Supporting Information

Pressure dependence of superconductivity in alkali-Bi compounds KBi$_2$ and RbBi$_2$

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Table S1. Lattice constants of KBi_2 determined at 0, 2.42, 6.41 and 20.1 GPa.

p (GPa)	Phase	a (Å)	b (Å)	c (Å)	Space group	R_p (%)	wR_P (%)
0	KBi_2	9.56415(6)			$Fd\bar{3}m$	2.85	4.59
	Bi-I	4.5671(1)		11.935(1)	$R\bar{3}m$		
2.42	KBi_2	9.40401(9)			$Fd\bar{3}m$	1.08	1.75
	Bi-I	4.5108(1)		11.5629(7)	$R\bar{3}m$		
6.41	KBi_2	9.1811(3)			$Fd\bar{3}m$	1.57	3.14
	Bi-III(1)	8.586(1)		3.1977(7)	$I4/mmm$		
	Bi-III(2)	8.594(1)		4.1986(9)	$I4/mcm$		
20.1	KBi_2	8.812(2)			$Fd\bar{3}m$	1.30	2.42
	KBi	5.156(1)	14.570(3)	5.3782(2)	Cm		
	Bi-V	3.71771(6)			$Im\bar{3}m$		

Table S2. Lattice constants of RbBi$_2$ determined at 0, 1.58, 8.36 and 17.0 GPa.

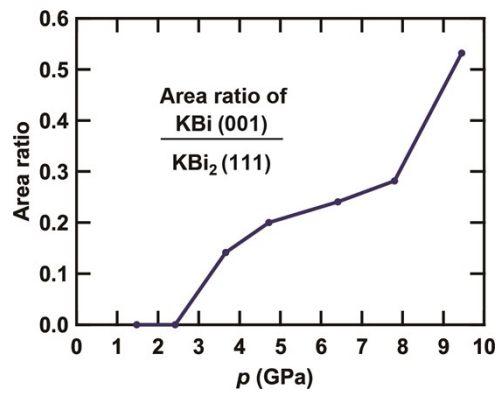| p (GPa)	Phase	a (Å)	c (Å)	Space group	R_p (%)	wR_P (%)
0	RbBi$_2$	9.65694(8)		Fd$\bar{3}$m	2.19	3.28
	Bi-I	4.56665(8)	11.9144(4)	$R\bar{3}m$		
1.58	RbBi$_2$	9.5327(1)		Fd$\bar{3}$m	1.05	1.78
	Bi-I	4.5388(1)	11.6822 (8)	$R\bar{3}m$		
8.36	RbBi$_2$	9.1402(2)		Fd$\bar{3}$m	0.98	1.56
	Bi-III(2)	8.5580(2)	4.1715(5)	I4/mcm		
	Bi-V	3.83122(3)		Im$\bar{3}$m		
17.0	RbBi$_2$	8.8393(6)		Fd$\bar{3}$m	1.56	2.56
	Bi-V	3.72861(3)		Im$\bar{3}$m		

Figure S1. Pressure dependence of the area ratio of 001 peak of KBi with respect to 111 peak of KBi_2. The area ratio cannot be evaluated from complete disappearance of 111 peak of KBi_2 above 9.45 GPa,
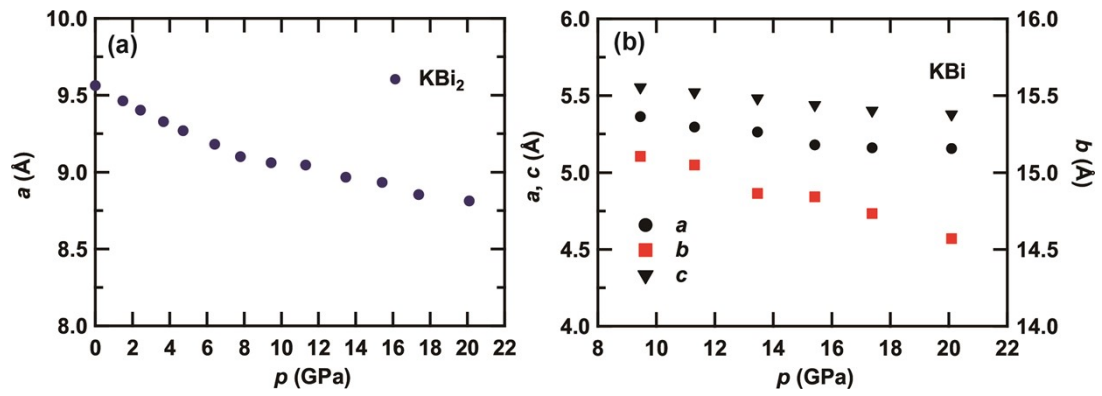
Figure S2. (a) $a - p$ plot of KBi$_2$. (b) Plots of $a - p$, $b - p$ and $c - p$ of KBi; a, b and c refer to the black circle, red square and black triangle, respectively.
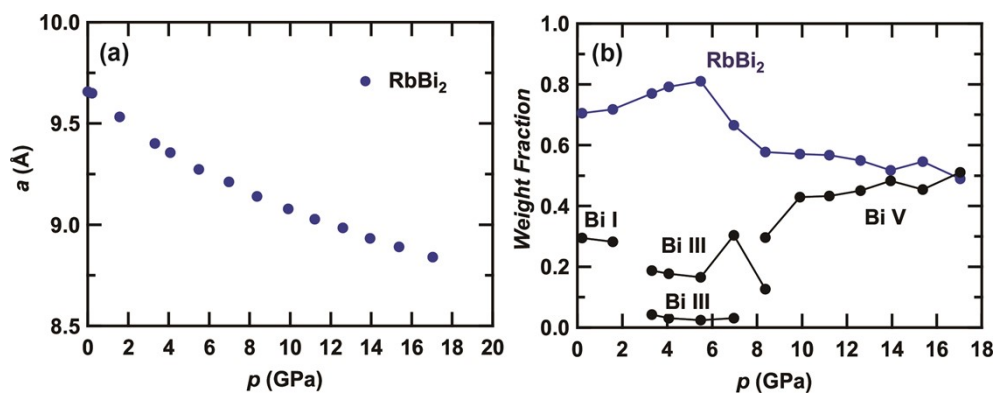
Figure S3. (a) $a - p$ plot of RbBi$_2$. (b) Pressure dependence of weight fraction for RbBi$_2$ and Bi. The weight fraction is evaluated from the Rietveld refinement for pressure-dependent XRD patterns (not shown).
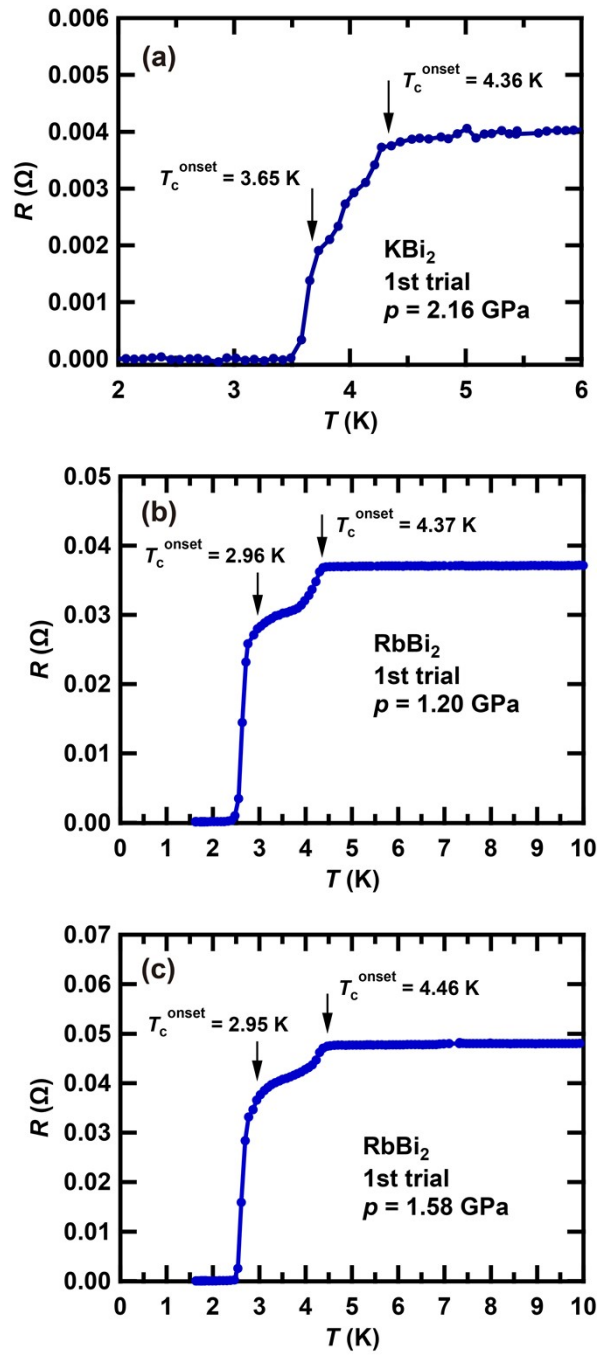
Figure S4. (a) $R - T$ plot of KBi_2 at 2.16 GPa which is the first trial of measurement of R against temperature. $R - T$ plots of $RbBi_2$ at (b) 1.20 GPa and (c) 1.58 GPa which are the first trial of measurement of R against temperature.
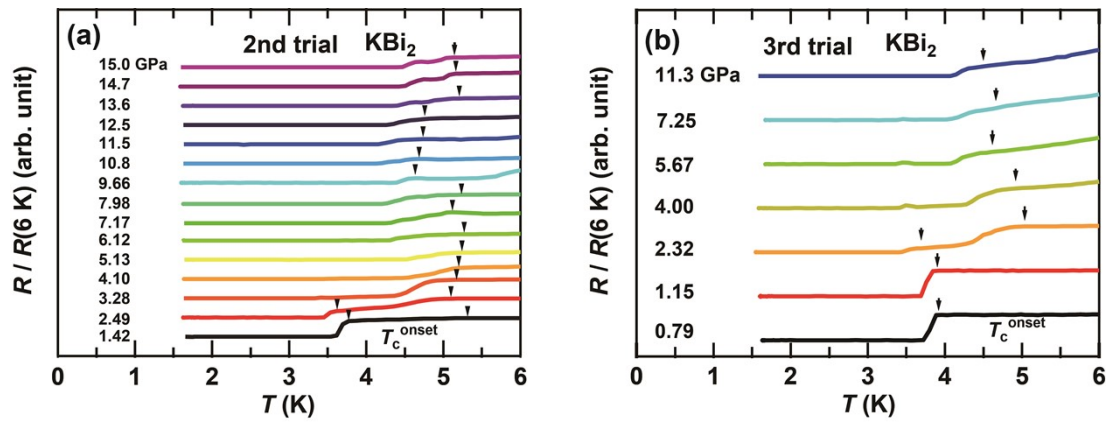
Figure S5. $R / R(6\ \text{K}) - T$ plots of KBi$_2$ obtained from (a) the second and (b) the third trials of measurement of R against temperature. The different butch of sample was employed in each trial.
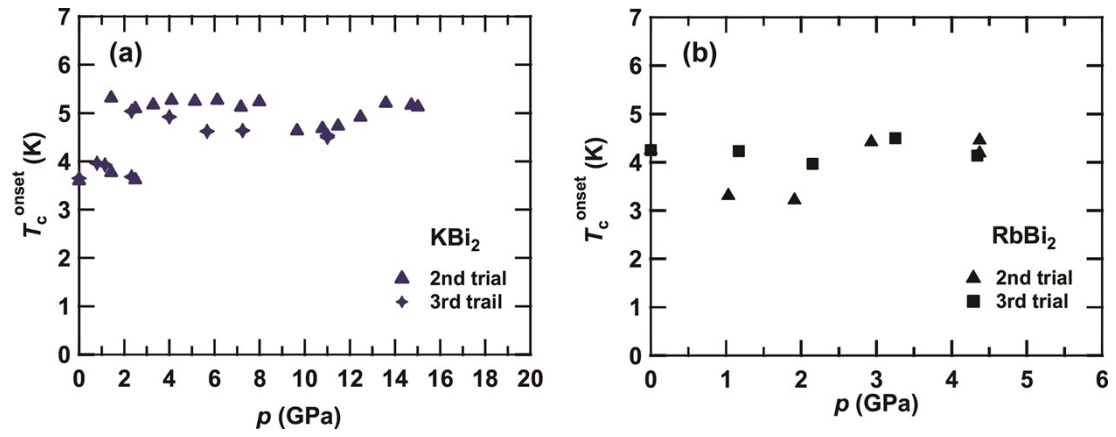
Figure S6. $T_c^{onset} - p$ plot of (a) KBi_2 and (b) $RbBi_2$; In each trial, different butch of sample is employed. The plots are obtained from the second and third trials of measurement of R against temperature for KBi_2 and $RbBi_2$ at different pressures.