

Supporting Information for

**Enhanced stability and tunable optoelectronic properties of novel
silicon-carbon monolayer by strain and surface functionalization**

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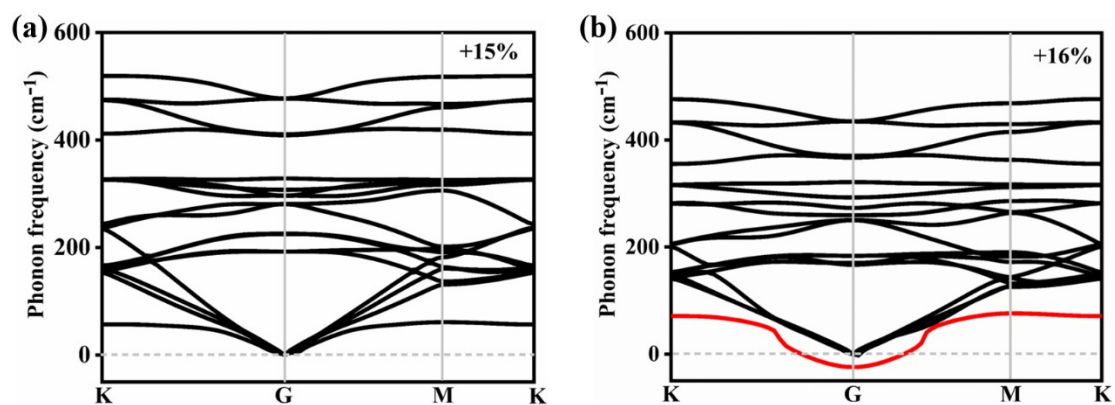


Fig. S1 Phonon spectra of Si_2C monolayer under tensile strains of $\delta = +15\%$ and $+16\%$.

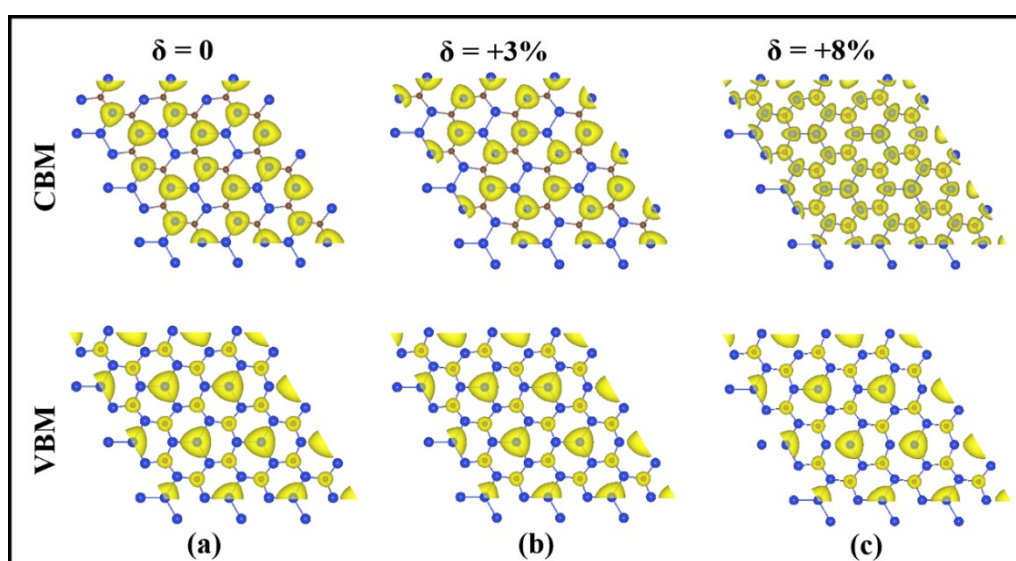


Fig. S2 Partial charge densities of Si_2C monolayer at the biaxial tensile strain $\delta = 0$, $+3\%$, and $+8\%$. (Isosurface value: $2.0 \times 10^{-3} \text{ e}/\text{\AA}^3$).

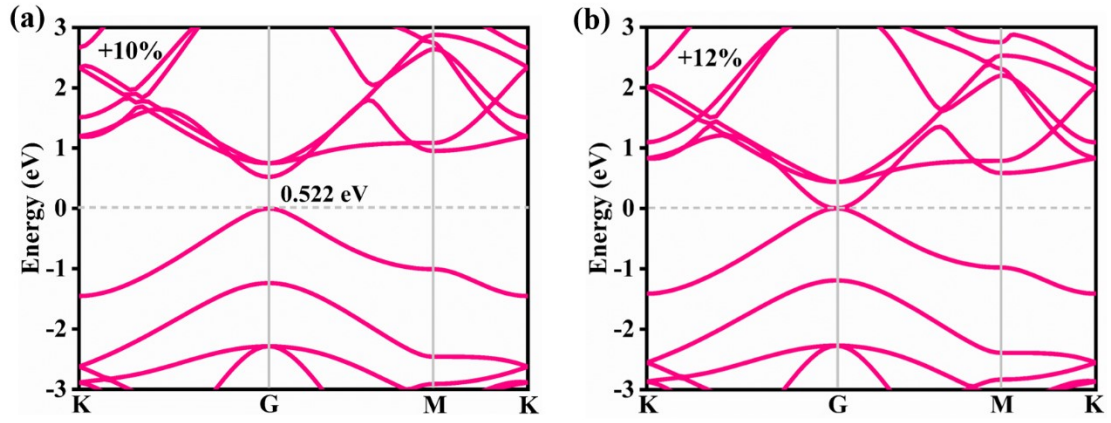


Fig. S3 Quasi-particle band structures of Si₂C monolayer at the biaxial tensile strains of +10% and +12%.

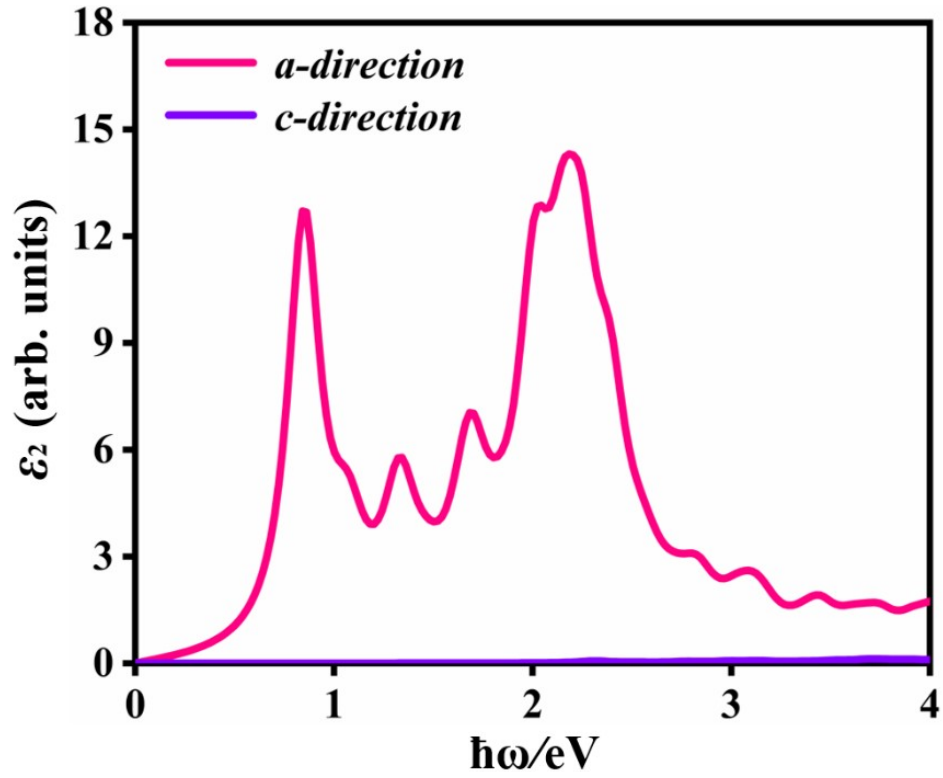


Fig. S4 Imaginary part (ϵ_2) of the dielectric function of the Si₂C monolayer from the G_0W_0 +BSE method along the lattice vector *a* and *c*, respectively. A Lorentzian broadening of 0.10 eV is adopted in these curves.