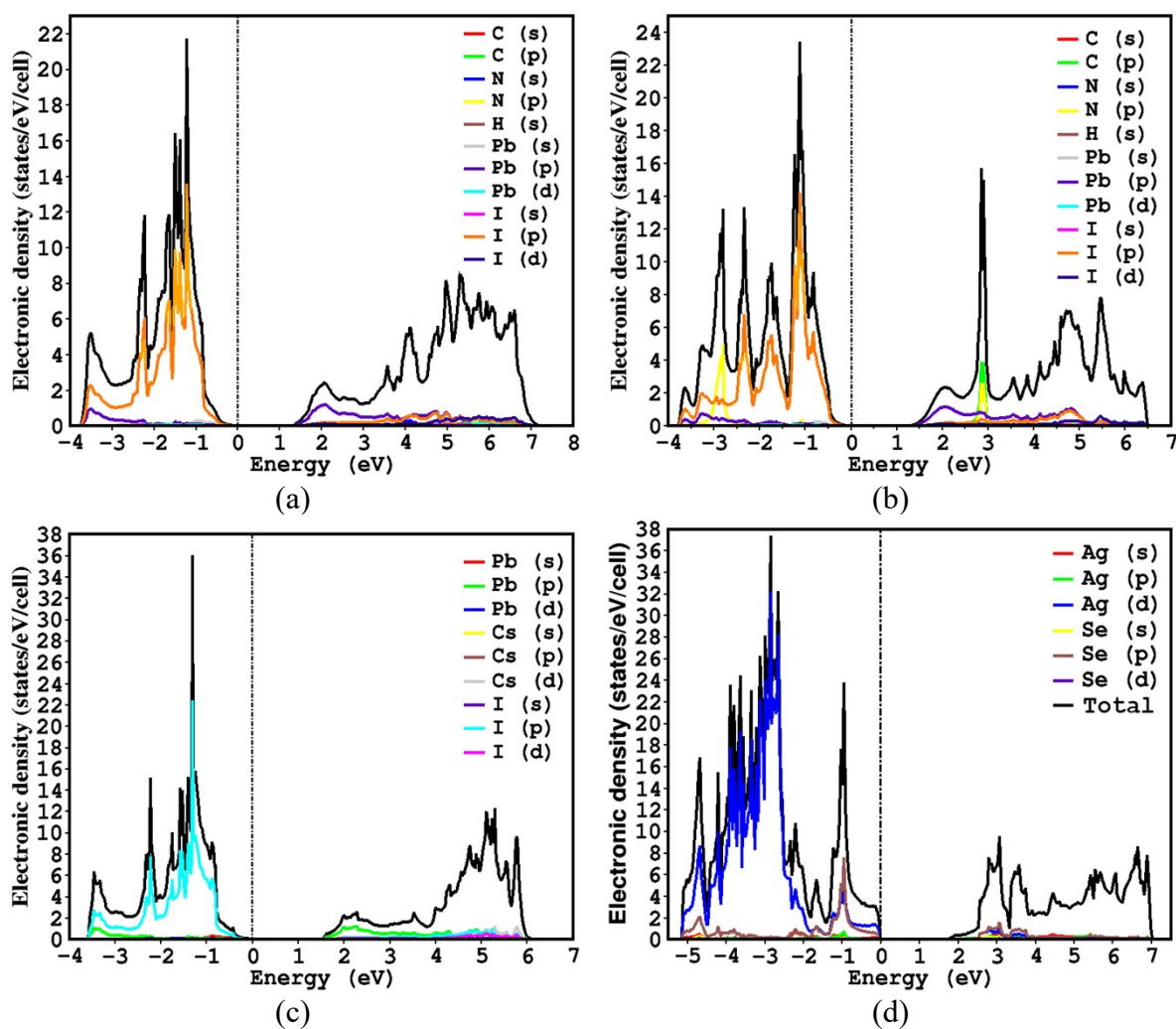


### Supplementary file



S1 Computed projected density of states (PDOS) for (a)  $\alpha$ -MAPbI<sub>3</sub>, (b)  $\alpha$ -FAPbI<sub>3</sub>, (c)  $\alpha$ -CsPbI<sub>3</sub> and (d) monolayer Ag<sub>4</sub>Se<sub>2</sub> phases.