Electronic Supplementary Material (ESI) for Materials Advances.

Electronic Properties and High-Pressure Behavior of Wolframite-Type $CoWO_4$

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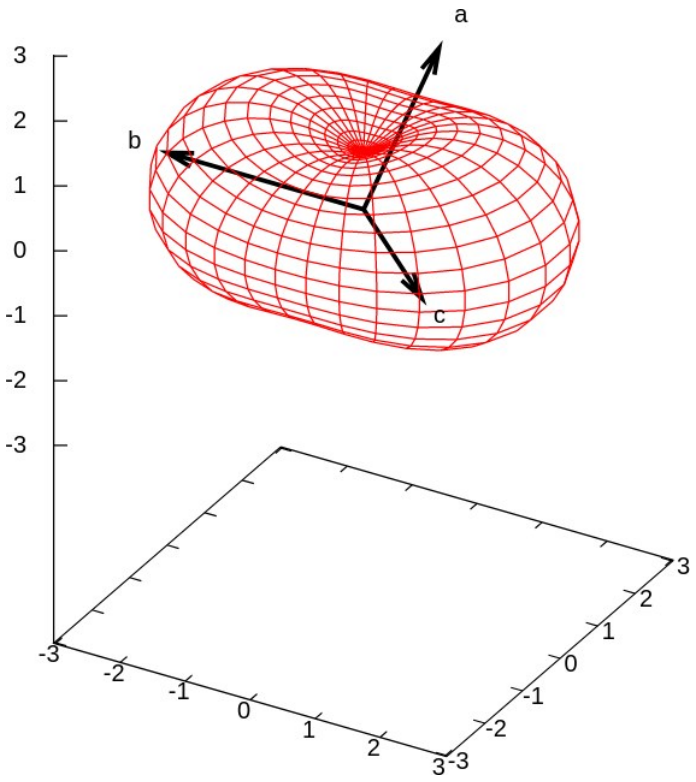

Figure S1. Compressibility indicatrix of $CoWO_4$. Red regions indicate positive linear compressibility.

	Experiment	Calculations	Literature[a]
a (Å)	4.670(5)	4.61176	4.6698(9)
b (Å)	5.687(6)	5.67847	5.6873(23)
c (Å)	4.951(5)	4.93178	4.9515(17)
β (deg)	90.08(9)	90.3215	90.00
V (Å^3)	131.5(2)	129.15	131.50

Table S1. Unit-cell parameters *a*, *b* and *c* and cell volume *V* for $CoWO_4$ at ambient pressure, as obtained from our experiments and calculations *ab initio* simulations, and comparison with Literature.

[a]H. Weitzel, *Zeitschrift fur Krist. - New Cryst. Struct.*, 1976, **144**, 238–258.

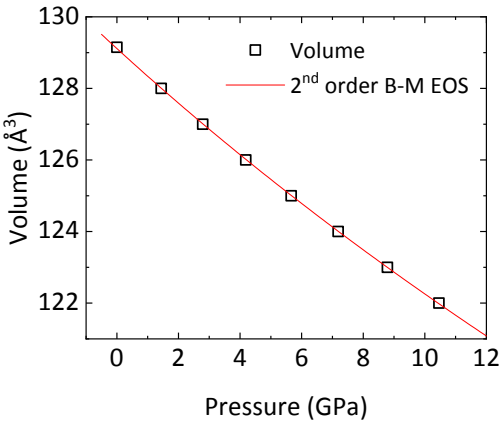

Figure S2. Pressure-Volume data for $CoWO_4$ (squares) as obtained from *ab initio* simulations. In red, the fitting of the data to a 2nd order Birch-Murnaghan EOS.

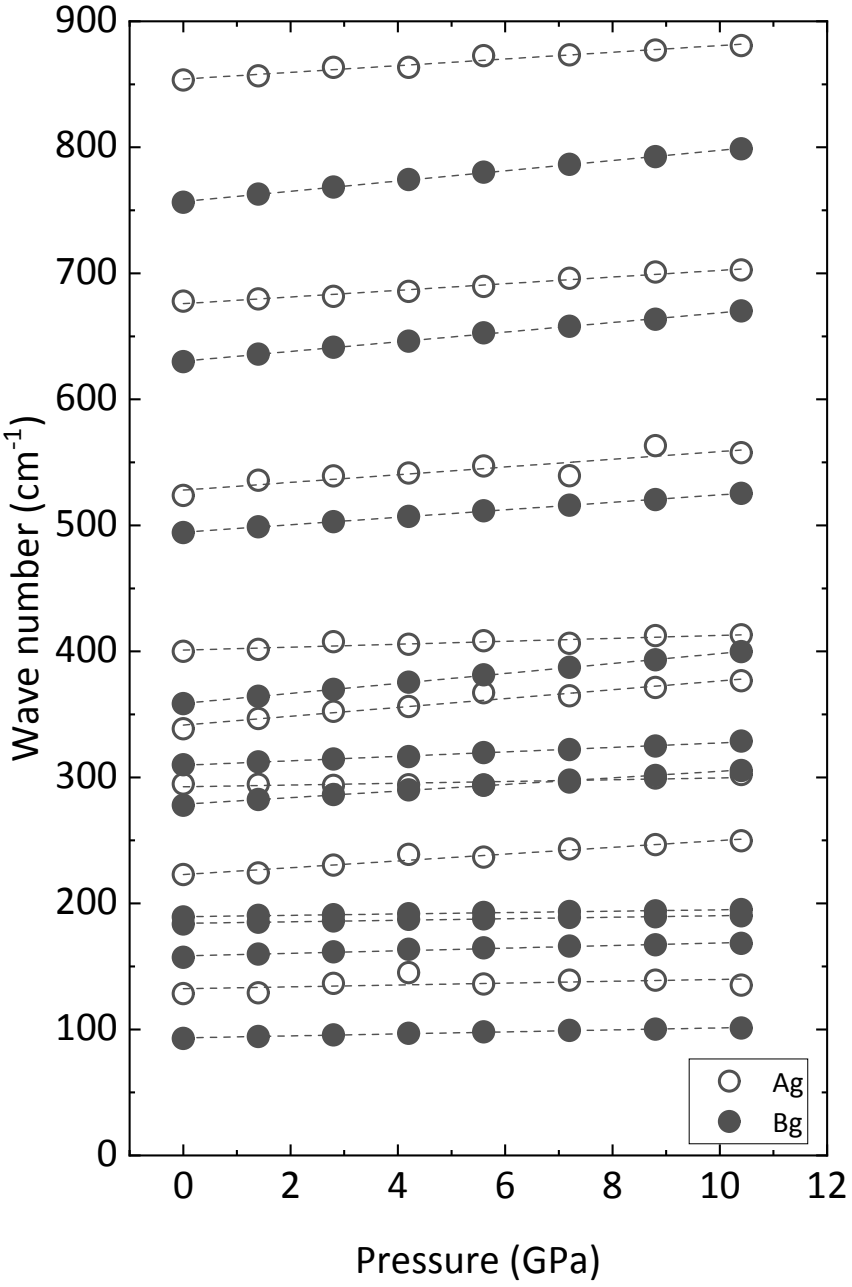

Figure S3. Frequency of Raman modes vs. pressure for wolframite-type $CoWO_4$ (circles), as calculated by ab initio simulations. Dashed lines are the linear fits used for the calculation of the pressure coefficients and Grüneisen parameters reported in the main manuscript.

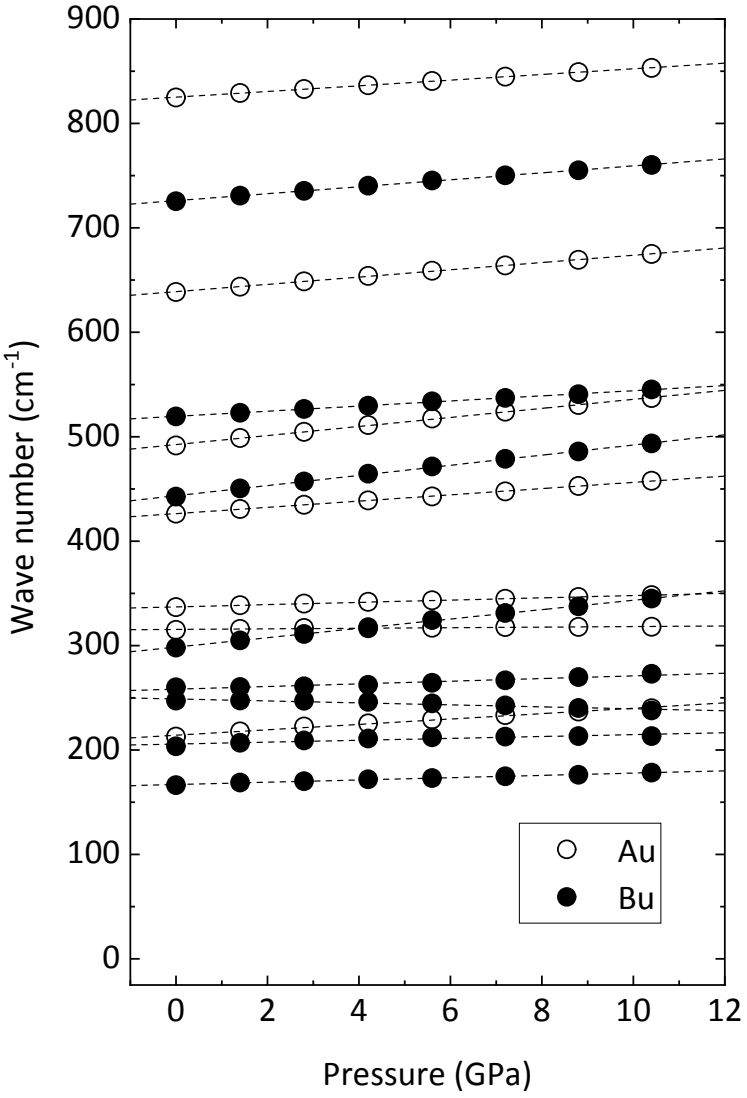

Figure S4. Evolution of IR modes vs. pressure for wolframite-type $CoWO_4$ (circles), as calculated by ab initio simulations. Dashed lines are the linear fits used for the calculation of the pressure coefficients.

		Linear fit	
Mode	ω_0^c (cm^{-1})	ω_0 (cm^{-1})	$\partial\omega/\partial P$ (cm^{-1} GPa^{-1})
B_u	166.38	167.0(2)	1.09(4)
B_u	203.54	206(1)	0.90(15)
A_u	212.75	214.2(6)	2.6(1)
B_u	247.20	249.0(7)	-0.94(12)
B_u	260.08	258.3(8)	1.27(13)
B_u	298.07	298.6(3)	4.48(5)
A_u	314.98	315.5(2)	0.27(4)
A_u	336.77	337.05(12)	1.09(2)
A_u	426.39	426.40(15)	2.99(3)
B_u	442.64	443.5(4)	4.86(7)
A_u	491.64	492.5(3)	4.33(6)
B_u	519.43	519.6(2)	2.45(4)
A_u	638.58	639.0(2)	3.48(3)
B_u	725.47	726.1(3)	3.33(5)
A_u	824.84	825.18(13)	2.71(2)

Table S2. Ab-initio calculated IR modes for $CoWO_4$, ω_0^c, and parameters of the linear fits of their evolution with pressure, ω_0 and $\partial\omega/\partial P$ (intercept and pressure coefficient, respectively). The symmetry of each phonon is also shown.

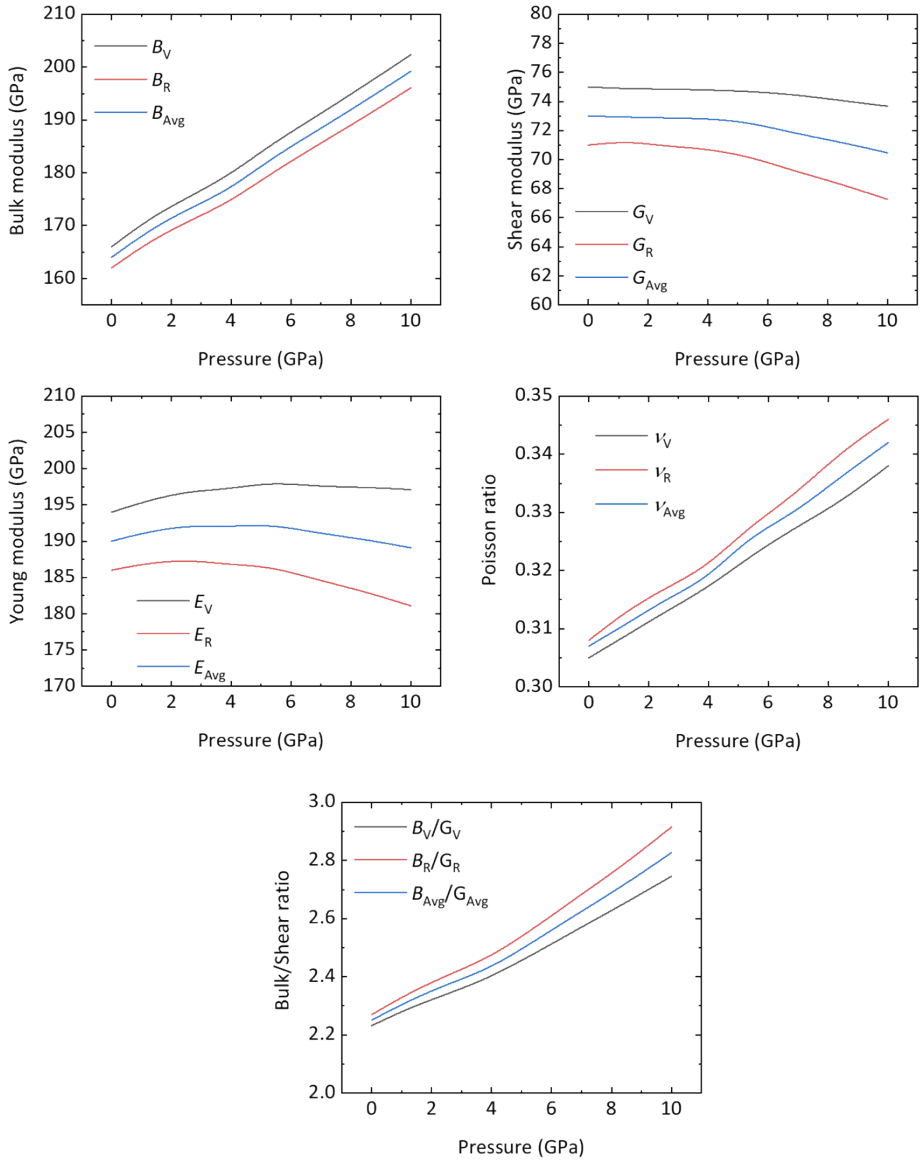

Figure S5: Elastic moduli of wolframite-type $CoWO_4$ as a function of pressure; a) Bulk modulus, b) Shear modulus, c) Young modulus, d) Poisson ratio, and e) bulk/shear ratio. "V", "R" and "Avg" subscripts indicate Voigt and Reuss approximation and their average, respectively.