

## Supporting Information

### **Lattice strain and texture analysis of superhard $\text{Mo}_{0.9}\text{W}_{1.1}\text{BC}$ and $\text{ReWC}_{0.8}$ via diamond anvil cell deformation**

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**Table S1.** Refined lattice parameters for  $\text{Mo}_{0.9}\text{W}_{1.1}\text{BC}$  and the associated Pt pressure calibrant along with calculated pressure values.

$P$ (GPa)	$\text{W}_{1.1}\text{Mo}_{0.9}\text{BC}$			Pt	
	$a$ (Å)	$b$ (Å)	$c$ (Å)	$a$ (Å)	$R_{\text{wp}}$
0.33(4)	3.07472(7)	17.2955(5)	3.04001(7)	3.9216(2)	6.92
7.04(7)	3.0541(2)	17.183(1)	3.0225(2)	3.8919(3)	8.96
17.23(7)	3.0315(1)	17.0429(9)	2.9992(1)	3.8527(2)	6.47
26.43(8)	3.0063(1)	16.9139(8)	2.9749(1)	3.8218(2)	6.09
35.7(1)	2.9871(1)	16.794(1)	2.9551(1)	3.7940(3)	6.35
47.74(9)	2.9625(1)	16.6722(9)	2.9319(1)	3.7617(2)	6.74

**Table S2.** Refined lattice parameters for  $\text{ReWC}_{0.8}$  and the associated corundum pressure calibrant along with calculated pressure values.

$P$ (GPa)	$\text{ReWC}_{0.8}$		Corundum	
	$a$ (Å)	$a$ (Å)	$c$ (Å)	$R_{\text{wp}}$
4.06(4)	4.0777(2)	4.7391(2)	12.934(1)	6.00
10.62(6)	4.0578(2)	4.7055(2)	12.829(1)	6.11
20.28(8)	4.0271(2)	4.6616(3)	12.695(1)	7.02
35.29(9)	3.9885(2)	4.6021(3)	12.529(1)	5.72
47.4(1)	3.9572(2)	4.5619(3)	12.410(1)	6.64
61.0(1)	3.9300(3)	4.5212(3)	12.296(1)	5.23

**Table S3.** Refined lattice strain parameter,  $Q(hkl)$ , for lattice planes of interest in  $\text{Mo}_{0.9}\text{W}_{1.1}\text{BC}$ .

$P$ (GPa)	$Q(110)$	$Q(130)$	$Q(041)$	$Q(200)$	$Q(002)$	$Q(191)$
0.33(4)	0	0	0	0	0	0
7.04(7)	0.0016(5)	0.0016(1)	0.00118(5)	0.0011(2)	0.0031(2)	0.0019(7)
17.23(7)	0.0009(2)	0.00117(6)	0.00102(2)	0.0019(1)	0.00132(8)	0.00086(4)
26.43(8)	0.0027(2)	0.00359(7)	0.00333(2)	0.00518(8)	0.0042(1)	0.00278(3)
35.7(1)	0.0033(2)	0.00471(3)	0.00386(3)	0.0060(1)	0.0049(1)	0.00343(4)
47.74(9)	0.0043(2)	0.00558(7)	0.00509(3)	0.0074(1)	0.0076(1)	0.00427(4)

**Table S4.** Refined lattice strain parameter,  $Q(hkl)$ , for lattice planes of interest in  $\text{ReWC}_{0.8}$ .

$P$ (GPa)	$Q(111)$	$Q(200)$	$Q(220)$	$Q(311)$
4.06(4)	0.0275(6)	0.00022(9)	0.00370(7)	0.00436(8)
10.62(6)	0.00665(5)	0.00447(9)	0.00525(8)	0.00861(7)
20.28(8)	0.00703(5)	0.0060(1)	0.00706(8)	0.0106(1)
35.29(9)	0.0078(2)	0.0076(1)	0.00769(9)	0.01111(8)
47.4(1)	0.0101(2)	0.0070(1)	0.0087(1)	0.0114(1)
61.0(1)	0.0121(2)	0.0062(3)	0.0092(1)	0.0135(2)