Supporting information

Single Crystal Growth, Structure and thermal transport properties of the metallic antiferromagnet Zintl -phase β-$EuIn_2As_2$

D. S. Wu[1, 2]*, S. H. Na[1, 2], Y. J. Li[1, 2], W. Wu[1, 2], X.B. Zhou[1, 2], P Zheng[1, 2], Z. Li[1, 2,3], J. L. Luo[1,2,3] *

[1]*Beijing National Laboratory for Condensed Matter Physics, Institute of Physics,*

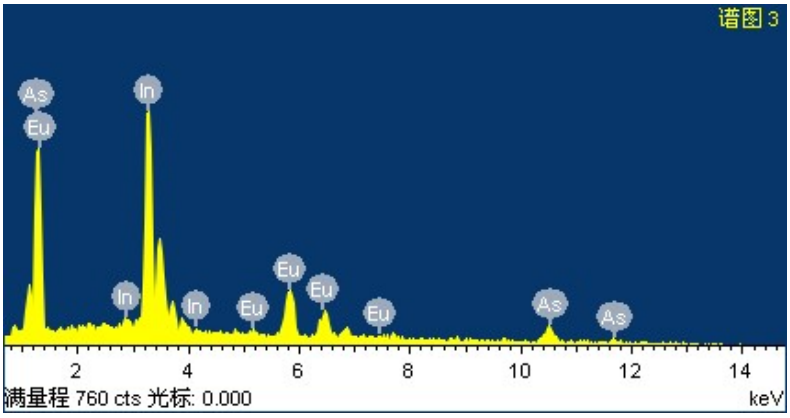
Chinese Academy of Sciences, Beijing 100190, China;

[2]*School of Physical Sciences, University of Chinese Academy of Sciences, Beijing 100190, China;*

[3]*Songshan Lake Materials Laboratory, Dongguan, Guangdong 523808, China*

*email address： dswu@iphy.ac.cn； jlluo@iphy.ac.cn

Figure S1：The chemical composition analysis of $EuIn_2As_2$ sample. The typical EDX spectrum of the $EuIn_2As_2$ crystal collected at an accelerating voltage of 15 k V and an accumulation time of 60 s.



To get a more convincing result, we chose several different micro-crystals which are cracked from a bulk crystal for the analysis of the chemical compositions. The result shows that there are only the Eu，In and As elements in the crystals. The percentage of Eu 16.98%（18.40%），In 26.12%（40.88%），As 15.56（40.72%）, which is very close to the stoichiometric ratio 1：2：2 in $EuIn_2As_2$