Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

In situ Synchrotron X-ray Diffraction with Laser-heated Diamond Anvil Cells Study of Pt up to 95 GPa and 3150 K

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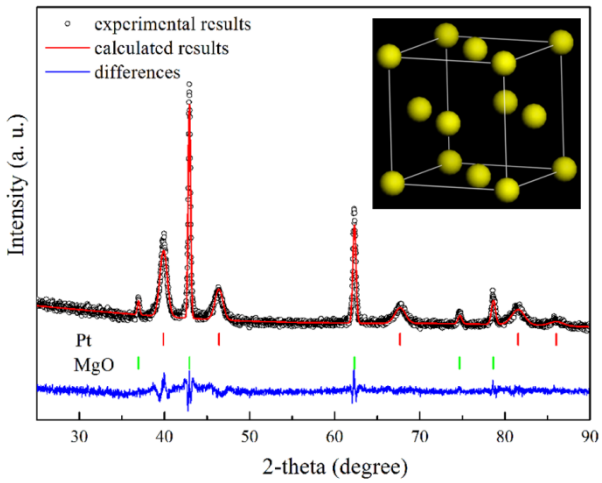

Fig. S1 The XRD pattern of the original sample at ambient conditions. The wavelength of the incident X-ray is 1.54 Å and the inset shows the crystal structure of Pt with space group *Fm*-3*m*.

Table SI. Summary of experimental conditions for the different runs performed in this study.

Experimental run	P_{min} (GPa)	*T* range (*K*)
Pt+MgO+Ne_1	24.0	300–1947
Pt+MgO+Ne_2	49.7	300–2580
Pt+MgO+Ne_3	62.0	300–3002
Pt+MgO+Ne_4	68.0	300–2588
Pt+MgO+Ne_5	80.0	300–3152

Table SII. The lattice constant of Pt calculated from individual diffraction peaks and the average lattice constant with different pressure at 300 K.

Pressure	Pt-$a_{(111)}$	Pt-$a_{(200)}$	Pt-$a_{(220)}$	Pt-$a_{(311)}$	Pt-$a_{(222)}$	Pt- a(average)
0.6	3.9179	3.9192	3.9151	3.9149	3.9155	3.9156 (7)
6.5	3.8968	3.9022	3.8942	3.9017	3.8999	3.899 (1)
6.7	3.8931	3.8944	3.8933	3.8934	3.8982	3.8943 (9)
8.3	3.8855	3.8862	3.8843	3.8861	3.8885	3.8865 (8)
10.9	3.8774	3.8818	3.8747	3.8785	3.8753	3.877 (1)
13.9	3.8665	3.867	3.8648	3.8675	3.8656	3.8662 (5)
18.0	3.8562	3.8598	3.8554	3.8546	3.8545	3.8552 (6)
20.1	3.8464	3.8508	3.8464	3.8460	3.8459	3.8462 (6)
21.9	3.8403	3.8414	3.8413	3.8403	3.8407	3.8408 (3)
49.3	3.7603	3.7822	3.7700	3.7630	3.7776	3.769 (4)
60.6	3.7314	3.7344	3.7313	3.7299	3.7308	3.7309 (6)
67.6	3.7175	3.7172	3.7154	3.7146	3.7177	3.7195 (1)
72.2	3.7121	3.7122	3.7103	3.7093	3.7101	3.7101 (4)
77.7	3.6998	3.6986	3.6985	3.6980	3.6993	3.6987 (3)

Table SIII. The lattice constant of MgO calculated from individual diffraction peaks and the average lattice constant with different pressure at 300 K.

Pressure	MgO-$a_{(111)}$	MgO-$a_{(200)}$	MgO-$a_{(220)}$	MgO-$a_{(311)}$	MgO-$a_{(222)}$	MgO-a (average)
0.6	4.2046	4.2052	4.2047	4.2035	4.2058	4.2052 (4)
6.5	4.1713	4.1726	4.1714	4.1719	4.1718	4.158 (7)
6.7	4.1557	4.1576	4.1569	4.1571	4.1573	4.1571 (2)
8.3	4.1417	4.1464	4.1451	4.1451	4.1451	4.1451 (4)
10.9	4.1245	4.127	4.1272	4.1272	4.1261	4.1268 (4)
13.9	4.1039	4.1066	4.1063	4.1073	4.1074	4.1070 (4)
18.0	4.0864	4.0840	4.0831	4.0804	4.0831	4.0821 (8)
20.1	4.0745	4.0688	4.0684	4.0695	4.0693	4.0694 (8)
21.9	4.0684	4.0596	4.0582	4.0602	4.0565	4.059 (1)
49.3	3.9319	3.9246	3.9338	3.9209	3.9397	3.933 (4)
60.6	3.8919	3.8890	3.8902	3.8894	3.8957	3.892 (1)
67.6	3.8618	3.8626	3.8614	3.8616	3.8625	3.8689 (2)
72.2	3.8547	3.8566	3.8543	3.8543	3.8545	3.8547 (5)
77.7	3.8394	3.8380	3.8356	3.8377	3.8396	3.8379 (8)