

AM-89-411

OH substitution in garnets: X-ray and neutron diffraction, infrared, and  
geometric-modeling studies

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For deposit: Tables 2 and 3

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Table 2. Comparison of observed and calculated structural amplitudes for San Benito andradites

SB-1

H	K	L	F(OBS)	F(CALC)	H	K	L	F(OBS)	F(CALC)	H	K	L	F(OBS)	F(CALC)	H	K	L	F(OBS)	F(CALC)	H	K	L	F(OBS)	F(CALC)
2	2	0	140.52	137.81	1	7	2	16.62	17.95	1	11	4	53.83	55.10	7	10	7	11.20	9.76	5	13	10	12.65	11.96
0	4	0	539.82	546.16	3	7	2	9.59	8.65	3	11	4	4.83	3.63	2	11	7	34.96	34.51	2	14	10	12.71	10.27
2	4	0	369.26	370.70	5	7	2	30.22	29.65	5	11	4	6.00	1.70	3	12	7	39.38	38.85	8	14	10	29.51	27.85
4	4	0	28.32	27.60	7	7	2	57.43	57.99	0	12	4	81.36	83.46	5	12	7	6.51	5.94	1	15	10	22.71	22.15
2	6	0	202.12	200.64	3	9	2	43.61	44.49	4	12	4	102.59	101.76	11	12	7	9.91	7.65	7	15	10	8.57	4.47
4	6	0	344.18	344.51	5	9	2	4.31	4.74	6	12	4	11.49	9.46	2	13	7	44.96	45.10	2	16	10	63.12	61.74
6	6	0	62.09	63.40	7	9	2	3.19	3.34	10	12	4	6.87	0.33	4	13	7	4.95	1.08	4	16	10	104.02	102.00
0	8	0	530.42	537.50	9	9	2	37.23	36.83	12	12	4	155.34	153.75	6	13	7	6.18	7.01	4	7	11	53.49	54.46
2	8	0	27.99	28.17	0	10	2	34.35	35.51	1	13	4	2.98	0.39	12	13	7	17.64	20.08	6	9	11	26.11	26.82
4	8	0	357.30	360.11	8	10	2	64.41	64.59	11	13	4	31.51	31.02	1	14	7	44.87	45.25	1	12	11	16.84	17.82
6	8	0	6.45	4.16	1	11	2	16.89	16.91	0	14	4	161.91	162.26	3	14	7	18.51	18.90	3	12	11	8.29	11.89
8	8	0	516.09	518.91	3	11	2	16.31	17.01	2	14	4	248.35	250.00	5	14	7	9.14	9.03	5	12	11	7.65	7.64
4	10	0	235.15	237.92	5	11	2	20.70	21.36	10	14	4	156.14	155.70	7	14	7	35.29	34.58	9	12	11	7.63	2.65
6	10	0	14.14	14.30	11	11	2	22.21	20.88	5	6	5	42.11	41.69	4	15	7	7.81	5.16	2	13	11	32.66	32.69
8	10	0	7.84	6.18	8	12	2	178.54	177.54	4	7	5	63.24	66.11	1	16	7	17.58	18.98	8	13	11	6.66	1.48
10	10	0	175.71	176.58	10	12	2	198.47	197.87	7	8	5	32.51	34.76	3	16	7	23.13	23.71	1	14	11	15.74	17.80
0	12	0	180.35	181.36	1	13	2	8.32	11.95	3	10	5	28.41	28.32	5	16	7	23.92	25.46	7	14	11	5.77	2.43
2	12	0	207.51	210.76	3	13	2	26.67	26.86	5	10	5	10.98	11.41	2	2	8	118.96	121.33	2	15	11	11.36	13.90
6	12	0	169.07	171.19	13	13	2	39.36	39.55	7	10	5	5.85	5.75	4	4	8	107.50	107.98	2	2	12	324.61	327.36
10	12	0	153.61	153.87	12	14	2	126.23	125.80	6	11	5	21.75	22.70	8	8	8	414.43	415.43	2	4	12	7.40	3.20
12	12	0	15.14	19.06	5	15	2	6.45	3.86	10	11	5	6.43	5.16	5	9	8	26.67	27.02	2	6	12	191.53	191.93
2	14	0	50.58	50.71	7	15	2	6.02	7.22	1	12	5	6.74	6.57	7	9	8	6.79	7.38	4	8	12	11.85	13.15
6	14	0	15.46	15.93	6	16	2	26.65	26.19	2	13	5	40.66	40.99	4	10	8	201.56	201.18	6	8	12	174.23	173.07
8	14	0	17.63	16.16	3	6	3	60.54	60.70	8	13	5	44.36	44.29	10	10	8	11.21	7.65	7	9	12	11.63	13.42
10	14	0	72.53	72.77	5	6	3	52.72	50.56	1	14	5	10.44	13.02	1	11	8	29.22	29.06	10	10	12	122.24	122.40
12	14	0	144.37	142.75	5	8	3	85.49	87.45	5	14	5	4.75	5.88	5	11	8	45.43	45.57	1	13	12	5.94	2.52
0	16	0	276.96	281.37	7	8	3	47.55	48.64	9	14	5	27.80	28.26	7	11	8	10.64	11.15	3	13	12	24.60	25.07
2	16	0	21.11	19.67	8	9	3	12.86	14.59	10	15	5	9.80	13.03	0	12	8	220.12	222.22	5	13	12	18.43	18.90
4	16	0	174.79	176.23	3	10	3	31.26	32.09	1	7	6	54.54	56.18	8	12	8	198.29	197.34	6	14	12	179.85	177.15
6	16	0	16.28	16.68	7	10	3	21.64	22.07	3	7	6	15.57	17.65	10	12	8	130.82	129.11	4	5	13	23.99	23.53
8	16	0	339.51	337.57	9	10	3	6.84	1.62	5	7	6	55.43	55.98	12	12	8	59.72	58.71	5	6	13	37.29	36.73
10	16	0	6.00	0.16	8	11	3	28.51	27.82	7	7	6	23.58	21.71	3	13	8	42.04	42.30	2	9	13	6.68	7.00
1	2	1	9.19	4.45	10	11	3	8.52	8.64	2	8	6	30.93	29.55	7	13	8	19.98	20.84	8	9	13	22.33	22.09
3	4	1	126.25	119.26	5	12	3	32.75	32.18	4	8	6	217.77	216.82	2	14	8	17.10	19.12	7	10	13	4.21	3.05
1	6	1	190.41	187.85	9	12	3	12.96	13.95	6	8	6	59.49	59.13	4	14	8	154.37	154.04	9	10	13	17.00	15.65
3	6	1	7.43	4.86	4	13	3	6.20	6.71	1	9	6	23.23	23.83	6	14	8	52.70	52.73	1	14	13	32.28	30.66
5	6	1	33.36	33.09	6	13	3	7.56	5.13	3	9	6	37.26	38.42	1	15	8	32.11	32.76	3	14	13	17.25	16.69
3	8	1	11.85	12.49	1	14	3	39.00	39.04	5	9	6	18.81	18.75	5	15	8	20.06	21.61	2	6	14	8.35	9.81
5	8	1	65.29	66.97	3	14	3	12.33	15.00	7	9	6	66.12	66.59	1	10	9	11.11	12.96	9	9	14	52.82	51.15
7	8	1	9.64	9.88	5	14	3	30.35	31.23	9	9	6	54.46	53.37	5	10	9	3.86	4.33	2	9	14	30.32	28.35
2	9	1	25.82	24.84	11	14	3	10.84	14.40	2	10	6	22.13	20.10	7	10	9	4.75	4.31	5	11	14	30.32	28.35
8	9	1	35.20	35.10	10	15	3	8.14	10.24	4	10	6	235.43	235.19	9	10	9	31.90	32.34	4	12	14	8.14	1.22
1	10	1	30.80	31.09	12	15	3	10.82	3.33	8	10	6	66.91	67.57	2	11	9	15.90	17.91	1	2	15	36.65	36.53
3	10	1	21.82	21.11	5	16	3	25.24	24.61	3	11	6	66.46	66.93	4	11	9	8.02	10.87	2	3	15	51.20	51.14
5	10	1	22.13	22.49	9	16	3	23.35	23.16	7	11	6	16.71	17.71	8	11	9	5.57	3.09	3	4	15	29.74	29.57
6	11	1	5.61	6.06	2	2	4	331.88	338.06	11	11	6	25.29	24.97	10	11	9	37.75	37.28	4	5	15	23.73	24.45
10	11	1	11.69	15.01	4	4	4	282.49	277.95	6	12	6	222.85	223.36	1	12	9	9.08	8.24	1	6	15	4.08	1.37
3	12	1	26.21	26.12	1	5	4	15.16	15.82	10	12	6	216.12	215.70	5	12	9	5.59	1.98	3	6	15	9.06	10.20
7	12	1	6.05	5.48	3	5	4	36.80	35.85	1	13	6	5.90	4.30	4	13	9	5.02	1.97	5	6	15	7.65	3.83
8	13	1	16.56	18.36	2	6	4	439.47	437.59	9	13	6	18.99	19.87	3	14	9	4.64	1.60	3	8	15	24.83	24.86
1	14	1	13.15	17.24	6	6	4	322.18	322.56	11	13	6	5.90	6.73	7	14	9	16.99	19.82	7	8	15	26.26	24.28
9	14	1	6.58	9.37	1	7	4	71.35	70.26	13	13	6	13.83	16.81	2	15	9	7.35	3.62	4	11	15	6.41	0.34
4	15	1	13.39	14.46	3	7	4	26.93	28.91	4	14	6	181.32	180.92	4	15	9	8.73	11.35	1	12	15	9.32	12.16
5	16	1	7.69	1.72	2	8	4	255.60	254.99	10	14	6	15.74	18.57	8	15	9	20.03	20.65	2	2	16	10.26	11.18
11	16	1	22.15	19.01	8	8	4	251.48	250.73	7	15	6	45.27	43.74	1	16	9	33.76	32.79	1	3	16	15.67	17.40
1	3	2	16.21	13.51	1	9	4	87.66	89.79	9	15	6	7.15	3.47	5	16	9	5.80	3.06	2	4	16	163.03	163.51
3	3	2	123.63	114.18	3	9	4	48.18	48.85	6	16	6	38.69	38.49	7	11	10	8.73	9.60	4	4	16	38.76	38.20
1	5	2	128.19	124.86	5	9	4	21.33	23.10	8	16	6	7.60	3.66	11	11	10	37.51	34.67	4	6	16	143.53	141.28
3	5	2	132.35	130.41	2	10	4	313.65	314.17	4	9	7	37.67	38.17	1	13	10	25.34	24.34	2	8	16	13.02	13.30
5	5	2	58.50	58.63	10	10	4	223.92	224.78	1	10	7	44.15	44.82	3	13	10	8.76	10.99	4	8	16	173.08	171.59

SB-2

H	K	L	F(OBS)	F(CALC)	H	K	L	F(OBS)	F(CALC)	H	K	L	F(OBS)	F(CALC)	H	K	L	F(OBS)	F(CALC)
2	2	0	126.78	126.16	3	16	1	18.21	17.84	2	2	4	309.02	318.30	3	15	6	8.36	LR 12.41
0	4	0	515.44	524.75	5	16	1	4.31	LR 1.38	4	4	4	289.30	283.04	5	15	6	5.80	LR 5.46
2	4	0	364.35	363.57	3	3	2	120.59	111.07	2	6	4	419.01	421.18	6	9	7	65.41	64.87
4	4	0	16.63	14.24	3	5	2	131.76	131.29	6	6	4	308.09	309.88	8	9	7	8.26	LR 9.06
4	6	0	341.48	340.53	5	5	2	61.41	63.81	1	7	4	69.17	68.64	5	10	7	7.49	LR 5.13
6	6	0	51.36	54.01	0	6	2	188.69	188.36	5	7	4	62.63	64.76	9	10	7	4.00	LR 6.05
0	8	0	522.17	522.89	3	7	2	10.47	8.11	0	8	4	343.62	346.59	4	11	7	52.99	53.54
2	8	0	30.26	30.29	7	7	2	58.15	58.93	8	8	4	240.55	241.11	8	11	7	9.27	LR 10.84
6	8	0	8.98	LR 2.86	4	8	2	248.14	248.35	1	9	4	85.99	88.30	10	11	7	9.30	LR 9.14
8	8	0	494.52	501.37	1	9	2	26.65	26.43	7	9	4	37.01	37.28	5	12	7	6.98	LR 4.66
4	10	0	234.28	235.62	3	9	2	44.33	45.05	6	10	4	226.31	226.38	6	13	7	7.24	LR 8.62
6	10	0	8.38	LR 8.28	7	9	2	4.50	LR 2.58	10	10	4	217.98	217.70	8	13	7	19.29	20.39
10	10	0	164.34	166.11	9	9	2	36.67	36.59	5	11	4	6.03	LR 2.39	2	2	8	110.58	112.40
0	12	0	170.52	171.23	0	10	2	42.45	42.88	4	12	4	106.81	106.66	4	4	8	102.16	101.02
2	12	0	205.03	205.93	4	10	2	300.48	301.70	8	12	4	8.42	LR 8.39	6	6	8	47.93	49.31
4	12	0	74.29	74.63	6	10	2	21.71	21.40	10	12	4	6.78	LR 0.49	8	8	8	402.08	402.77
6	12	0	171.51	171.43	8	10	2	57.01	57.24	1	13	4	3.78	LR 1.01	0	10	8	8.12	LR 8.76
8	12	0	213.24	212.13	3	11	2	15.02	16.18	3	13	4	8.09	LR 7.23	4	10	8	199.76	199.83
12	12	0	13.82	13.85	5	11	2	18.82	18.87	7	13	4	6.06	LR 2.18	10	10	8	6.15	LR 8.34
2	14	0	46.32	46.26	7	11	2	34.38	34.23	6	14	4	173.61	173.00	3	11	8	26.28	25.74
4	14	0	160.57	161.50	9	11	2	19.89	19.80	8	14	4	151.05	150.90	9	11	8	4.87	LR 1.73
6	14	0	14.35	11.68	11	11	2	22.28	19.33	3	15	4	28.13	26.61	8	12	8	191.42	189.01
8	14	0	16.26	17.50	2	12	2	311.03	314.79	5	15	4	23.70	23.05	1	13	8	15.70	16.40
0	16	0	273.64	274.43	4	12	2	1.41	LR 4.16	4	16	4	33.01	32.03	2	14	8	15.52	12.99
2	16	0	19.04	17.81	8	12	2	175.67	175.32	5	6	5	42.46	42.94	5	10	9	6.32	LR 5.90
4	16	0	169.24	169.81	3	13	2	26.80	26.71	2	7	5	28.13	27.45	4	11	9	12.80	13.01
1	2	1	13.23	9.99	7	13	2	43.31	41.98	6	7	5	56.80	58.17	7	12	9	16.28	16.30
2	3	1	18.97	16.98	4	14	2	239.96	241.03	1	8	5	64.24	66.80	2	13	9	5.65	LR 6.66
3	4	1	123.30	117.70	6	14	2	10.32	LR 10.13	7	8	5	32.32	32.98	4	13	9	1.04	LR 1.05
2	5	1	129.46	128.09	1	15	2	37.18	37.44	2	9	5	7.47	LR 2.31	3	14	9	5.37	LR 1.30
4	5	1	15.59	15.11	7	15	2	7.47	LR 8.10	4	9	5	20.40	20.80	7	7	10	10.72	LR 9.32
1	6	1	190.67	189.13	2	16	2	9.56	LR 6.47	6	9	5	18.77	18.89	9	9	10	33.73	34.24
3	6	1	9.87	3.63	4	16	2	161.73	162.70	8	9	5	26.04	25.99	1	11	10	16.70	15.39
5	6	1	36.19	36.44	4	5	3	36.60	35.68	1	10	5	25.73	25.39	5	11	10	4.70	LR 3.85
2	7	1	18.41	19.66	3	6	3	60.24	60.79	5	10	5	14.10	13.96	0	12	10	153.53	151.58
6	7	1	52.28	52.98	5	6	3	49.18	47.31	8	11	5	43.73	43.97	2	12	10	192.87	191.15
7	8	1	13.88	12.33	4	7	3	27.04	28.66	9	12	5	5.00	LR 1.62	1	13	10	25.37	24.46
6	9	1	25.45	25.63	6	7	3	18.18	19.07	2	13	5	38.72	39.20	3	13	10	12.69	LR 12.05
8	9	1	34.94	34.66	1	8	3	12.70	12.88	4	13	5	24.97	24.48	1	12	11	18.39	20.13
1	10	1	28.51	28.50	5	8	3	85.34	87.31	8	13	5	43.34	42.34					
3	10	1	23.09	22.61	7	8	3	46.83	47.32	3	14	5	30.70	30.28					
7	10	1	43.99	44.26	4	9	3	47.07	47.61	5	14	5	5.52	LR 5.55					
9	10	1	12.90	13.12	6	9	3	37.04	38.15	7	14	5	9.79	LR 10.12					
2	11	1	18.67	19.19	8	9	3	13.50	15.59	2	15	5	3.83	LR 3.76					
4	11	1	52.26	54.02	3	10	3	29.52	30.54	7	7	6	23.54	22.69					
6	11	1	7.11	LR 6.56	5	10	3	30.49	29.98	2	8	6	23.44	22.66					
8	11	1	29.91	29.67	7	10	3	20.91	20.04	4	8	6	215.39	213.39					
3	12	1	28.29	26.89	9	10	3	3.31	LR 1.66	9	9	6	52.26	51.97					
5	12	1	7.98	LR 5.56	4	11	3	5.80	LR 4.22	8	10	6	59.54	60.06					
7	12	1	4.85	LR 3.64	6	11	3	68.54	68.69	5	11	6	24.58	24.41					
9	12	1	8.81	LR 8.15	10	11	3	7.98	LR 8.32	7	11	6	19.26	18.54					
2	13	1	11.60	LR 11.30	5	12	3	32.60	32.94	9	11	6	27.09	27.94					
6	13	1	6.26	LR 5.11	7	12	3	38.81	38.72	11	11	6	21.07	21.05					
1	14	1	13.90	14.26	9	12	3	13.73	13.87	2	12	6	184.07	184.63					
3	14	1	38.59	38.59	11	12	3	9.00	LR 11.35	4	12	6	9.60	LR 10.71					
5	14	1	11.30	LR 13.75	6	13	3	5.22	LR 3.16	6	12	6	215.12	214.24					
7	14	1	44.80	43.91	8	13	3	41.03	40.47	8	12	6	171.69	169.67					
9	14	1	7.05	LR 8.63	3	14	3	13.96	LR 14.95	10	12	6	209.45	207.15					
4	15	1	11.17	LR 13.95	7	14	3	20.76	20.23	5	13	6	36.33	34.45					
6	15	1	3.25	LR 1.49	2	15	3	49.65	49.78	9	13	6	17.42	19.58					

F(CALC)	H	K	L	F(OBS)	F(CALC)	H	K	L	F(OBS)	F(CALC)	H	K	L	F(OBS)	F(CALC)	H	K	L	F(OBS)	F(CALC)	H	K	L	F(OBS)	F(CALC)		
140.88	4	17	1	32.23	32.41	12	13	3	23.37	24.59	1	10	5	28.22	28.48	9	10	7	7.14	LR	8.33	5	13	10	12.72	LR	14.42
527.76	6	17	1	11.30	11.38	1	14	3	39.30	39.71	5	10	5	18.58	16.99	2	11	7	35.41	LR	35.42	9	13	10	15.55	LR	15.87
354.39	8	17	1	9.05	10.25	7	14	3	21.55	21.86	7	10	5	5.66	6.80	8	11	7	8.84	LR	10.19	2	14	10	7.39	LR	7.70
24.70	1	18	1	35.42	33.80	9	14	3	5.78	1.86	9	10	5	8.63	8.00	10	11	7	9.57	LR	10.57	8	14	10	24.73	LR	25.02
333.67	5	18	1	4.85	10.53	6	15	3	13.39	14.17	10	11	5	4.55	5.02	9	12	7	16.75	LR	16.69	1	15	10	23.34	LR	22.35
62.25	1	3	2	24.84	21.72	8	15	3	24.81	24.02	7	12	5	5.01	4.58	4	13	7	6.50	LR	2.57	3	15	10	7.77	LR	10.78
518.24	3	3	2	119.88	107.27	12	15	3	6.50	1.19	8	13	5	41.20	40.42	10	13	7	6.26	LR	3.18	5	15	10	10.02	LR	11.11
347.53	1	5	2	134.33	131.96	7	16	3	23.56	23.65	12	13	5	21.09	17.22	1	14	7	43.92	LR	44.24	10	11	11	32.86	LR	29.89
2.72	3	5	2	133.93	134.32	9	16	3	20.22	21.27	1	14	5	12.36	11.44	5	14	7	11.61	LR	11.94	1	12	11	18.81	LR	20.50
493.18	5	5	2	67.13	67.42	2	17	3	5.83	1.31	3	14	5	31.75	31.14	7	14	7	34.52	LR	35.72	3	12	11	10.92	LR	10.91
35.01	0	6	2	200.09	198.26	6	17	3	21.79	19.54	2	15	5	5.63	5.11	9	14	7	17.99	LR	18.04	5	12	11	5.80	LR	5.45
228.74	1	7	2	21.72	23.32	8	17	3	17.37	17.64	4	15	5	22.12	22.44	11	14	7	0.00	LR	3.94	7	12	11	6.18	LR	2.76
13.89	3	7	2	9.24	5.17	1	18	3	25.44	23.99	1	16	5	4.76	2.15	2	15	7	5.24	LR	9.58	2	13	11	33.69	LR	32.69
8.91	5	7	2	25.88	24.47	2	2	4	315.38	322.14	3	16	5	20.58	20.41	4	15	7	5.39	LR	3.77	3	14	11	8.97	LR	9.21
167.35	7	7	2	59.62	61.06	4	4	4	271.01	264.71	7	16	5	25.10	25.54	6	15	7	43.72	LR	41.41	5	14	11	30.95	LR	29.03
172.56	0	8	2	31.22	30.60	1	5	4	15.83	15.05	2	17	5	10.62	11.25	8	15	7	23.18	LR	22.86	2	2	12	306.90	LR	311.77
79.65	1	9	2	28.91	28.72	3	5	4	37.36	35.50	4	17	5	18.52	18.88	10	15	7	4.35	LR	5.03	4	4	12	99.40	LR	96.02
165.01	3	9	2	46.07	47.33	2	6	4	418.34	422.60	6	17	5	14.31	18.81	2	17	7	20.07	LR	18.30	10	10	12	113.46	LR	116.68
210.30	5	9	2	5.31	2.26	6	6	4	308.03	310.42	3	18	5	14.17	13.33	1	18	7	15.38	LR	13.47	7	13	12	18.53	LR	21.27
145.68	7	9	2	4.90	1.65	1	7	4	68.39	67.42	1	7	6	49.30	49.41	2	2	8	119.09	LR	121.13	2	5	13	35.74	LR	35.96
18.24	9	9	2	37.32	38.47	3	7	4	27.07	28.62	3	7	6	21.09	22.11	4	4	8	106.85	LR	108.26	3	14	13	15.07	LR	16.08
51.55	1	11	2	21.32	21.94	5	7	4	60.93	64.10	2	8	6	31.38	30.22	6	6	8	52.88	LR	55.40	1	1	14	11.43	LR	11.28
16.66	3	11	2	17.21	18.23	2	8	4	241.06	240.48	2	8	6	31.38	30.22	8	8	8	382.44	LR	394.50	3	3	14	17.17	LR	16.91
17.75	5	11	2	16.54	15.78	8	8	4	239.01	240.25	4	8	6	208.34	206.32	3	9	8	16.79	LR	15.03	5	5	14	7.24	LR	4.09
66.30	11	11	2	22.66	19.43	3	9	4	46.71	47.21	1	9	6	27.10	28.18	2	10	8	60.91	LR	62.38	1	2	15	38.83	LR	38.09
133.95	0	12	2	200.99	199.06	5	9	4	18.82	20.08	3	9	6	39.11	39.73	4	10	8	192.46	LR	193.54	2	3	15	49.94	LR	49.88
268.92	4	12	2	8.90	3.87	7	9	4	36.12	36.66	9	9	6	49.27	48.47	10	10	8	12.63	LR	6.69	4	4	16	35.81	LR	35.11
17.82	8	12	2	168.32	168.65	2	10	4	299.90	300.84	2	10	6	22.48	21.54	5	11	8	42.26	LR	42.37	1	2	17	6.74	LR	3.31
167.93	10	12	2	189.13	189.29	10	10	4	214.72	215.93	4	10	6	225.10	226.13	9	11	8	3.01	LR	0.92	3	3	18	48.24	LR	47.36
15.37	1	13	2	8.35	9.32	1	11	4	52.93	53.32	8	10	6	62.19	64.24	4	12	8	18.41	LR	12.77	5	5	18	8.56	LR	9.13
319.44	3	13	2	28.45	28.32	3	11	4	5.85	4.23	1	11	6	6.54	8.77	8	12	8	185.31	LR	186.77	1	4	19	5.95	LR	6.33
1.40	7	13	2	43.20	42.26	5	11	4	6.55	2.52	3	11	6	68.78	70.35	12	12	8	54.11	LR	52.93						
42.46	13	13	2	38.91	37.46	7	11	4	51.25	52.28	5	11	6	26.55	26.04	1	13	8	15.76	LR	15.20						
98.33	4	14	2	237.75	238.27	9	11	4	12.95	12.86	7	11	6	21.33	19.92	3	13	8	39.38	LR	39.15						
39.78	6	14	2	11.43	10.26	10	12	4	10.78	0.41	9	11	6	24.57	25.98	7	13	8	20.32	LR	19.46						
15.70	8	14	2	18.60	17.11	12	12	4	146.30	144.71	11	11	6	19.89	17.64	9	13	8	21.69	LR	19.74						
117.15	12	14	2	118.06	119.56	1	13	4	3.79	1.67	2	12	6	184.02	184.27	11	13	8	5.32	LR	1.87						
192.32	9	15	2	5.84	2.87	3	13	4	5.21	7.11	4	12	6	12.65	10.52	4	14	8	144.82	LR	144.79						
1.81	11	15	2	7.60	12.35	5	13	4	24.36	23.85	6	12	6	209.74	212.32	5	15	8	18.99	LR	18.85						
39.65	2	16	2	15.35	9.35	9	13	4	6.70	0.48	8	12	6	162.42	163.06	9	15	8	21.96	LR	21.52						
13.18	8	16	2	6.92	11.64	11	13	4	28.00	28.42	10	12	6	200.80	203.55	4	16	8	161.29	LR	161.79						
66.49	10	16	2	56.38	55.76	0	14	4	155.21	155.45	5	13	6	35.69	34.22	6	16	8	8.58	LR	2.21						
13.08	9	17	2	7.31	8.09	10	14	4	145.82	146.15	7	13	6	12.27	10.42	5	17	8	10.46	LR	10.86						
87.00	1	19	2	3.21	2.55	12	14	4	10.33	0.64	9	13	6	20.17	20.64	1	10	9	15.00	LR	14.91						
34.07	3	19	2	31.40	30.64	1	15	4	13.09	13.27	11	13	6	5.39	6.39	9	10	9	33.29	LR	34.80						
29.10	5	6	3	61.66	63.42	3	15	4	26.26	25.53	13	13	6	9.10	16.53	2	11	9	22.05	LR	21.67						
16.97	5	6	3	46.29	43.25	9	15	4	8.91	11.31	4	14	6	171.02	171.71	10	11	9	37.76	LR	38.49						
4.91	5	8	3	84.08	86.20	11	15	4	4.74	1.88	8	14	6	47.76	48.34	1	12	9	5.34	LR	7.48						
2.77	7	8	3	45.51	45.89	2	16	4	156.15	156.42	10	14	6	17.04	17.63	3	12	9	12.16	LR	13.62						
3.21	1	10	3	25.67	25.10	6	16	4	136.59	134.32	12	14	6	164.28	165.10	5	12	9	4.36	LR	1.72						
25.24	3	10	3	31.00	32.74	10	16	4	98.44	96.52	5	15	6	6.72	7.14	11	12	9	5.04	LR	1.59						
7.48	5	10	3	32.07	32.06	3	17	4	12.13	12.96	9	15	6	7.08	7.26	2	13	9	5.28	LR	8.12						
18.48	7	10	3	21.35	21.35	7	17	4	19.01	19.13	2	16	6	26.45	24.31	1	14	9	8.78	LR	10.34						
27.26	9	10	3	4.10	3.03	2	18	4	147.72	146.88	6	16	6	35.57	36.59	5	14	9	28.16	LR	27.53						
1.62	8	11	3	24.94	24.67	6	18	4	145.19	144.10	7	17	6	18.06	19.66	9	14	9	47.34	LR	46.52						
30.67	10	11	3	7.86	6.71	5	6	5	45.38	45.70	2	18	6	12.22	12.82	1	16	9	30.07	LR	30.02						
13.94	1	12	3	26.62	26.67	6	7	5	59.15	61.06	6	9	7	63.72	65.41	5	16	9	6.89	LR	2.57						
17.55	5	12	3	31.97	32.85	7</																					

Table 3. Neutron powder diffraction data for synthetic hibschite

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SAMPLE: Synthetic Hydrogrossular - two months, 623 K, 500 bars  
 INSTRUMENT: IPNS-I TIME-OF-FLIGHT GENERAL PURPOSE POWDER DIFFRACTOMETER (GPPD)  
 AUTHORS: G. A. Lager, U. of Louisville, Louisville, KY 40292; Th. Armbruster, U. of  
 Bern; F. J. Rotella, Argonne National Lab; G. R. Rossman, Cal Tech

DIFFRACTOMETER CONSTANTS: C = 7697.695 A = -3.020 ZERO POINT = -17.400  
 EXPERIMENTAL PARAMETERS: CHANNEL WIDTH = 8.0 TIME DELAY = 3000.0 SCATTERING ANGLE = 90.0

DATA LISTED BY TIME-OF-FLIGHT (TOF) IN MICROSECONDS AND D-SPACING (D) IN ANGSTROMS  
 FOR CONSECUTIVE 8.0 MICROSECOND-WIDE TIME CHANNELS.

TOF	D	NEUTRON COUNTS									
3000.0	0.3921	15642.	15624.	15401.	15759.	15658.	15726.	15677.	15519.	15435.	15720.
3080.0	0.4024	15718.	15506.	15738.	15729.	15376.	15718.	15678.	15443.	15655.	15632.
3160.0	0.4129	15665.	15820.	15599.	15551.	15530.	15528.	15925.	15948.	15640.	15743.
3240.0	0.4232	15939.	15817.	15939.	16122.	16004.	16069.	15966.	16392.	16360.	16234.
3320.0	0.4336	16350.	16408.	16257.	16508.	16455.	16377.	16403.	16273.	16290.	16463.
3400.0	0.4441	16440.	16563.	16583.	16743.	16903.	16688.	16606.	16758.	16644.	16621.
3480.0	0.4544	17400.	17585.	17746.	17635.	17298.	16851.	16594.	16780.	16567.	16671.
3560.0	0.4648	16528.	16740.	16988.	16978.	16844.	17077.	17080.	17029.	16859.	16977.
3640.0	0.4752	17038.	17318.	17609.	17875.	17598.	17537.	17478.	17716.	17671.	17411.
3720.0	0.4856	17370.	17590.	17769.	17717.	18134.	18438.	18443.	18146.	18166.	18104.
3800.0	0.4960	17823.	17958.	18009.	17937.	17914.	17880.	18063.	18235.	18083.	18390.
3880.0	0.5064	18702.	18774.	18913.	19128.	18672.	18424.	18880.	18865.	19047.	19287.
3960.0	0.5168	19266.	19823.	19736.	20157.	19892.	20084.	20368.	19703.	19213.	19645.
4040.0	0.5272	19866.	19956.	19985.	19710.	19807.	19909.	19677.	19801.	19952.	20354.
4120.0	0.5376	20514.	20150.	19866.	19824.	19608.	19373.	19563.	19505.	19367.	19367.
4200.0	0.5480	19393.	19529.	19401.	19775.	19943.	20396.	20725.	20780.	21037.	20886.
4280.0	0.5584	20705.	21154.	21254.	21850.	21720.	21460.	21041.	20846.	20936.	20867.
4360.0	0.5688	21067.	20619.	20642.	20745.	21102.	21177.	21193.	21003.	21339.	21138.
4440.0	0.5792	21224.	20983.	21306.	21404.	21105.	20687.	20413.	20591.	20503.	20425.
4520.0	0.5896	20493.	20548.	20888.	21183.	21673.	21772.	22383.	22799.	23034.	23917.
4600.0	0.6000	24477.	24342.	24677.	23939.	23513.	23111.	22652.	22066.	21879.	21843.
4680.0	0.6104	22153.	22656.	23062.	22495.	22319.	22340.	22513.	22757.	23264.	23551.
4760.0	0.6208	23584.	22876.	22813.	22130.	22104.	21878.	21707.	21389.	21700.	21923.
4840.0	0.6312	22325.	22259.	22611.	22609.	22690.	22484.	22503.	22569.	22566.	23248.
4920.0	0.6416	22719.	23108.	22659.	22704.	22465.	22570.	22839.	22976.	23145.	23045.
5000.0	0.6520	23421.	23388.	23615.	23409.	23091.	23173.	22748.	22815.	22780.	22874.
5080.0	0.6624	22983.	22968.	23394.	23422.	23782.	23359.	23598.	24227.	24560.	25042.
5160.0	0.6728	24699.	24446.	24247.	24338.	24207.	24013.	24098.	24244.	24004.	23897.
5240.0	0.6832	24458.	25127.	25554.	25996.	26152.	26355.	26191.	25625.	25118.	24483.
5320.0	0.6936	23625.	23651.	23232.	23224.	23015.	22761.	22965.	22642.	22830.	22728.
5400.0	0.7040	22472.	22288.	22080.	21686.	21697.	21190.	21271.	21262.	21715.	21886.
5480.0	0.7144	22449.	22717.	23660.	24934.	24626.	24794.	24940.	24878.	25057.	25053.
5560.0	0.7248	24701.	24292.	24337.	23622.	23871.	23473.	23287.	23068.	22916.	22699.
5640.0	0.7352	22615.	23061.	23248.	23323.	23084.	23380.	23398.	23266.	23023.	23271.
5720.0	0.7456	23185.	23453.	23600.	23437.	23068.	22817.	22450.	21940.	21854.	21839.
5800.0	0.7560	21531.	21750.	21766.	21858.	22160.	23145.	23582.	23954.	23788.	23571.
5880.0	0.7664	23804.	23622.	23632.	23594.	23299.	23123.	22673.	22691.	22444.	22416.
5960.0	0.7768	23167.	23749.	24509.	24696.	24228.	23914.	23288.	23196.	22742.	22767.
6040.0	0.7872	22644.	22692.	22503.	22666.	22737.	22783.	22488.	22373.	21921.	21723.
6120.0	0.7976	21632.	22000.	21762.	22053.	21684.	21908.	22071.	21969.	21929.	22055.
6200.0	0.8080	21664.	21766.	21228.	21443.	22133.	22822.	23986.	25709.	27149.	28936.
6280.0	0.8184	29095.	28978.	27751.	26593.	25441.	24737.	24687.	24120.	24166.	24124.
6360.0	0.8288	23356.	23152.	22171.	21936.	21611.	21413.	21750.	21396.	21619.	21488.

TOF	D	NEUTRON COUNTS									
6440.0	0.8391	21283.	20760.	20657.	20701.	20755.	20786.	20882.	21083.	21347.	21991.
6520.0	0.8496	22295.	22703.	23001.	23088.	23325.	22306.	22013.	21470.	20525.	20103.
6600.0	0.8600	19532.	19098.	18872.	18646.	18313.	18453.	18577.	18118.	18367.	17813.
6680.0	0.8703	17705.	17456.	17255.	17106.	16818.	17388.	17092.	17483.	18000.	18794.
6760.0	0.8808	19084.	19166.	18873.	18425.	18122.	17512.	17272.	16836.	17227.	17664.
6840.0	0.8911	17909.	18218.	18673.	19111.	19282.	19577.	19329.	18659.	18311.	18117.
6920.0	0.9015	17724.	17343.	17152.	16680.	16786.	16479.	16433.	16759.	16382.	16337.
7000.0	0.9120	16362.	16137.	15784.	15482.	15549.	15163.	15062.	14980.	14959.	15013.
7080.0	0.9224	14829.	14766.	14668.	14652.	15066.	15367.	15885.	17126.	18004.	18857.
7160.0	0.9327	19156.	19070.	18544.	17749.	17061.	16419.	15938.	15595.	15002.	14655.
7240.0	0.9432	14384.	14304.	13923.	13695.	13760.	13798.	13358.	13367.	13405.	13317.
7320.0	0.9536	13315.	13458.	13513.	13331.	13423.	13329.	13336.	13201.	13530.	13311.
7400.0	0.9640	13461.	13831.	13946.	14622.	14659.	15395.	15350.	15725.	16303.	16873.
7480.0	0.9744	17219.	17334.	17019.	16635.	16138.	15912.	15327.	15101.	14715.	14390.
7560.0	0.9848	14262.	14133.	14009.	13987.	13750.	14053.	13919.	14020.	14278.	14296.
7640.0	0.9952	14210.	13707.	13594.	13383.	13311.	13153.	12887.	12678.	12506.	12127.
7720.0	1.0056	12133.	12144.	11763.	11678.	11935.	11543.	11753.	11822.	11922.	11754.
7800.0	1.0160	11930.	11865.	12002.	12127.	12490.	12745.	13191.	13382.	13581.	13355.
7880.0	1.0264	13621.	13342.	13317.	12991.	12735.	12382.	12174.	12400.	12451.	12556.
7960.0	1.0368	12631.	12955.	12701.	12655.	12406.	12147.	11654.	11500.	11227.	11005.
8040.0	1.0471	11018.	10745.	10716.	10624.	10491.	10279.	10482.	10508.	10539.	10622.
8120.0	1.0576	10670.	10830.	11085.	11373.	11556.	11270.	11366.	11385.	11397.	11453.
8200.0	1.0680	11725.	11515.	11950.	11958.	11904.	11487.	11532.	11122.	10754.	10697.
8280.0	1.0783	10536.	10479.	10300.	10397.	10610.	11021.	11641.	11959.	12451.	12881.
8360.0	1.0888	13083.	12834.	12731.	12626.	12732.	13270.	13409.	13736.	13829.	13796.
8440.0	1.0992	13425.	12902.	12625.	12407.	12278.	11733.	11650.	11580.	11232.	11254.
8520.0	1.1096	11303.	11437.	12235.	12844.	13492.	14249.	14545.	14283.	14034.	13654.
8600.0	1.1200	13041.	12746.	12638.	12037.	11537.	11146.	10787.	10521.	10292.	9879.
8680.0	1.1304	9773.	9567.	9722.	9480.	9353.	9377.	9282.	9351.	9360.	9449.
8760.0	1.1408	9645.	9635.	10025.	10116.	10042.	10152.	10156.	10121.	9719.	9516.
8840.0	1.1512	9529.	9338.	8953.	8953.	8861.	8985.	8889.	9205.	9077.	9190.
8920.0	1.1616	9158.	9198.	8887.	8858.	8836.	9014.	8810.	8961.	9077.	9406.
9000.0	1.1720	9383.	9790.	10228.	10930.	11840.	12624.	12906.	13336.	12742.	12420.
9080.0	1.1824	11983.	11506.	10722.	10339.	10213.	9947.	9885.	9586.	9351.	9220.
9160.0	1.1928	9012.	8680.	8613.	8475.	8475.	8216.	8440.	8538.	8634.	8432.
9240.0	1.2032	8609.	8571.	8937.	9145.	9774.	10429.	11605.	12755.	14123.	15441.
9320.0	1.2136	16022.	15932.	15656.	15271.	14344.	13503.	12647.	11929.	11665.	11233.
9400.0	1.2240	10609.	10232.	9846.	9395.	8932.	8816.	8489.	8186.	8061.	8057.
9480.0	1.2344	7851.	8049.	8080.	7911.	7826.	7781.	7713.	7425.	7417.	7361.
9560.0	1.2448	7360.	7347.	7359.	7260.	7119.	7148.	6850.	6975.	6673.	6848.
9640.0	1.2552	6648.	6850.	6688.	6763.	7080.	7228.	7618.	8326.	8802.	9399.
9720.0	1.2657	9880.	10286.	10417.	9878.	9591.	9118.	8688.	8484.	8173.	7837.
9800.0	1.2761	7733.	7608.	7580.	7669.	7527.	7608.	7440.	7455.	7129.	6974.
9880.0	1.2864	7047.	6694.	6853.	6695.	6891.	6969.	7156.	7415.	7550.	7377.
9960.0	1.2969	7452.	7229.	7052.	6841.	6852.	6724.	6686.	6709.	6598.	6435.
10040.0	1.3072	6461.	6469.	6617.	6640.	6632.	6536.	6288.	6025.	5864.	5809.
10120.0	1.3176	5802.	5578.	5414.	5385.	5283.	5198.	5141.	5168.	5024.	5185.
10200.0	1.3281	5138.	5203.	5257.	5346.	5318.	5274.	5499.	5305.	5418.	5741.
10280.0	1.3384	5807.	6460.	6592.	6895.	7000.	7353.	7147.	7047.	6859.	6658.
10360.0	1.3488	6422.	6310.	6070.	5820.	5861.	5845.	5772.	5953.	5977.	6127.
10440.0	1.3593	6256.	6411.	6208.	6219.	5957.	5837.	5712.	5574.	5470.	5273.
10520.0	1.3697	5231.	4956.	4891.	4899.	4936.	4792.	4917.	4597.	4802.	4685.
10600.0	1.3800	4687.	4709.	4642.	4588.	4479.	4404.	4501.	4463.	4522.	4361.
10680.0	1.3905	4444.	4366.	4437.	4632.	4540.	4569.	4488.	4544.	4541.	4409.



TOF	D	NEUTRON COUNTS									
10760.0	1.4009	4396.	4325.	4251.	4116.	4241.	4079.	4205.	4139.	4130.	4209.
10840.0	1.4112	4229.	4290.	4367.	4418.	4470.	4430.	4480.	4489.	4444.	4393.
10920.0	1.4217	4288.	4222.	4347.	4291.	4202.	4435.	4537.	4866.	4945.	5263.
11000.0	1.4321	5531.	5678.	5886.	5883.	5664.	5582.	5436.	5153.	4961.	4637.
11080.0	1.4425	4586.	4571.	4280.	4212.	4257.	4092.	3981.	4108.	3824.	3976.
11160.0	1.4529	3966.	3990.	3882.	4023.	3985.	3967.	4055.	3976.	3828.	3792.
11240.0	1.4633	3766.	3816.	3718.	3682.	3658.	3734.	3917.	3749.	3964.	4054.
11320.0	1.4737	4359.	4412.	4622.	4822.	4916.	4829.	4946.	4831.	4716.	4551.
11400.0	1.4841	4447.	4378.	4040.	4072.	3953.	3985.	3835.	3678.	3666.	3819.
11480.0	1.4945	3746.	3612.	3667.	3705.	3610.	3675.	3637.	3505.	3562.	3507.
11560.0	1.5049	3405.	3536.	3538.	3593.	3553.	3649.	3772.	3765.	3889.	3871.
11640.0	1.5153	3957.	4008.	3802.	3775.	3637.	3674.	3677.	3821.	3747.	3712.
11720.0	1.5257	3795.	3608.	3774.	3791.	3511.	3489.	3412.	3402.	3302.	3339.
11800.0	1.5361	3260.	3157.	3013.	3171.	2991.	3058.	3012.	3051.	3050.	2936.
11880.0	1.5465	2957.	2943.	2981.	2962.	2923.	2885.	2987.	2954.	2982.	3111.
11960.0	1.5569	3195.	3297.	3550.	3606.	3803.	3783.	3582.	3556.	3364.	3212.
12040.0	1.5674	3129.	3027.	2964.	3018.	3029.	2865.	2759.	2803.	2797.	2906.
12120.0	1.5778	2777.	2707.	2792.	2687.	2797.	2694.	2640.	2696.	2605.	2661.
12200.0	1.5882	2852.	2807.	2794.	2852.	2771.	2924.	3052.	3180.	3472.	3729.
12280.0	1.5986	4150.	4509.	5028.	5436.	5983.	6434.	6840.	6882.	6756.	6635.
12360.0	1.6090	6338.	6115.	5730.	5380.	5080.	4766.	4462.	4117.	4049.	3752.
12440.0	1.6193	3696.	3613.	3515.	3268.	3285.	3205.	3196.	3141.	3261.	3153.
12520.0	1.6298	3141.	3198.	3133.	3212.	3274.	3263.	3190.	3116.	3058.	3086.
12600.0	1.6402	3085.	3013.	3095.	3029.	2960.	2943.	2907.	2845.	2980.	2899.
12680.0	1.6506	2848.	2911.	2825.	2760.	2764.	2883.	2942.	2971.	3126.	3193.
12760.0	1.6610	3287.	3427.	3597.	3712.	3733.	3768.	3781.	3674.	3541.	3442.
12840.0	1.6714	3399.	3204.	3122.	3034.	2909.	2810.	2765.	2684.	2489.	2678.
12920.0	1.6818	2528.	2537.	2404.	2423.	2300.	2463.	2449.	2411.	2431.	2479.
13000.0	1.6923	2521.	2654.	2611.	2746.	2861.	2993.	2882.	2937.	3059.	2904.
13080.0	1.7026	2884.	2784.	2767.	2647.	2602.	2661.	2431.	2388.	2482.	2411.
13160.0	1.7130	2375.	2155.	2218.	2273.	2241.	2269.	2308.	2263.	2267.	2273.
13240.0	1.7235	2354.	2309.	2471.	2591.	2712.	2765.	2986.	3203.	3292.	3296.
13320.0	1.7339	3295.	3307.	3350.	3236.	3086.	3014.	2926.	2794.	2674.	2653.
13400.0	1.7443	2506.	2487.	2436.	2223.	2189.	2228.	2187.	2130.	2121.	2125.
13480.0	1.7547	2064.	2071.	2067.	2074.	2081.	2058.	2079.	2069.	2101.	2124.
13560.0	1.7651	2219.	2333.	2316.	2347.	2459.	2489.	2477.	2493.	2522.	2418.
13640.0	1.7754	2384.	2356.	2282.	2195.	2180.	2171.	2080.	2003.	1992.	1965.
13720.0	1.7859	1946.	1890.	1891.	1868.	1830.	1844.	1887.	1829.	1765.	1778.
13800.0	1.7963	1776.	1734.	1724.	1740.	1655.	1771.	1766.	1747.	1803.	1751.
13880.0	1.8067	1743.	1773.	1674.	1721.	1740.	1680.	1739.	1669.	1765.	1664.
13960.0	1.8171	1735.	1667.	1664.	1796.	1661.	1671.	1646.	1675.	1700.	1601.
14040.0	1.8275	1599.	1571.	1588.	1554.	1455.	1572.	1566.	1533.	1498.	1474.
14120.0	1.8379	1412.	1492.	1506.	1473.	1419.	1456.	1489.	1427.	1421.	1502.
14200.0	1.8484	1449.	1563.	1443.	1409.	1460.	1459.	1416.	1382.	1484.	1438.
14280.0	1.8587	1404.	1499.	1385.	1458.	1514.	1380.	1347.	1314.	1347.	1389.
14360.0	1.8691	1348.	1406.	1369.	1439.	1349.	1404.	1406.	1365.	1422.	1380.
14440.0	1.8796	1355.	1353.	1407.	1448.	1425.	1413.	1455.	1487.	1431.	1520.
14520.0	1.8900	1632.	1682.	1699.	1840.	1888.	2025.	2065.	2212.	2229.	2304.
14600.0	1.9004	2251.	2293.	2226.	2228.	2096.	2052.	2006.	1921.	1875.	1884.
14680.0	1.9108	1828.	1718.	1694.	1638.	1669.	1717.	1686.	1600.	1512.	1548.
14760.0	1.9212	1529.	1575.	1506.	1554.	1540.	1569.	1567.	1659.	1644.	1701.
14840.0	1.9315	1754.	1767.	1891.	1979.	2126.	2244.	2351.	2681.	2906.	3254.
14920.0	1.9420	3621.	4100.	4459.	4868.	5252.	5721.	5813.	5997.	5882.	5802.
15000.0	1.9524	5510.	5386.	4932.	4867.	4232.	4133.	3898.	3711.	3378.	3298.

TOF	D	NEUTRON COUNTS									
15080.0	1.9628	3134.	2936.	2763.	2747.	2519.	2456.	2486.	2407.	2242.	2223.
15160.0	1.9733	2203.	2173.	2040.	2091.	2080.	2033.	1966.	1982.	2008.	1970.
15240.0	1.9836	1905.	1871.	1916.	1888.	1907.	1933.	1902.	1955.	1942.	1955.
15320.0	1.9940	1942.	1879.	1915.	1860.	1820.	1832.	1865.	1861.	1777.	1697.
15400.0	2.0045	1798.	1661.	1666.	1665.	1594.	1520.	1448.	1496.	1482.	1410.
15480.0	2.0149	1399.	1376.	1375.	1299.	1283.	1305.	1280.	1355.	1336.	1338.
15560.0	2.0253	1308.	1219.	1280.	1324.	1308.	1309.	1272.	1250.	1118.	1165.
15640.0	2.0357	1133.	1154.	1110.	1088.	1024.	1026.	1055.	1040.	976.	1021.
15720.0	2.0461	997.	953.	1014.	945.	972.	976.	974.	992.	972.	899.
15800.0	2.0565	992.	1010.	974.	967.	981.	1005.	930.	951.	903.	968.
15880.0	2.0669	972.	984.	923.	953.	977.	973.	913.	996.	1070.	1088.
15960.0	2.0773	1047.	1138.	1159.	1211.	1147.	1122.	1205.	1200.	1079.	1103.
16040.0	2.0877	993.	975.	1000.	1023.	980.	897.	941.	948.	873.	925.
16120.0	2.0982	864.	886.	891.	940.	873.	907.	921.	918.	880.	883.
16200.0	2.1086	905.	947.	926.	887.	945.	924.	946.	949.	989.	1025.
16280.0	2.1189	1056.	1041.	1005.	1027.	1038.	996.	983.	1039.	1021.	1090.
16360.0	2.1294	1040.	1029.	991.	1047.	997.	1002.	965.	1049.	986.	1047.
16440.0	2.1398	1012.	944.	961.	1008.	937.	954.	976.	887.	888.	906.
16520.0	2.1502	894.	869.	908.	864.	844.	865.	939.	786.	821.	911.
16600.0	2.1606	795.	873.	893.	836.	892.	859.	913.	964.	898.	920.
16680.0	2.1710	958.	939.	1007.	1001.	1023.	1155.	1077.	1208.	1164.	1263.
16760.0	2.1814	1366.	1486.	1609.	1723.	1900.	2053.	2185.	2334.	2556.	2709.
16840.0	2.1918	2839.	2907.	2806.	2973.	2907.	2837.	2757.	2618.	2537.	2372.
16920.0	2.2023	2272.	2297.	2227.	2116.	2050.	2032.	1893.	1842.	1819.	1677.
17000.0	2.2127	1655.	1494.	1506.	1420.	1439.	1420.	1302.	1343.	1301.	1365.
17080.0	2.2231	1344.	1256.	1267.	1313.	1219.	1222.	1231.	1251.	1272.	1218.
17160.0	2.2335	1195.	1208.	1263.	1273.	1221.	1221.	1235.	1205.	1232.	1187.
17240.0	2.2438	1224.	1207.	1304.	1208.	1248.	1266.	1208.	1181.	1155.	1148.
17320.0	2.2543	1105.	1175.	1076.	1109.	1094.	1018.	1025.	1063.	993.	952.
17400.0	2.2647	913.	928.	935.	933.	888.	876.	838.	804.	867.	793.
17480.0	2.2751	786.	777.	744.	821.	770.	700.	734.	728.	769.	743.
17560.0	2.2855	814.	679.	747.	712.	726.	671.	706.	695.	749.	720.
17640.0	2.2959	718.	658.	694.	670.	669.	678.	645.	683.	651.	644.
17720.0	2.3063	650.	627.	677.	639.	661.	637.	647.	655.	666.	652.
17800.0	2.3167	622.	709.	684.	617.	675.	668.	663.	680.	634.	691.
17880.0	2.3272	715.	695.	744.	721.	832.	794.	822.	840.	920.	979.
17960.0	2.3376	1013.	1036.	985.	1065.	1108.	1092.	1213.	1280.	1363.	1449.
18040.0	2.3480	1528.	1644.	1799.	1850.	1983.	2035.	2228.	2140.	2248.	2139.
18120.0	2.3584	2220.	2174.	2037.	1979.	1869.	1882.	1764.	1689.	1528.	1515.
18200.0	2.3688	1440.	1379.	1275.	1263.	1151.	1178.	1140.	1119.	1083.	998.
18280.0	2.3792	979.	1003.	950.	952.	912.	947.	949.	919.	836.	882.
18360.0	2.3897	879.	904.	819.	824.	871.	851.	834.	823.	865.	849.
18440.0	2.4000	815.	842.	827.	791.	815.	816.	811.	860.	818.	829.
18520.0	2.4104	882.	831.	834.	802.	858.	788.	861.	829.	816.	746.
18600.0	2.4209	787.	750.	716.	804.	753.	731.	719.	719.	722.	701.
18680.0	2.4313	652.	669.	688.	628.	637.	633.	600.	636.	605.	647.
18760.0	2.4417	584.	578.	575.	599.	601.	608.	652.	612.	597.	611.
18840.0	2.4521	639.	562.	605.	564.	569.	519.	582.	592.	535.	541.
18920.0	2.4625	529.	531.	556.	518.	533.	523.	519.	501.	503.	482.
19000.0	2.4729	518.	493.	511.	490.	506.	485.	505.	521.	530.	496.
19080.0	2.4834	504.	499.	524.	476.	501.	482.	516.	466.	467.	526.
19160.0	2.4938	501.	476.	474.	464.	465.	495.	461.	474.	477.	485.
19240.0	2.5041	473.	472.	454.	483.	475.	446.	434.	469.	491.	488.
19320.0	2.5146	507.	480.	436.	493.	459.	494.	476.	497.	498.	458.

TOF	D	NEUTRON COUNTS									
19400.0	2.5250	458.	495.	487.	466.	487.	453.	484.	472.	481.	482.
19480.0	2.5354	504.	525.	547.	558.	590.	642.	606.	658.	729.	727.
19560.0	2.5459	808.	818.	891.	921.	917.	982.	1081.	1085.	1169.	1163.
19640.0	2.5562	1175.	1263.	1281.	1281.	1240.	1344.	1318.	1227.	1245.	1150.
19720.0	2.5667	1175.	1101.	1136.	1046.	1034.	943.	959.	869.	878.	819.
19800.0	2.5771	784.	772.	705.	753.	752.	690.	685.	686.	669.	616.
19880.0	2.5875	619.	572.	571.	593.	504.	533.	554.	534.	586.	522.
19960.0	2.5979	541.	501.	545.	540.	528.	522.	548.	514.	516.	523.
20040.0	2.6083	566.	526.	518.	512.	561.	513.	534.	555.	529.	522.
20120.0	2.6188	512.	538.	527.	512.	535.	530.	534.	548.	494.	464.
20200.0	2.6292	496.	502.	491.	480.	527.	491.	466.	472.	474.	473.
20280.0	2.6395	431.	459.	502.	440.	457.	426.	411.	434.	408.	412.
20360.0	2.6500	469.	385.	435.	445.	443.	436.	444.	437.	402.	423.
20440.0	2.6604	439.	391.	431.	439.	444.	431.	446.	465.	446.	468.
20520.0	2.6708	464.	531.	532.	541.	577.	588.	691.	667.	697.	741.
20600.0	2.6813	747.	817.	809.	825.	825.	886.	825.	822.	831.	853.
20680.0	2.6916	747.	796.	686.	676.	703.	661.	632.	655.	562.	587.
20760.0	2.7020	566.	604.	529.	504.	505.	523.	497.	503.	450.	462.
20840.0	2.7125	430.	416.	432.	412.	431.	414.	424.	374.	429.	392.
20920.0	2.7229	402.	419.	426.	395.	367.	370.	397.	405.	365.	397.
21000.0	2.7333	386.	318.	324.	369.	398.	343.	371.	409.	374.	392.
21080.0	2.7437	376.	341.	371.	407.	381.	319.	375.	335.	369.	372.
21160.0	2.7541	365.	339.	335.	349.	346.	356.	355.	343.	325.	327.
21240.0	2.7645	300.	354.	322.	345.	298.	279.	324.	315.	326.	317.
21320.0	2.7750	312.	307.	316.	286.	308.	310.	316.	326.	347.	360.
21400.0	2.7854	361.	367.	369.	405.	388.	412.	392.	418.	399.	399.
21480.0	2.7958	356.	337.	327.	340.	311.	319.	271.	313.	304.	297.
21560.0	2.8062	290.	278.	279.	282.	269.	271.	272.	258.	250.	264.
21640.0	2.8166	251.	247.	256.	247.	232.	275.	254.	250.	254.	252.
21720.0	2.8270	291.	267.	228.	257.	257.	258.	244.	261.	252.	226.
21800.0	2.8374	256.	239.	247.	261.	264.	251.	256.	271.	255.	244.
21880.0	2.8479	245.	255.	266.	265.	253.	236.	230.	256.	243.	276.
21960.0	2.8583	249.	255.	247.	249.	231.	228.	229.	238.	225.	214.
22040.0	2.8687	261.	229.	235.	241.	230.	222.	251.	250.	254.	263.
22120.0	2.8791	254.	233.	224.	218.	217.	224.	234.	242.	220.	242.
22200.0	2.8896	216.	245.	206.	242.	228.	259.	203.	244.	256.	224.
22280.0	2.8999	230.	234.	225.	232.	227.	218.	221.	220.	206.	235.
22360.0	2.9104	220.	233.	233.	205.	242.	228.	205.	249.	239.	221.
22440.0	2.9208	238.	208.	227.	204.	227.	203.	220.	229.	220.	224.
22520.0	2.9312	236.	216.	231.	206.	229.	232.	232.	228.	222.	232.
22600.0	2.9417	205.	215.	220.	204.	252.	229.	245.	210.	212.	240.
22680.0	2.9520	241.	190.	231.	208.	256.	200.	215.	199.	203.	217.
22760.0	2.9624	222.	202.	221.	227.	239.	218.	260.	241.	229.	202.
22840.0	2.9729	201.	200.	198.	190.	228.	208.	217.	209.	222.	214.
22920.0	2.9833	203.	210.	222.	208.	201.	213.	233.	245.	230.	229.
23000.0	2.9937	263.	238.	258.	215.	261.	246.	234.	265.	253.	240.
23080.0	3.0041	260.	249.	226.	259.	250.	215.	228.	215.	226.	227.
23160.0	3.0146	227.	238.	235.	245.	223.	200.	212.	230.	207.	218.
23240.0	3.0249	199.	189.	216.	206.	221.	214.	206.	217.	204.	200.
23320.0	3.0353	224.	238.	228.	222.	209.	207.	177.	195.	194.	202.
23400.0	3.0458	218.	219.	195.	213.	200.	198.	171.	189.	213.	188.
23480.0	3.0562	187.	214.	201.	199.	195.	182.	175.	200.	237.	215.
23560.0	3.0666	204.	184.	191.	198.	206.	166.	205.	210.	205.	177.
23640.0	3.0771	175.	196.	197.	190.	194.	179.	185.	180.	184.	175.

TOF	D	NEUTRON COUNTS									
23720.0	3.0875	184.	178.	186.	165.	182.	175.	170.	206.	190.	168.
23800.0	3.0979	192.	171.	203.	181.	177.	196.	158.	176.	186.	162.
23880.0	3.1083	176.	192.	187.	172.	178.	187.	164.	182.	173.	176.
23960.0	3.1187	172.	182.	172.	202.	187.	197.	164.	176.	183.	180.
24040.0	3.1291	168.	167.	172.	175.	186.	184.	161.	158.	152.	153.
24120.0	3.1396	150.	173.	186.	185.	195.	182.	173.	165.	170.	169.
24200.0	3.1500	177.	194.	166.	200.	154.	171.	179.	178.	166.	187.
24280.0	3.1604	176.	194.	186.	188.	165.	164.	208.	149.	194.	147.
24360.0	3.1708	168.	158.	160.	163.	184.	173.	143.	163.	137.	161.
24440.0	3.1812	162.	141.	158.	179.	149.	166.	183.	165.	172.	161.
24520.0	3.1916	170.	190.	191.	164.	199.	173.	163.	171.	165.	169.
24600.0	3.2020	179.	161.	175.	190.	161.	174.	176.	181.	180.	174.
24680.0	3.2125	171.	180.	157.	186.	164.	198.	193.	148.	162.	144.
24760.0	3.2229	195.	158.	160.	172.	161.	145.	191.	156.	171.	157.
24840.0	3.2333	139.	165.	157.	162.	151.	175.	150.	129.	156.	177.
24920.0	3.2438	164.	154.	144.	158.	180.	166.	162.	160.	157.	155.
25000.0	3.2542	158.	134.	144.	157.	135.	138.	149.	158.	166.	145.
25080.0	3.2645	166.	146.	135.	149.	144.	163.	142.	140.	138.	144.
25160.0	3.2750	154.	147.	128.	149.	155.	149.	141.	156.	133.	150.
25240.0	3.2854	141.	144.	125.	148.	137.	148.	146.	150.	140.	127.
25320.0	3.2958	128.	139.	149.	146.	132.	145.	168.	131.	137.	144.
25400.0	3.3062	140.	153.	141.	163.	128.	148.	142.	133.	138.	133.
25480.0	3.3167	140.	137.	140.	143.	156.	147.	132.	136.	153.	125.
25560.0	3.3271	120.	152.	135.	140.	139.	145.	164.	130.	130.	141.
25640.0	3.3375	136.	155.	144.	145.	143.	143.	129.	156.	120.	124.
25720.0	3.3480	143.	143.	155.	142.	146.	120.	140.	146.	135.	137.
25800.0	3.3584	136.	134.	135.	115.	137.	113.	138.	133.	135.	135.
25880.0	3.3687	121.	128.	120.	118.	123.	131.	122.	121.	120.	126.
25960.0	3.3792	105.	126.	137.	151.	132.	129.	122.	134.	123.	137.
26040.0	3.3896	124.	129.	133.	111.	114.	139.	124.	106.	133.	144.
26120.0	3.4000	115.	108.	131.	135.	123.	129.	138.	142.	104.	145.
26200.0	3.4105	130.	122.	128.	131.	114.	109.	114.	132.	148.	118.
26280.0	3.4209	142.	114.	140.	92.	125.	124.	111.	130.	130.	120.
26360.0	3.4313	129.	125.	118.	120.	120.	120.	131.	132.	116.	140.
26440.0	3.4417	132.	117.	118.	127.	119.	120.	114.	120.	140.	114.
26520.0	3.4522	98.	117.	121.	122.	110.	121.	127.	117.	102.	118.
26600.0	3.4626	113.	151.	118.	125.	121.	117.	112.	114.	122.	122.
26680.0	3.4729	120.	122.	118.	127.	106.	114.	98.	115.	130.	108.
26760.0	3.4835	112.	120.	146.	147.	116.	125.	115.	97.	126.	109.
26840.0	3.4938	125.	98.	116.	120.	120.	114.	123.	108.	107.	105.
26920.0	3.5042	109.	105.	111.	108.	123.	108.	104.	97.	131.	135.
27000.0	3.5147	115.	101.	115.	119.	112.	130.	107.	102.	98.	110.
27080.0	3.5251	122.	98.	101.	110.	143.	103.	103.	102.	108.	117.
27160.0	3.5355	92.	118.	119.	90.	136.	115.	112.	106.	105.	97.
27240.0	3.5459	118.	109.	96.	78.	110.	115.	107.	118.	110.	95.
27320.0	3.5564	94.	102.	113.	119.	86.	123.	109.	116.	122.	133.
27400.0	3.5668	107.	99.	105.	103.	108.	103.	93.	114.	107.	103.
27480.0	3.5772	100.	95.	121.	108.	96.	91.	100.	120.	109.	107.
27560.0	3.5877	106.	111.	111.	102.	102.	88.	103.	101.	127.	111.
27640.0	3.5980	108.	98.	118.	126.	126.	105.	124.	131.	117.	115.
27720.0	3.6084	116.	122.	121.	115.	101.	109.	87.	95.	98.	102.
27800.0	3.6189	93.	111.	95.	101.	111.	84.	102.	67.	85.	115.
27880.0	3.6293	115.	93.	113.	99.	84.	90.	91.	106.	114.	98.
27960.0	3.6397	103.	70.	96.	99.	94.	90.	107.	92.	90.	111.

TOF	D	NEUTRON COUNTS									
28040.0	3.6501	89.	88.	105.	83.	88.	96.	98.	100.	99.	85.
28120.0	3.6606	111.	111.	111.	84.	86.	107.	91.	99.	95.	93.
28200.0	3.6710	108.	91.	90.	86.	102.	81.	106.	93.	90.	107.
28280.0	3.6814	80.	83.	70.	119.	91.	106.	105.	88.	88.	90.
28360.0	3.6919	85.	98.	86.	88.	87.	95.	82.	80.	106.	79.
28440.0	3.7023	71.	87.	80.	87.	89.	86.	86.	87.	93.	80.
28520.0	3.7127	92.	80.	81.	90.	96.	92.	100.	93.	89.	103.
28600.0	3.7231	94.	73.	80.	88.	91.	79.	81.	98.	109.	82.
28680.0	3.7335	90.	82.	89.	87.	87.	84.	79.	96.	92.	83.
28760.0	3.7440	62.	84.	97.	89.	84.	85.	100.	87.	87.	75.
28840.0	3.7543	91.	63.	81.	90.	83.	70.	84.	76.	95.	82.
28920.0	3.7648	79.	87.	88.	99.	91.	62.	73.	76.	78.	83.
29000.0	3.7753	91.	86.	72.	96.	82.	75.	75.	82.	80.	87.
29080.0	3.7856	87.	75.	80.	75.	78.	71.	86.	86.	67.	74.
29160.0	3.7961	92.	92.	98.	77.	80.	92.	61.	87.	90.	85.
29240.0	3.8065	83.	98.	84.	90.	76.	90.	70.	85.	86.	65.
29320.0	3.8169	87.	79.	89.	89.	63.	69.	70.	69.	84.	87.
29400.0	3.8273	72.	76.	81.	66.	71.	91.	93.	84.	87.	77.
29480.0	3.8378	75.	79.	73.	64.	82.	70.	62.	89.	83.	75.
29560.0	3.8482	79.	83.	81.	77.	80.	70.	78.	81.	86.	82.
29640.0	3.8586	71.	84.	77.	89.	85.	79.	89.	91.	69.	70.
29720.0	3.8691	67.	77.	61.	74.	77.	74.	71.	73.	73.	69.
29800.0	3.8795	78.	79.	77.	77.	77.	82.	79.	67.	85.	59.
29880.0	3.8899	67.	76.	94.	79.	81.	59.	78.	68.	82.	78.
29960.0	3.9003	74.	68.	69.	86.	75.					