TABLE 2. Lattice parameters and unit cell volumes of Mw78

Ambient – Cubic Unit Cell				
P (GPa)	*a* (Å)	V (Å^3)		
0.0001	4.2898(4)*	78.94(2)		
Helium Medium – Cubic Unit Cell				
Ruby 1 λ (nm)	Ruby 2 λ (nm)	Avg. P (GPa)	*a* (Å)	V (Å^3)
694.95	694.95	1.823(16)	4.2703(12)	77.87(7)
696.13	696.14	5.128(32)	4.2433(12)	76.40(7)
697.41	697.45	8.786(63)	4.2132(12)	74.79(7)
698.64	698.67	12.294(64)	4.1860(13)	73.35(7)
699.98	700.01	16.199(65	4.1596(13)	71.97(7)
701.02	701.06	19.301(72)	4.1420(12)	70.97(7)
702.29	702.33	23.119(75)	4.1152(15)	69.69(8)
703.38	703.44	26.467(115)	4.1003(11)	68.94(6)
704.22	704.28	29.044(136)	4.0838(14)	68.11(7)
705.13**	705.15	31.820(52)	4.0707(13)	67.46(7)
706.40	706.44	35.856(86)	4.0491(13)	66.38(7)
707.70	707.74	40.004(94)	4.0314(15)	65.52(7)
708.40	708.46	42.319(127)	4.0235(13)	65.12(7)
709.73	709.77	46.645(71)	4.0034(11)	64.16(5)
710.78	710.84	50.177(145)	3.9891(15)	63.48(8)
711.48	711.53	52.517(129)	3.9781(14)	62.95(7)
712.35	712.44	55.542(222)	3.9665(16)	62.40(8)
Helium Medium – Hexagonal Unit Cell				
Avg. P (GPa)	*a* (Å)	*c* (Å)	*c/a*	V (Å^3)
1.823(16)	3.0184(17)	7.404(10)	2.453(4)	58.42(10)
5.128(32)	3.0011(16)	7.345(9)	2.448(4)	57.29(9)
8.786(63)	2.9778(16)	7.307(10)	2.454(4)	56.11(10)
12.294(64)	2.9592(17)	7.255(10)	2.452(4)	55.02(10)
16.199(65	2.9388(14)	7.221(9)	2.457(4)	54.01(8)
19.301(72)	2.9265(16)	7.179(10)	2.453(4)	53.24(9)
23.119(75)	2.9063(18)	7.151(10)	2.461(4)	52.31(10)
26.467(115)	2.8994(14)	7.102(8)	2.449(3)	51.70(8)
29.044(136)	2.8858(19)	7.086(11)	2.455(5)	51.10(11)
31.820(52)	2.8761(17)	7.067(10)	2.457(4)	50.63(10)
35.856(86)	2.8620(17)	7.021(10)	2.453(4)	49.80(10)
40.004(94)	2.8490(19)	6.993(11)	2.455(5)	49.16(11)

42.319(127)	2.8418(16)	6.991(10)	2.460(4)	48.89(9)
46.645(71)	2.8295(13)	6.953(15)	2.457(6)	48.21(11)
50.177(145)	2.820(2)	6.914(12)	2.452(5)	47.62(11)
52.517(129)	2.8110(19)	6.903(11)	2.456(5)	47.24(10)
55.542(222)	2.8008(19)	6.898(12)	2.463(5)	46.86(10)

Neon Medium – Cubic Unit Cell

Ruby 1 λ (nm)	Ruby 2 λ (nm)	Avg. P (GPa)	*a* (Å)	V (Å^3)
694.76	694.77	1.314(20)	4.2749(5)	78.12(3)
696.19	696.20	5.294(20)	4.2423(5)	76.35(3)
697.51	697.52	9.029(21)	4.2162(5)	74.95(3)
699.12	699.14	13.682(42)	4.1827(5)	73.18(3)
701.02	701.02	19.244	4.1505(6)	71.5(4)
702.73	702.53	24.084(43)	4.1246(8)	70.17(5)
704.45	704.07	29.081(84)	4.1023(13)	69.04(7)
706.12	705.66	34.18(1.03)	4.0806(15)	67.95(8)
708.20	707.68	40.73(1.19)	4.0546(19)	66.66(10)
709.14	708.66	43.86(1.12)	4.039(3)	65.90(15)
710.26	709.73	47.46(1.25)	4.028(3)	65.36(15)
712.03	711.43	53.28(1.44)	4.003(4)	65.14(20)

Neon Medium – Hexagonal Unit Cell

Avg. P (GPa)	*a* (Å)	*c* (Å)	*c/a*	V (Å^3)
1.314(20)	3.0240(7)	7.409(3)	2.4500(12)	58.68(4)
5.294(20)	3.0000(8)	7.347(3)	2.4490(12)	57.26(4)
9.029(21)	2.9813(8)	7.304(3)	2.4499(13)	56.22(4)
13.682(42)	2.9581(7)	7.243(3)	2.4485(12)	54.89(4)
19.244	2.9318(8)	7.201(3)	2.4562(13)	53.60(4)
24.084(43)	2.9102(9)	7.170(4)	2.4637(16)	52.59(5)
29.081(84)	2.8891(12)	7.152(5)	2.476(3)	51.79(6)
34.18(1.03)	2.8720(13)	7.122(5)	2.480(3)	50.88(6)
40.73(1.19)	2.8508(16)	7.086(6)	2.486(3)	49.87(8)
43.86(1.12)	2.833(2)	7.092(9)	2.503(4)	49.29(10)
47.46(1.25)	2.8214(18)	7.084(7)	2.511(3)	48.83(8)
53.28(1.44)	2.7953(18)	7.070(7)	2.529(3)	47.84(8)

* Using the relationships $a_{hex} = a_{cubic} / \sqrt{2}$ and $c_{hex} = \sqrt{3}\, a_{cubic}$ to transform cubic to hexagonal resulting in $a_{hex} = 3.0333$ Å and $c_{hex} = 7.4302$ Å and $V_{hex} = 59.21$ Å^3.

**Ruby 1 was not measured at this pressure point. To estimate a pressure comparable with the other data points, we used the other data points to fit the ruby 1 wavelength as a linear function of ruby 2 wavelength. The resulting equation, which we used to estimate the ruby 1 pressure (P_{ruby1}), was: $P_{ruby1} = 0.9973*P_{ruby2} + 1.8804$ (GPa). P_{ruby1} and P_{ruby1} are in units of GPa.