https://doi.org/10.15302/frontphys.2026.055202

RESEARCH ARTICLE

Electric-field-induced topological phase transition in $CrS_2/CrSe_2$ heterostructures

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Received May 21,2025; accepted September 24, 2025

Supporting Information

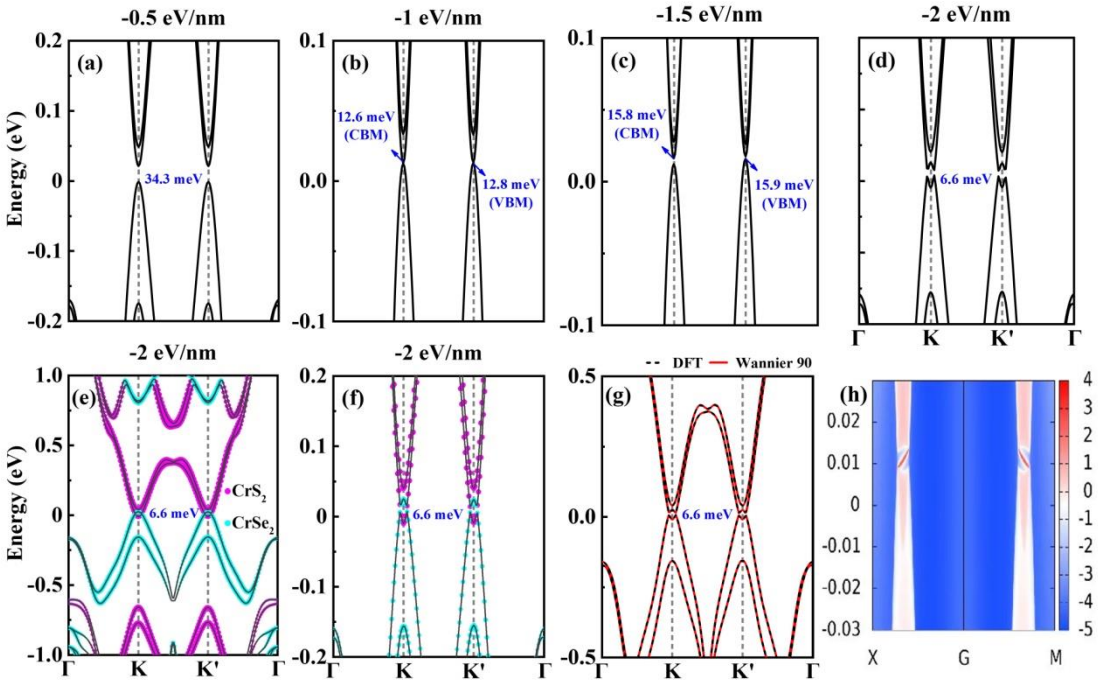


Fig. S1 The band structures with D2 van der Waals correction of the applied vertical electric fields at -0.5 eV/nm (a), -1 eV/nm (b), -1.5 eV/nm (c), and -2 eV/nm (d), respectively. Figure S1 (e) and (f) show the layer-resolved band structures of heterostructures under a vertical electric field of -2 eV/nm, and (f) is an enlarged image of (e). The magenta bubble represents the element projection of CrS_2 whereas the light blue bubble represents the element projection of $CrSe_2$. (g) The band structures of $CrS_2/CrSe_2$ heterostructure with SOC by using first principles calculations and Wannier 90. (h) Topological edge states of $CrS_2/CrSe_2$ heterostructures.

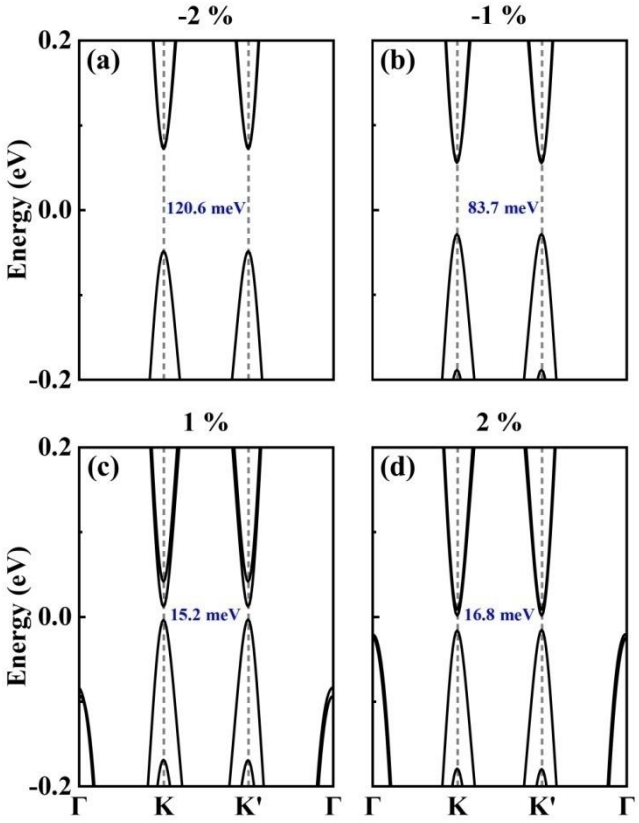


Fig. S2 The band structures under different tensile strains, i.e., -2% (a), -1% (b), 1% (c), and 2% (d).

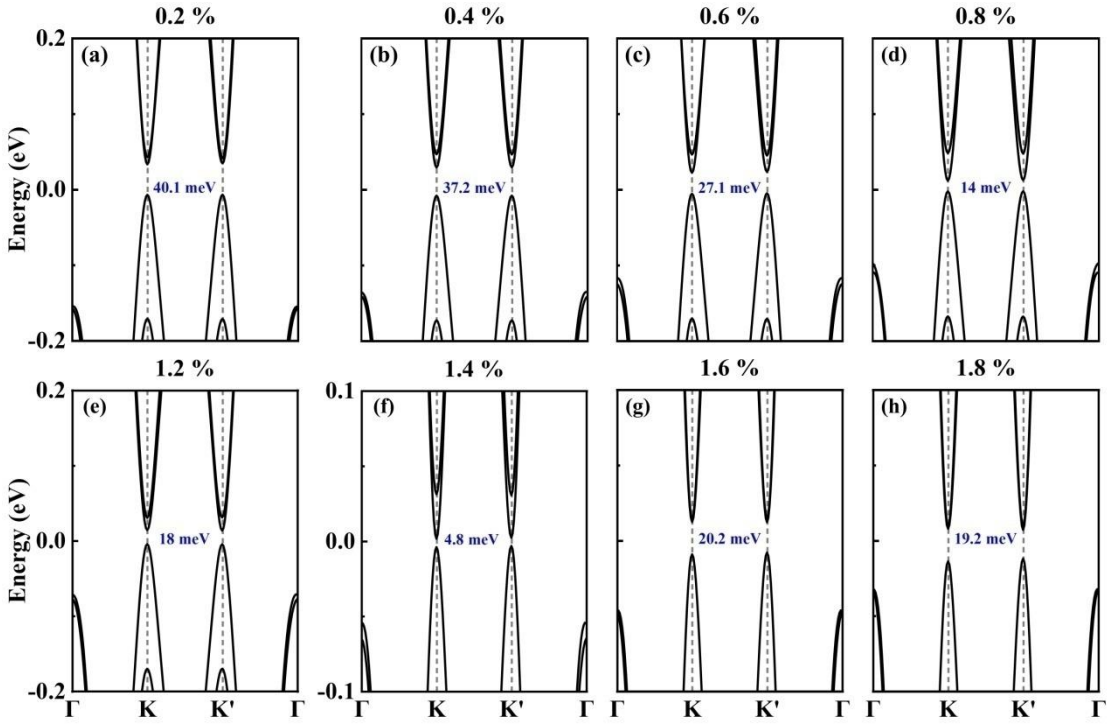


Fig. S3 The band structures under different tensile strains, i.e., 0.2% (a), 0.4% (b), 0.6% (c), 0.8% (d), 1.2% (e), 1.4% (f), 1.6% (g), 1.8% (h).

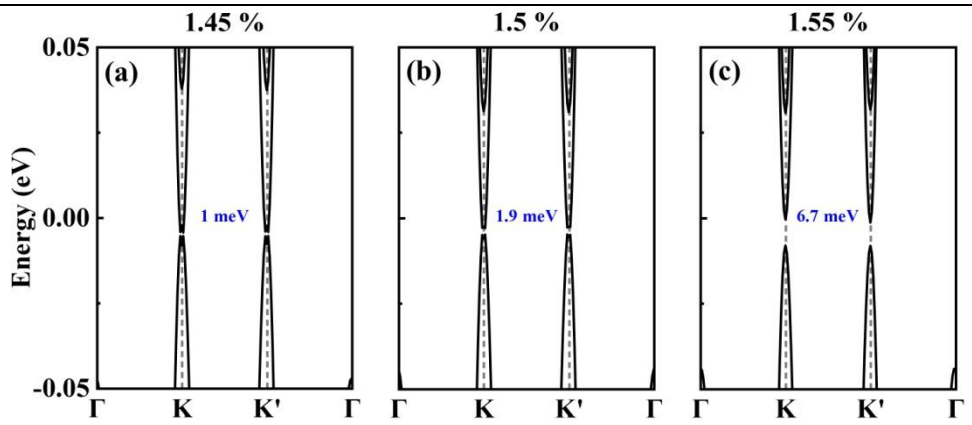


Fig. S4 The band structures under different tensile strains, i.e., 1.45% (a), 1.5% (b), and 1.55% (c).

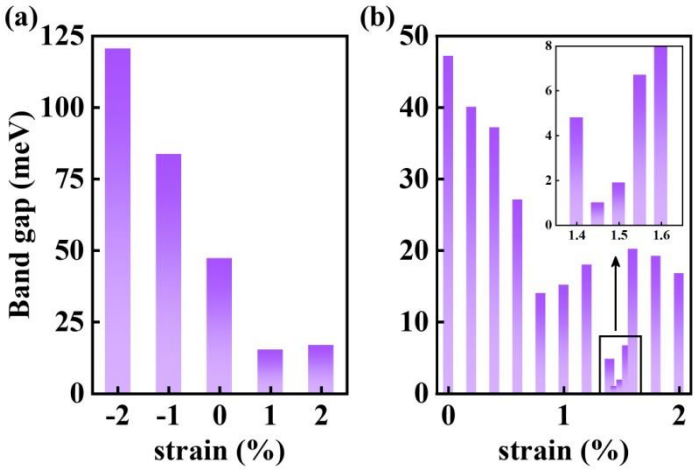


Fig. S5 The band gap as a function of strains.