Supplementary Information

From the EDS analyses, the ratio of Co and S is about 0.578 in the CoS_2 nanocrystal grain. However, the ratio of Co and S is about 0.717 in the amorphous matrix not approaching to 1. This is to say that the cobalt sulfide amorphous matrix is the non-stoichiometric cobalt sulfide.

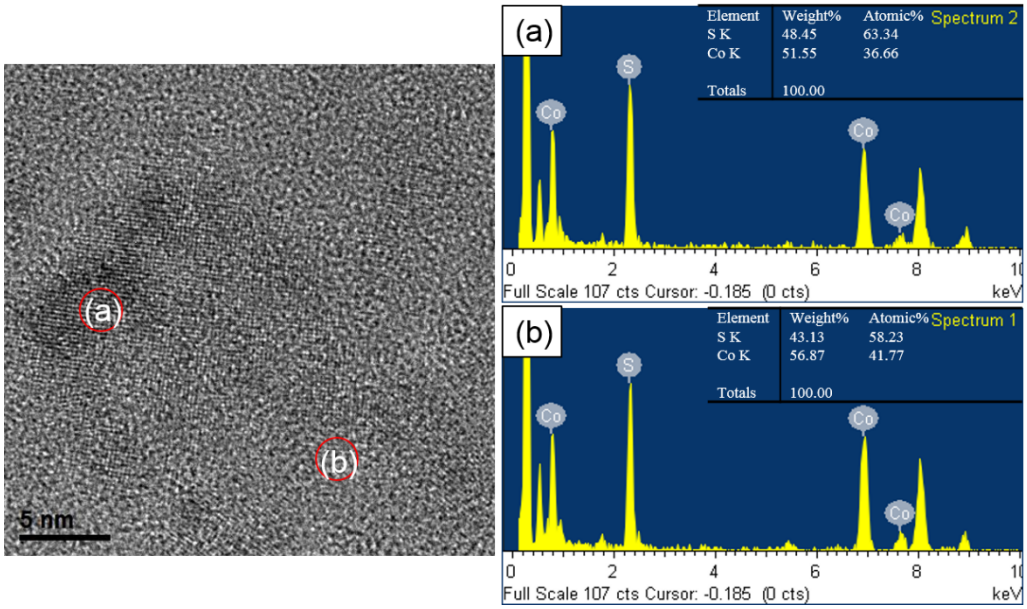

Fig. S1 The EDS analyses of different areas on a cobalt sulfide nanoflake: (a) CoS_2 nanocrystal and (b) cobalt sulfide amorphous matrix.