Supporting Information

Synthesis, Crystal Structure, Electronic Structure, and Photoelectric Response Properties of KCu_2SbS_3

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Table S1. Selected interatomic distances (Å) and bond angles (deg.).

Cu1	S4	1x	2.3245(9)
	S5	1x	2.3125(9)
	S6	1x	2.3188(9)
	Sb2	1x	2.8184(5)
Cu2	S1	1x	2.2844(9)
	S2	1x	2.2813(5)
	S3	1x	2.3562(8)
	Sb1	1x	2.7547(5)
Cu3	S1	1x	2.3391(9)
	S3	1x	2.3907(8)
	S3	1x	2.4064(9)
	S4	1x	2.3613(9)
Cu4	S2	1x	2.4758(9)
	S2	1x	2.3942(9)
	S5	1x	2.4037(9)
	S6	1x	2.3261(9)

S(4)−Sb(1)−S(6)	93.64(3)	S(1)−Sb(1)−S(4)	106.18(3)
S(1)−Sb(1)−S(6)	102.30(3)	S(2)−Sb(2)−S(3)	107.61(3)
S(2)−Sb(2)−S(5)	100.73(3)	S(3)−Sb(2)−S(5)	100.29(3)

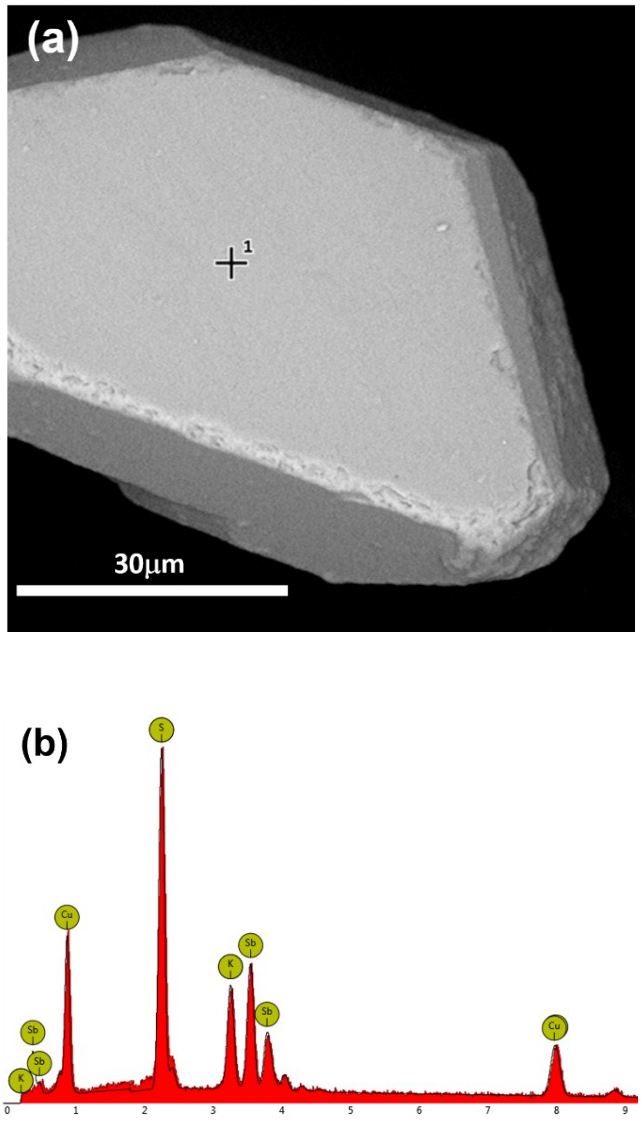

Figure S1. (a) SEM image of a well-defined KCu_2SbS_3 crystal. (b) Energy dispersive X-ray analysis (EDX) of KCu_2SbS_3.

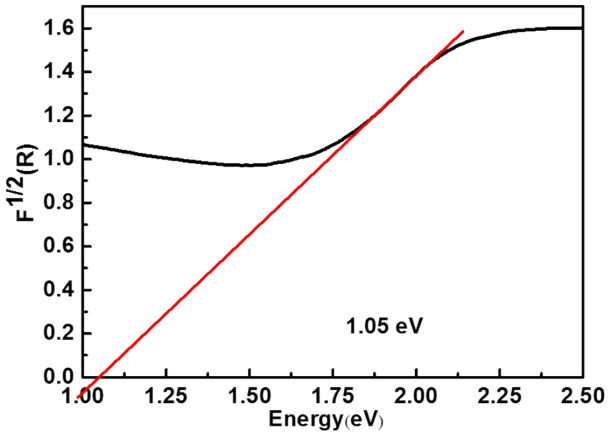

Figure S2. Plot of $(\alpha h\upsilon)^{1/2}$ *vs.* $h\upsilon$ for the absorption spectrum.

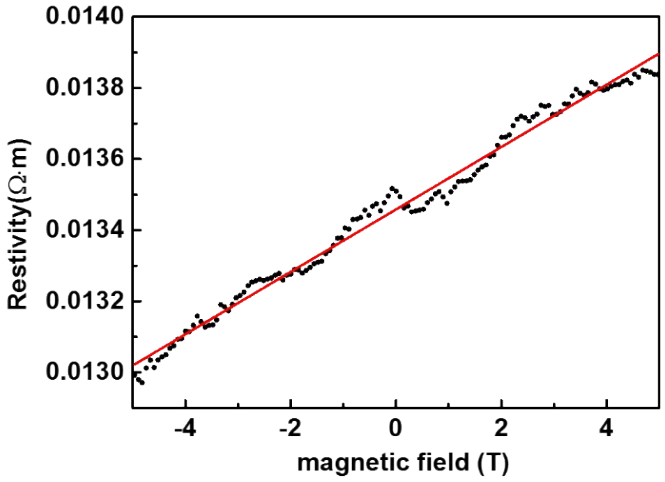

Figure S3. Resitivity-field curve of KCu_2SbS_3.

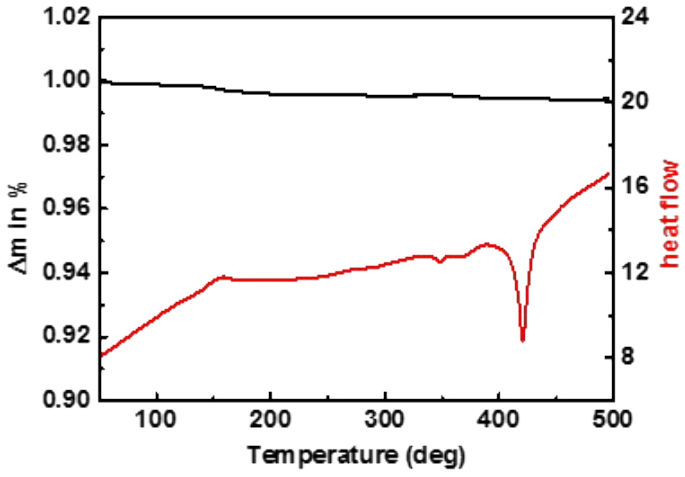

Figure S4.DTA-TG curve of KCu_2SbS_3

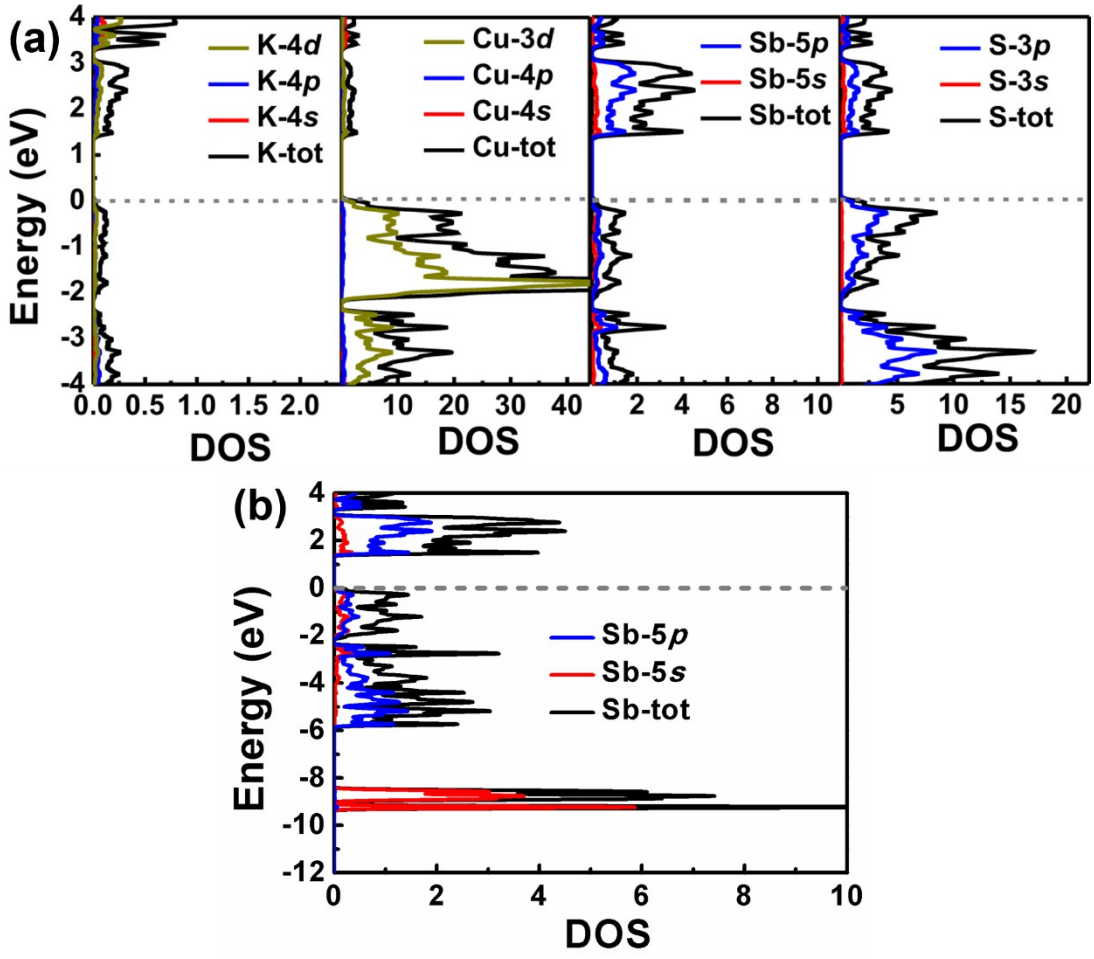

Figure S5. (a) Partial DOS of K, Cu, Sb, and S in KCu_2SbS_3. (b) Partial DOS of Sb in extended energy range.

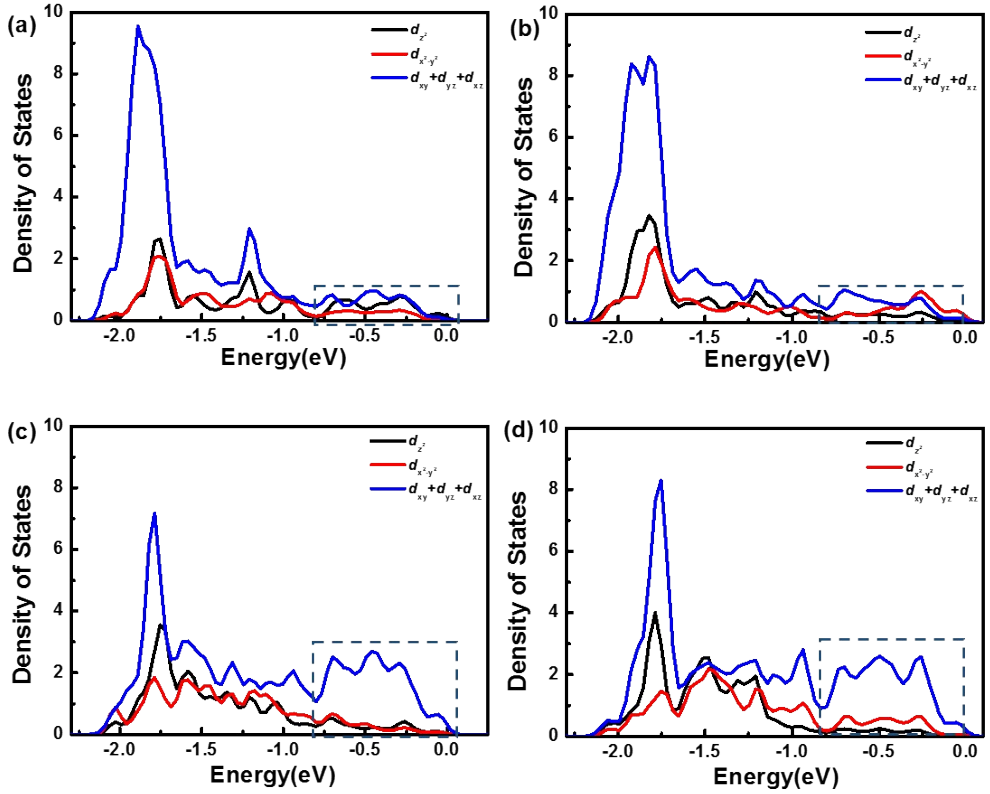

Figure S6. Detailed partial DOS of the *d* orbitals of the Cu atoms in KCu_2SbS_3.