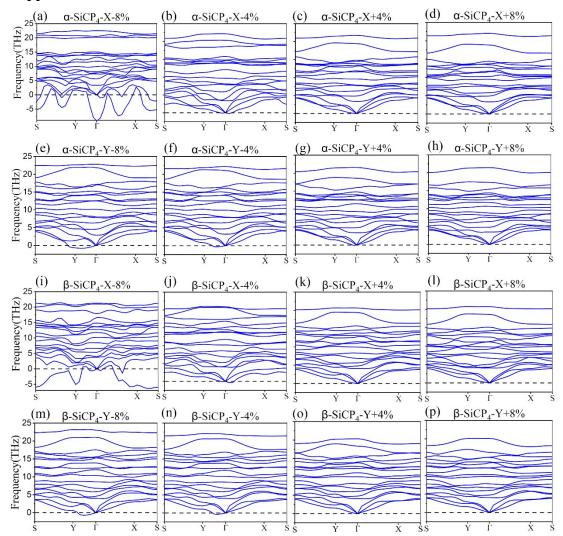
Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics. This journal is © the Owner Societies 2023

## **Support Information**



**Fig.S1** (a) - (d) the phonon spectrum of monolayer α-SiCP<sub>4</sub> with X-direction strain for -8%, -4%, 4% and 8%. (e) - (h) the phonon spectrum of monolayer α-SiCP<sub>4</sub> with Y-direction strain for -8%, -4%, 4% and 8%. (i) - (l) the phonon spectrum of monolayer β-SiCP<sub>4</sub> with X-direction strain for -8%, -4%, 4% and 8%. (m) - (p) the phonon spectrum of monolayer β-SiCP<sub>4</sub> with Y-direction strain for -8%, -4%, 4% and 8%.

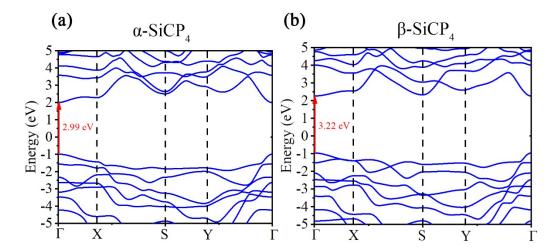


Fig.S2 (a) - (b) the quasi particle band structure of monolayer  $\alpha\text{-}$  and  $\beta\text{-SiCP}_4$  .