

High Electron Mobility in Si-Doped Two-Dimensional β -Ga₂O₃

Tuned Using Biaxial Strain

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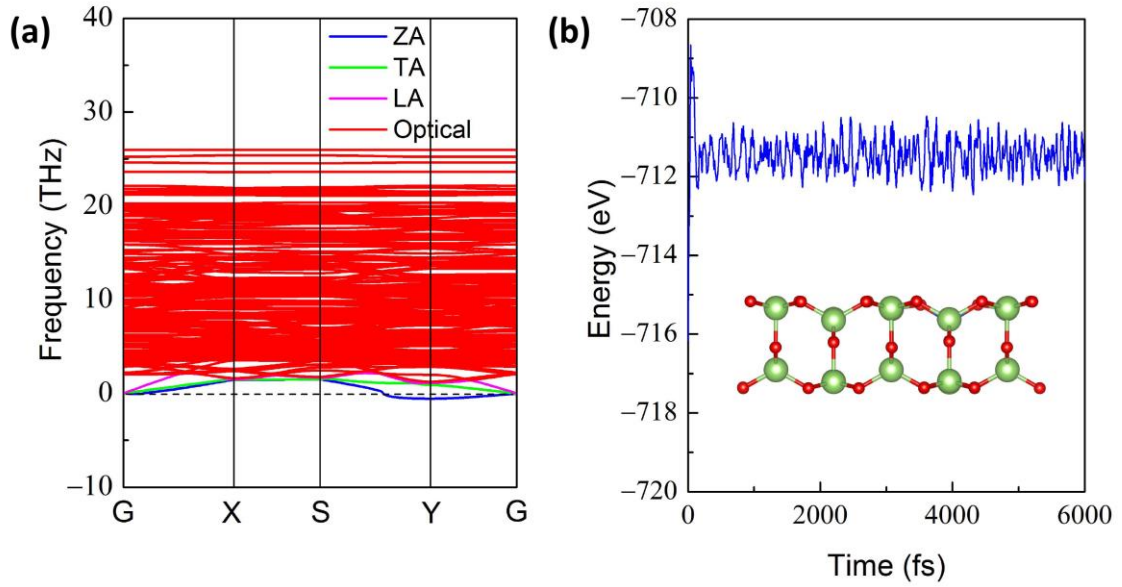


Figure S1 (a) Phonon dispersion and (b) AIMD simulation for the $6 \times 2 \times 1$ supercell of the SiGaII under O-rich condition at the temperature of 300 K. The inserted plot in Figure S1(b) indicates the optimized lattice structure of SiGaII.

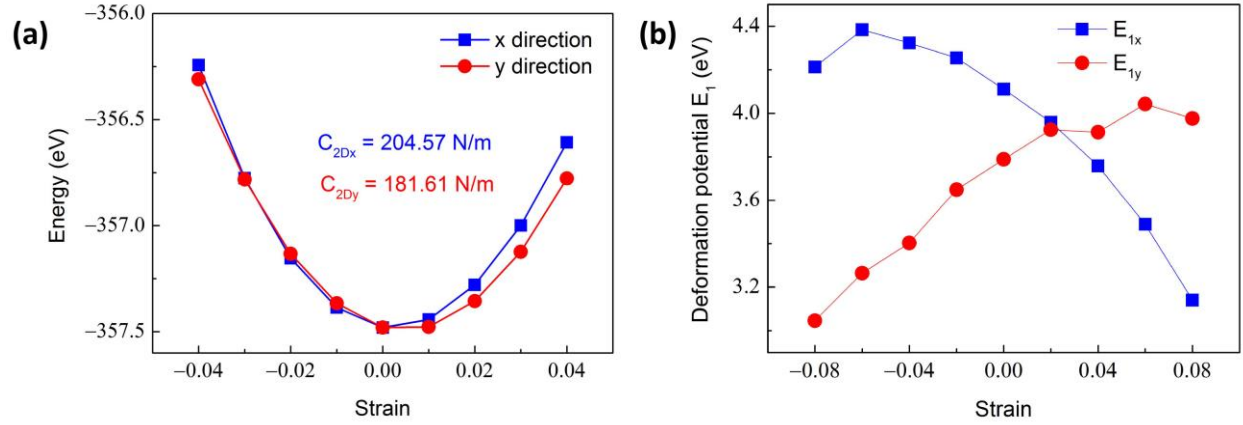


Figure S2 (a) Total energies of 2D SiGaII with respect to strain, and the in-plane elastic constant C_{2D} are also added. (b) Deformation potentials of 2D SiGaII versus uniaxial strains.

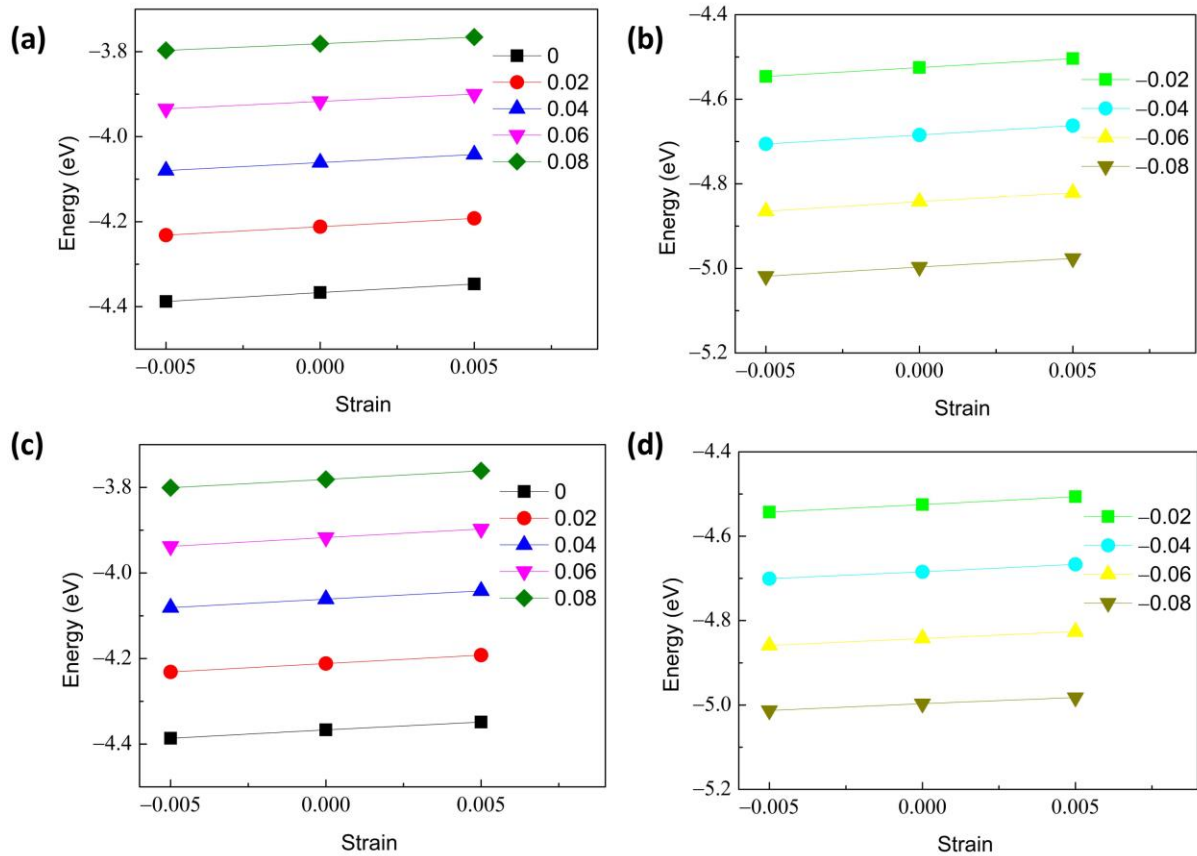


Figure S3 Energy shift of CBM of 2D SiGaII under uniaxial strains along x (a-b) and y (c-d) directions, respectively. The slope indicates the deformation potential constant E_1 of CBM.

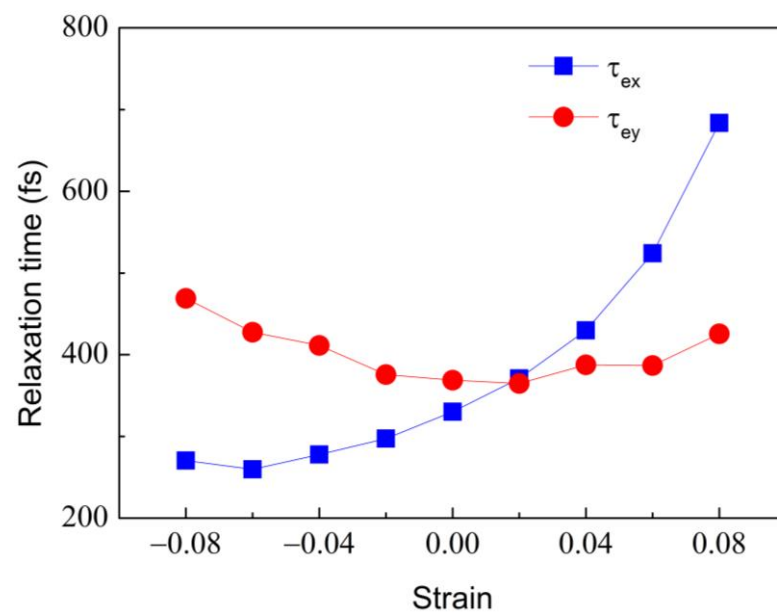


Figure S4 The relaxation time τ of 2D SiGaII with respect to different uniaxial strains.