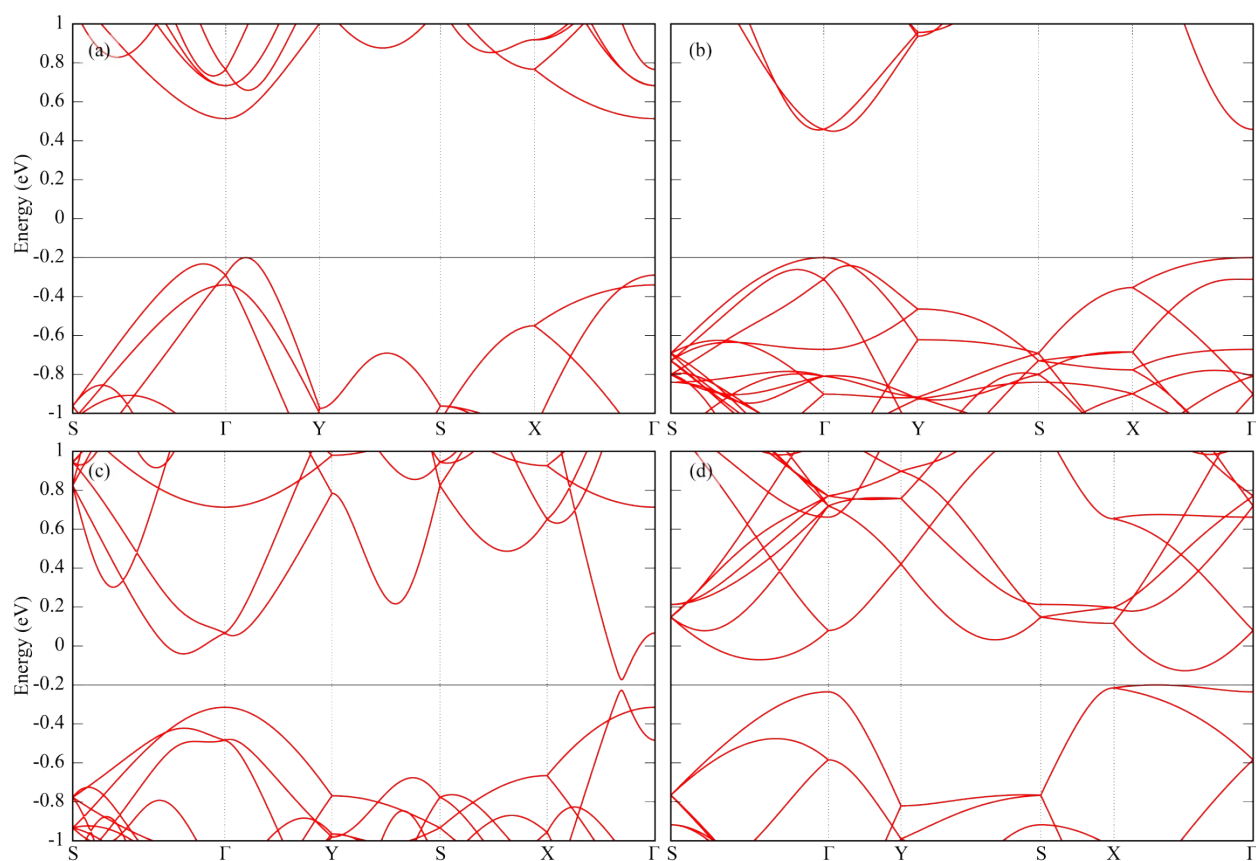


## Supplementary Information



**Figure 1** Electronic band dispersions for (a) pristine b-As, (b) 9 % biaxially strained b-As, (c) 12 % and (d) 45 % uniaxially strained b-As along zigzag and armchair directions, respectively. 3x3 supercell was used for calculation of electronic band structures.