

26/07/2017

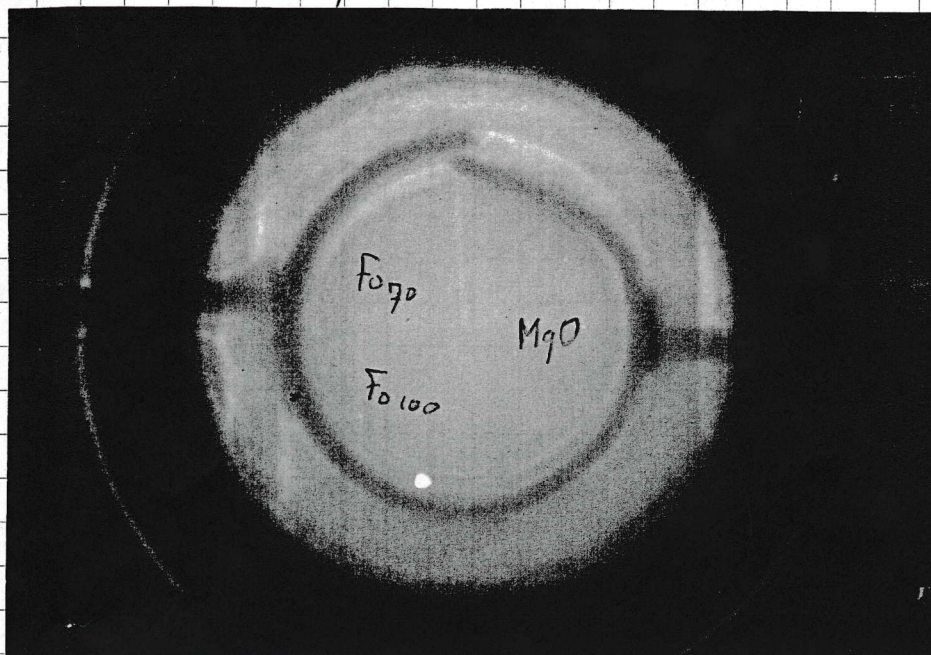
M2272

target P = 23.6 GPa

0:07

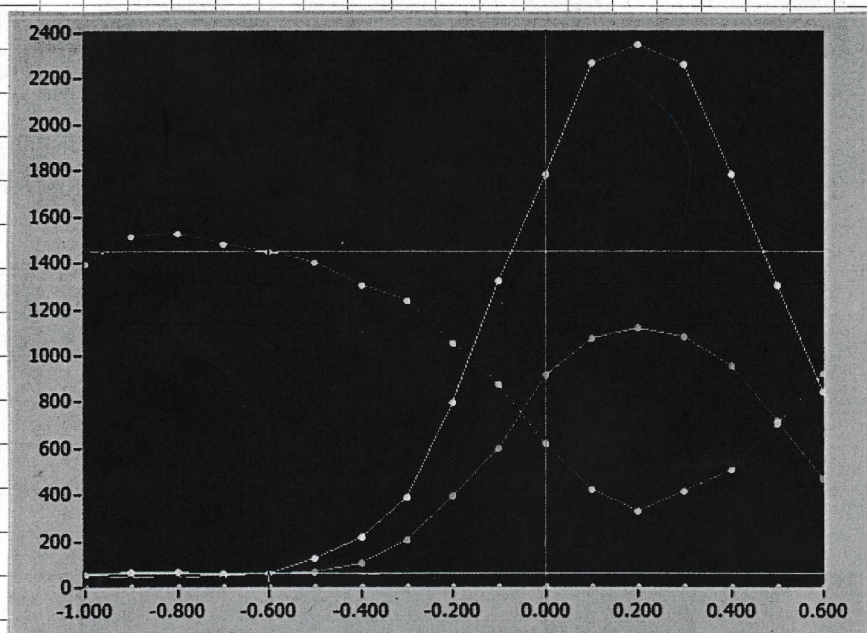
put in assembly

Z = -4



1:15

X-scan

X = ~~0.2~~ 0.2M2272001MgO, 0 ton, RT, 300 sec $\kappa = 0 - 7.2^\circ$

DT = 5.66%

X = 0.2

Y = -1.58

Z = -4.15

TC 0.45

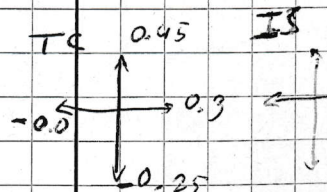
IS

P = 0.02539 ± 0.01610 GPa

α = 4.211200

V = 74.682172 ± 0.0017498 Å³

2θ = 7.19828°

W₀ = 0.999998 ± 0.00010

Top

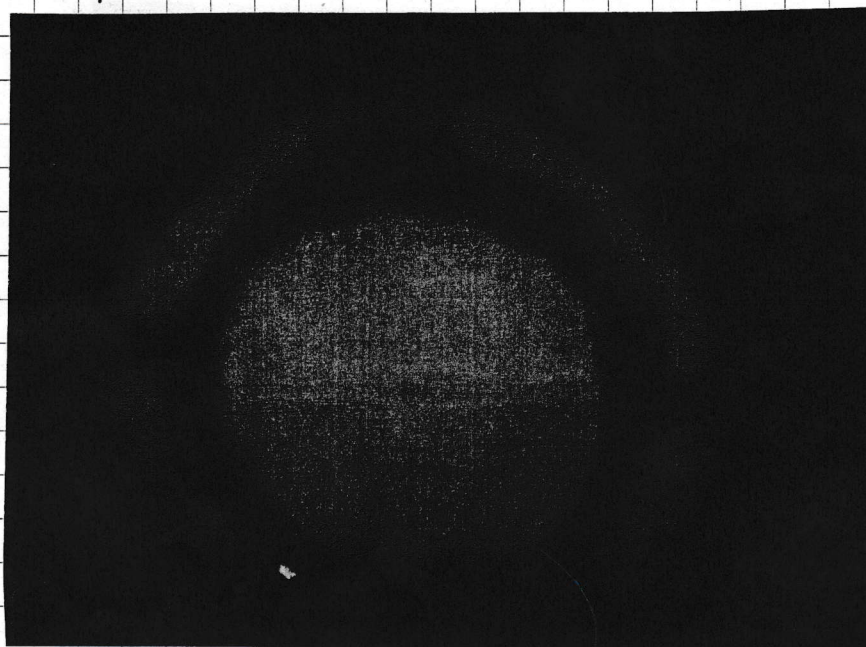
M2252002 F_{070} , 0 ton, RT, 1000 sec, $K = 0-7.2$
 DT = 4.55% $x = 0.188$, $y_z = -1.163$ $z = -4.341$

Bottom

M2272003 F_{0100} , 0 ton, RT, 100 sec, $K = 0-7.2$
 DT = 3.35% $x = 0.188$, $y_z = -1.163$ $z = -3.958$

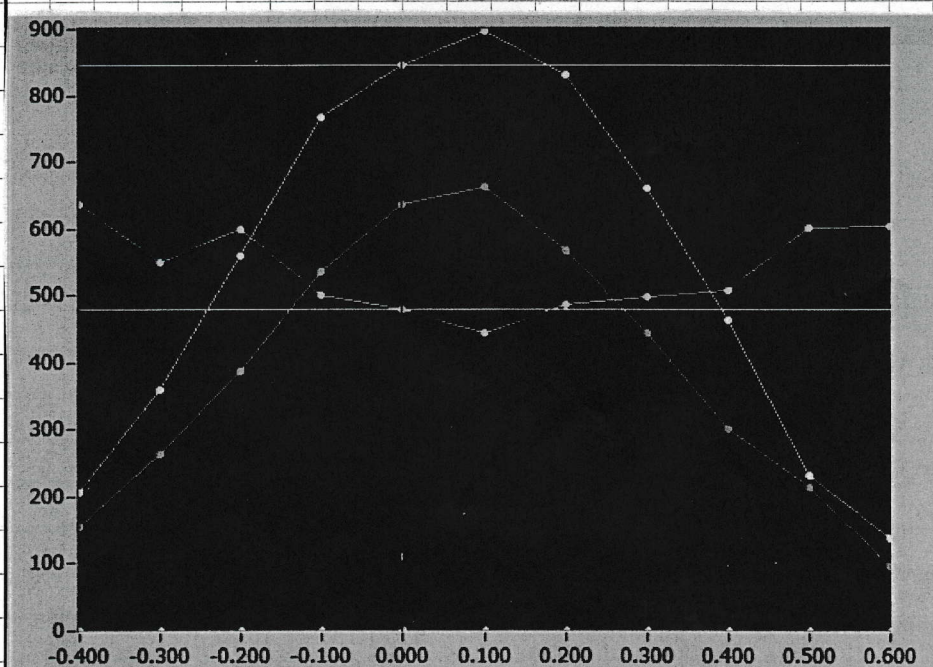
0:46

Compression to 0.5 MN



01:10

X-Scan

 $x = 0.1$ 

01:22

M22572604

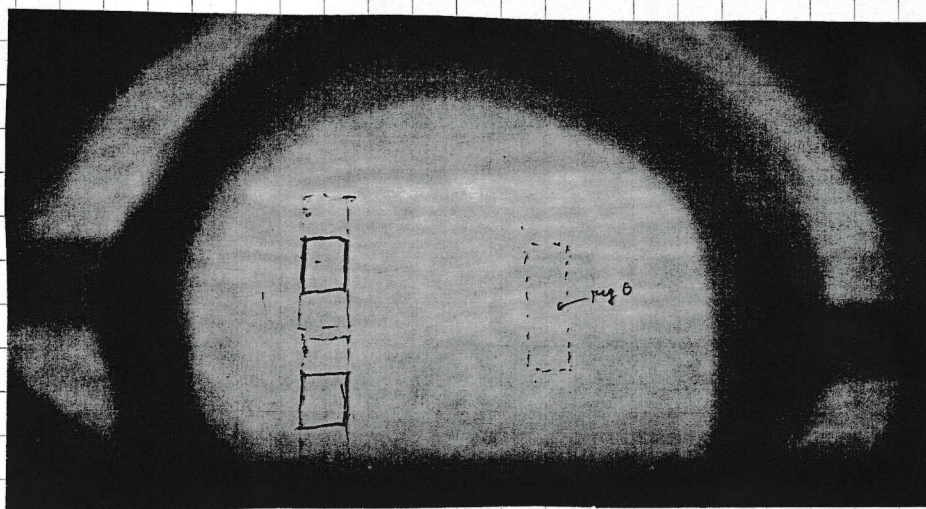
MgO, 50 ton, RT, 300 sec, $K = 0 - 7.2^\circ$

DT = 4.0%

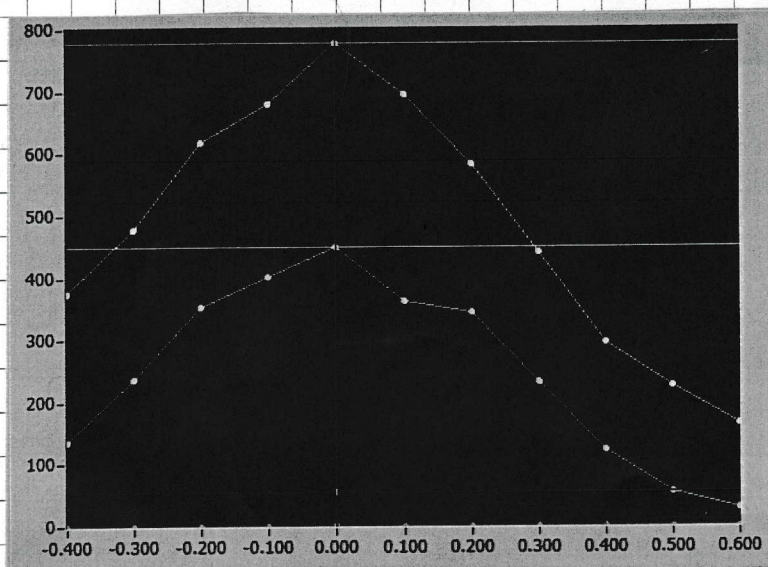
 $x = 0.1$ $y_2 = -1.46$ $z = -2.671$ $P = 3.23268 \pm 0.07951 \text{ GPa}$ $V = 73.265139 \pm 0.033442 \text{ Å}^3$ $V/V_0 = 0.981024 \pm 0.000448$

01:27

Pressurize to 500 ton in 150 min



4:05 X-SCAN

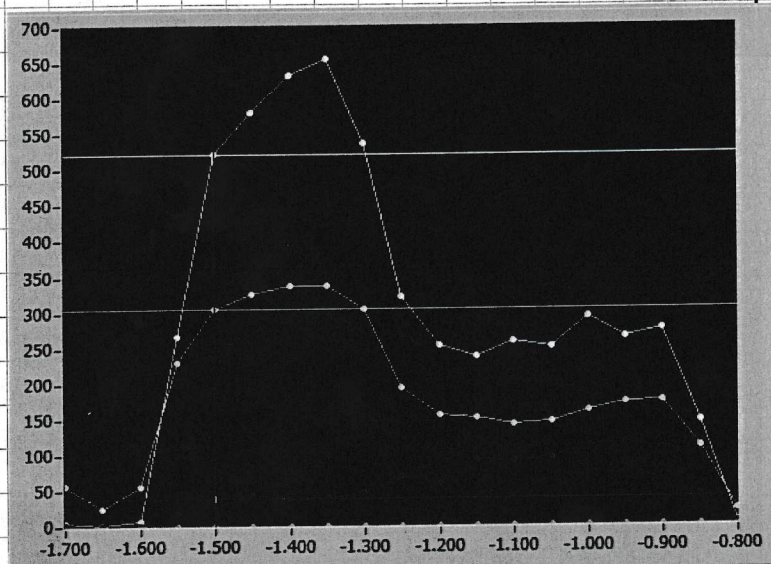
 $x = 0.0$ 

4:10

Y scan

MgO -1.40

sample -1.05



4:25

Z scan

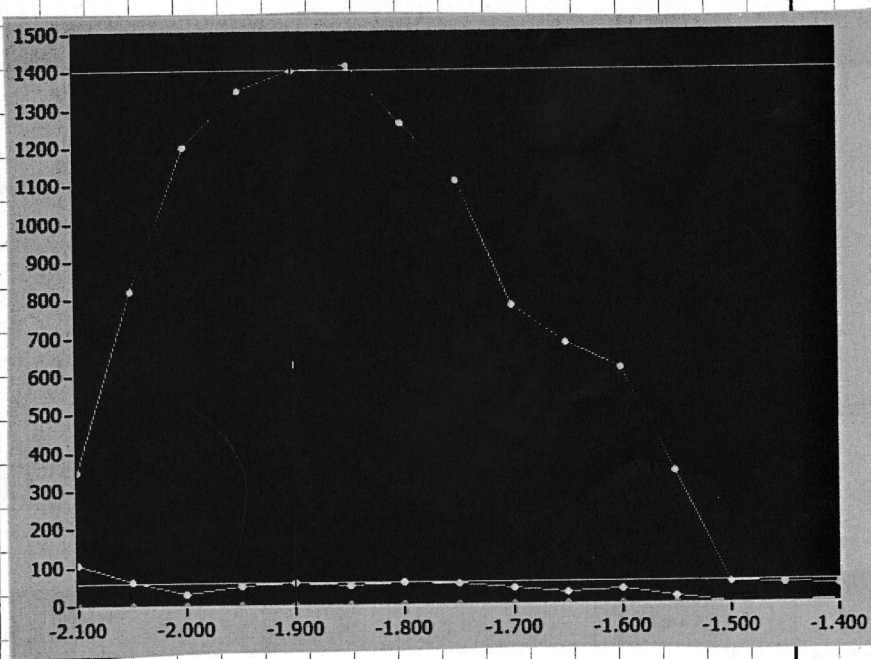
F090 -1.85

F0100 -1.65

pink: > 45 keV →

Blue: ~45 keV (Mo) →

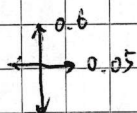
Red: < 45 keV →



4:49

M2272005

IS



MgO, 500 um, R.T. 150 sec, K = 0-7.2°

D.T. = 4.17%

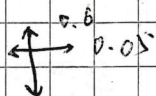
 $x = 0.0$, $y = -1.35$, $z = -1.75$ $P = 25.60671 \pm 0.25115$ GPa $V = 66.057732 \pm 0.063140$ Å³ $V/V_0 = 0.884517 \pm 0.000845$ $a = 4.042418 \pm 0.00128$ Å

compression to 5.5 MN in 10 min

5:08

5.5 MN

M2272006

MgO, 550 mm, R.T., 150 sec, $K = 0-7.2^\circ$

D.T. = 4.20 %

 $\alpha = 0.0$, $\gamma = -1.35$, $\varepsilon = -1.70$

$$P = 25.82168 \pm 0.15185 \text{ GPa}$$

$$V = 66.003794 \pm 0.038026 \text{ Å}^3$$

$$V/V_0 = 0.883795 \pm 0.000509$$

$$a = 4.041317 \pm 0.00077 \text{ Å}$$

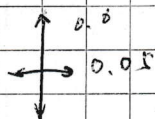
5:12

compression to 6.0 MN in 10 min

5:23

6.0 MN

M2272007

MgO, 600 mm, R.T., 150 sec, $K = 0-7.2^\circ$

D.T. = 4.15 %

 $\alpha = 0.0$, $\gamma = -1.35$, $\varepsilon = -1.625$

$$P = 27.80703 \pm 0.36990 \text{ GPa}$$

$$V = 65.515446 \pm 0.089881 \text{ Å}^3$$

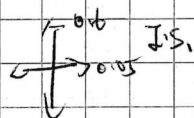
$$V/V_0 = 0.87255 \pm 0.01197$$

$$a = 4.031326 \pm 0.00183 \text{ Å}$$

5:27 Heating to 1700 K

Time	Temp.	V_1	I_1	R_1	P_1	V_2	I_2	R_2	P_2	Stroke
5:28	27.76	0.11	0.00	201.5	0.00	0.018	1.09	0.017	0.02	9.370
5:32	101.84	24.16	1.45	16.68	35.19	12.36	1.67	2.79	2.11	9.373
5:33	203.13	24.56	2.30	10.62	56.11	12.32	3.40	3.63	42.41	9.374
5:34	301.56	24.30	3.11	7.81	75.31	12.24	4.98	2.45	61.32	9.375
5:35	401.87	24.84	3.89	6.37	96.03	12.40	6.44	1.91	80.12	9.378
5:37	501.19	25.32	4.60	5.50	116.32	12.59	7.83	1.60	98.56	9.383
5:38	602.00	25.91	5.26	4.93	136.89	12.84	9.06	1.41	116.53	9.391
5:39	702.72	26.73	5.83	4.59	155.40	13.20	10.10	1.30	132.42	9.402
5:41	828.21	27.96	6.44	4.34	180.57	13.74	11.25	1.22	154.69	9.418

M2272008

MgO, 600 mm, 1100 K, 150 sec, $K = 0-7.2^\circ$

D.T. = 4.0 %

 $\alpha = 0$, $\gamma = -1.35$, $\varepsilon = -1.6$

$$P = 23.63829 \pm 0.0335$$

$$V/V_0 = 0.908143 \pm 0.000128$$

$$V = 67.822196 \pm 0.009365$$

$$a = 4.078094 \pm 0.00019$$

M2272008

MgO

$$\frac{P}{V} =$$

$$\frac{V/V_0}{a} =$$

M2272009

Fo 70

6.0 MN

1100 K

300 sec

0~7.2°

$X = 0$

$Y = -1.05$

$Z = -1.7$

$\Delta T = 25.7\%$

RW + P_CM2272010

Fo 100

6.0 MN

1100 K

300 sec

0~7.2°

$X = 0$

$Y = -1.05$

$Z = -1.5$

$\Delta T = 3.6\%$

M2272011

MgO

6.0 MN

1100 K

300 sec

0~7.2°

$\Delta T = 3.4\%$

$X = 0$

$Y = -1.35$

$Z = -1.55$

$P = 22.72547 \pm 0.02733 \text{ GPa}$

$V = 68.085757 \pm 0.007967$

$V/V_0 = 0.911672 \pm 0.000107$

$a = 4.083370 \pm 0.00015$

6.02 compression to 6.2 MN in 5 min.

M2272012

MgO

6.20 MN

1100 K

*

0~7.2°

$\Delta T = 3.6\%$

$X = 0$

$Y = -1.35$

$Z = -1.5$

$P = 22.73406 \pm 0.02513$

$V = 68.083252 \pm 0.007323$

$V/V_0 = 0.911639 \pm 0.00098$

$a = 4.083310 \pm 0.00014$

6.12 compression to 6.6 MN in 10 min.

1/11/2013MgO 6.6 mV 1100 K ~~300 sec~~ 150 sec 0~7.2°

$$D.T. = 3.38\%$$

$$X = 0 \quad Y = -1.35 \quad Z = -1.45.$$

$$P = 23.24356 \pm 0.03288$$

$$V = 67.93555 \pm 0.00948$$

$$V/U_0 = 0.909661$$

$$a = 4.080565 \pm 0.00019$$

1/11/2014F₀₇₀ 6.6 mV 1100 K 300 sec 0~7.2°

$$X = 0 \quad Y = -1.05 \quad Z = -1.55.$$

$$R_W + fP_C + AK \quad (\text{no St.})$$

1/11/2015F₀₀₀ 6.6 mV 1100 K 300 sec 0~7.2°

$$D.T. = 1.3\%$$

$$X = 0 \quad Y = -1.05 \quad Z = -1.35.$$

$$AK, R_W, P_C.$$

1/11/2016

MgO 6.6 mV 1100 K 150 sec 0~7.2°

$$X = 0 \quad Y = -1.35 \quad Z = -1.45.$$

$$P = 23.23786 \pm 0.04548$$

$$V = 67.937194 \pm 0.013115$$

$$V/U_0 = 0.909683 \pm 0.013115$$

$$a = 4.080398 \pm 0.00026$$

6.6 keep 1000 min

6.85 5 min

7.10 10

7.35 15

7.60 20

7.85 25

8.10 30

8.35 40

8.60 1000

6:51 Heating to 1700 K

Time	Temp.	V_1	I_1	R_1	P_1	V_2	I_2	R_2	P_2	Stroke
6:52	827.00	28.60	6.52	4.40	186.91	14.10	11.34	1.24	160.9	9.628
6:53	930.50	29.36	7.04	4.17	207.60	14.41	12.33	1.17	178.9	9.628
6:55	1028.86	30.27	7.46	4.07	225.90	14.87	13.03	1.14	193.80	9.628
6:57	1125.76	31.96	7.53	4.25	241.38	15.75	13.18	1.19	207.2	9.628
6:58	1226.70	33.32	7.89	4.22	262.91	16.39	13.77	1.18	226.0	9.628
7:00	1324.20	34.49	8.31	4.17	286.71	16.93	14.55	1.16	245.6	9.628
7:02	1427.62	35.32	8.78	4.03	310.55	17.31	15.42	1.12	267.0	9.629

~~1/11/2017~~

1/11/2017

MgO 6.66 mN 1700 K 150 sec 0 ~ 7.2°
 $\Delta T_1 = 3.48\%$

$$X = 0 \quad Y = -1.35 \quad Z = -1.4$$

$$P = 23.55725 \pm 0.04932 \quad V/V_0 = 0.923474 \pm 0.000205$$

$$V = 68.967151 \pm 0.015293 \quad \alpha = 4.100915 \pm 0.00008$$

1/11/2018

Fe₁₀₀ 6.66 mN 1700 K 300 sec 0 ~ 7.2°
 $\Delta T_1 = 1.15\%$

$$X = 0 \quad Y = -1.05 \quad Z = -1.3$$

 $R_{wt} + B_{gr} + P <$

1/11/2019

MgO 7.05 ~ 7.10
~~6.66~~ mN 1700 K 150 sec. 0 ~ 7.2°

$$X = 0 \quad Y = -1.35 \quad Z = -1.35$$

$$P = 23.68099 \pm 0.04241 \text{ GPa}$$

$$V = 68.928825 \pm 0.013115 \text{ Å}^3$$

$$V/V_0 = 0.922961 \pm 0.000176$$

$$\alpha = 4.100155 \pm 0.00026 \text{ Å}$$

7:23 M2272020 Fe_{70} , 7.11 MN, 1700 K, 300 sec, $K = 0 - 7.2^\circ$
D.T. = 2.55%

$$x = 0.0, y = -1.050, z = -1.450 \quad R_w + fP_c + S$$

$R_w + fP_c + S$

7:29 M2272021 MgO , 7.11 MN, 1700 K, ¹⁵⁰sec, $K = 0 - 7.2^\circ$
D.T. = 3.53%

$$x = 0.0, y = -1.30, z = -1.35$$

$$\begin{aligned} P &= 23.52583 \pm 0.05375 \text{ GPa} \\ V &= 68.976895 \pm 0.016678 \text{ \AA}^3 \\ V/V_0 &= 0.923604 \pm 0.000223 \\ a &= 4.101108 \pm 0.00033 \text{ \AA} \end{aligned}$$

7:37 M2272022 Fe_{100} , 7.16 \rightarrow 7.25 MN, 1700 K, 300 sec, $K = 0 - 7.2^\circ$
D.T. = 1.15%

$$x = 0.0, y = -1.05, z = -1.25$$

$Brg + R + R_w$

M2272023 MgO , 7.28 \rightarrow 7.35 MN, 1700 K, ¹⁵⁰sec, $K = 0 - 7.2^\circ$
D.T. = 3.46%

$$x = 0.0, y = -1.30, z = -1.35$$

$$\begin{aligned} P &= 23.53902 \pm 0.06274 \text{ GPa} \\ V &= 68.972805 \pm 0.019461 \text{ \AA}^3 \\ V/V_0 &= 0.923550 \pm 0.000261 \\ a &= 4.101027 \pm 0.00038 \text{ \AA} \end{aligned}$$

7:48 M2272024 ~~MgO~~ Fe_{70} , 7.37 \rightarrow 7.43 MN, 1700 K, 300 sec, $K = 0 - 7.2^\circ$
D.T. = 2.31%

$$x = 0.0, y = -1.13, z = -1.45$$

$R_w + fP_c + S$

Phases: $R_w + fP_c + S$

7:56 M2272025 MgO , 7.48 \rightarrow MN, 1700 K, 300 sec,
 $K = 0 - 7.2^\circ$, D.T. = 1.82%
 $x = 0.0, y = -1.300, z = -1.325$

$$\begin{aligned} P &= 23.54716 \pm 0.02171 \text{ GPa} \\ V &= 68.970279 \pm 0.006733 \text{ \AA}^3 \\ V/V_0 &= 0.923516 \pm 0.000090 \\ a &= 4.100977 \pm 0.00013 \text{ \AA} \end{aligned}$$

8:02

French

9:40

B.O. at 3.4 MN