	6	297765.972(70)	0.060	26.16
7	3	5	7	2	6	297897.894(46)	0.040	22.89
13	3	11	13	2	12	298799.067(87)	0.217	48.57
15	3	13	15	2	14	299342.752(86)	0.207	60.38
3	3	1	2	2	0	323188.756(36)	-0.077	12.69
4	3	1	3	2	2	331728.312(47)	-0.094	13.91
5	3	3	4	2	2	340260.455(46)	-0.027	15.54
6	3	3	5	2	4	348836.056(41)	0.005	17.58
7	3	5	6	2	4	357332.097(56)	0.046	20.04
8	3	5	7	2	6	365994.226(60)	0.053	22.89
9	3	7	8	2	6	374369.325(88)	0.130	26.16