

Electronic Supplementary Information

Half-metallicity in honeycomb-kagome-lattice Mg_3C_2 monolayer with carrier doping

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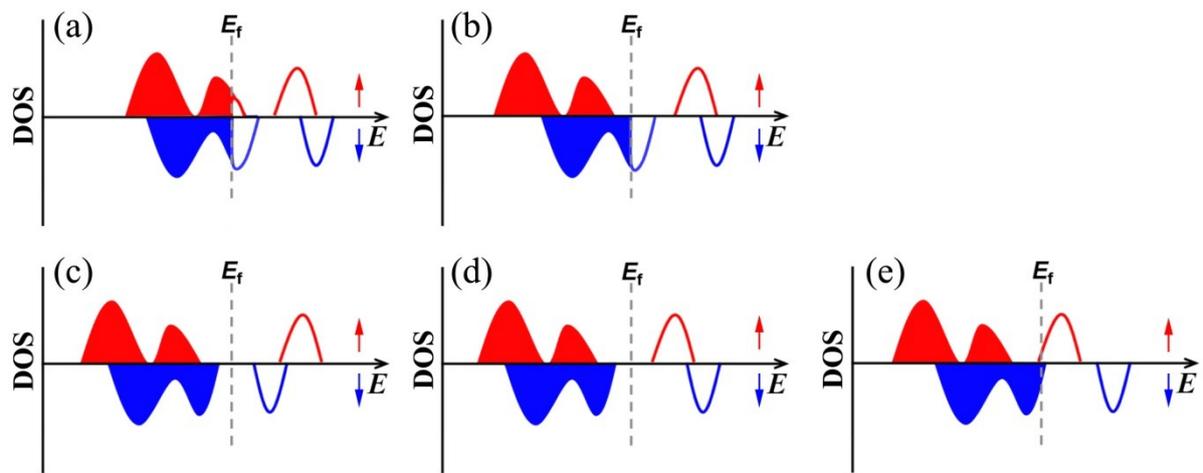


Fig. S1 Schematic DOSs for various spintronic materials: (a) conventional ferromagnetic metal, (b) half-metal, (c) half-semiconductor, (d) bipolar magnetic semiconductor, and (e) spin-gapless semiconductor.

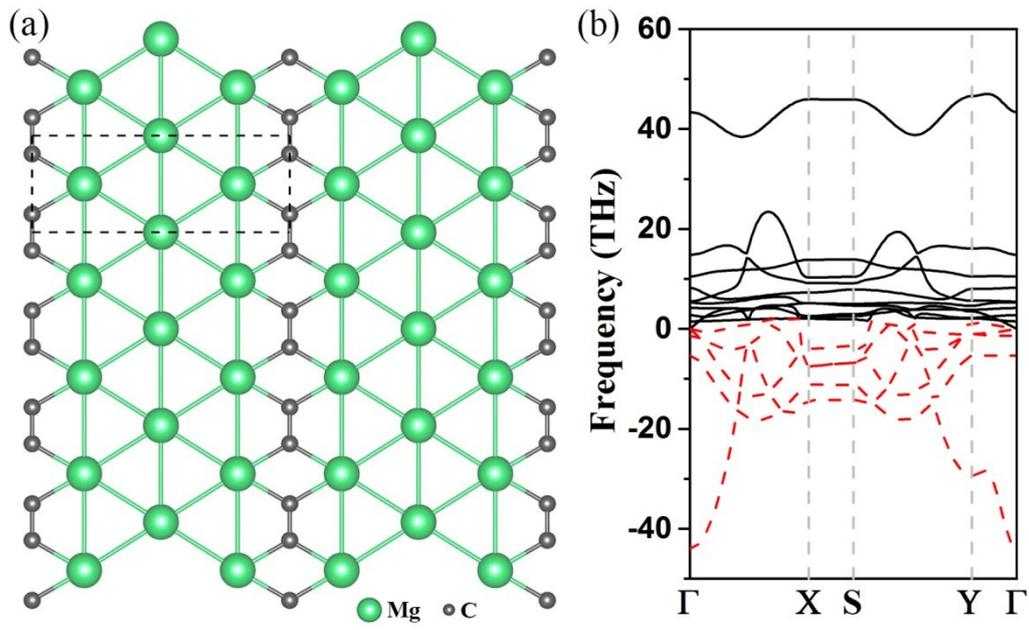


Fig. S2 (a) Top view of the optimized geometric structure and (b) phonon spectrum of the $pm3m$ - Mg_3C_2 monolayer. The red dashed lines indicate the phonon dispersion curves with evident imaginary frequencies.

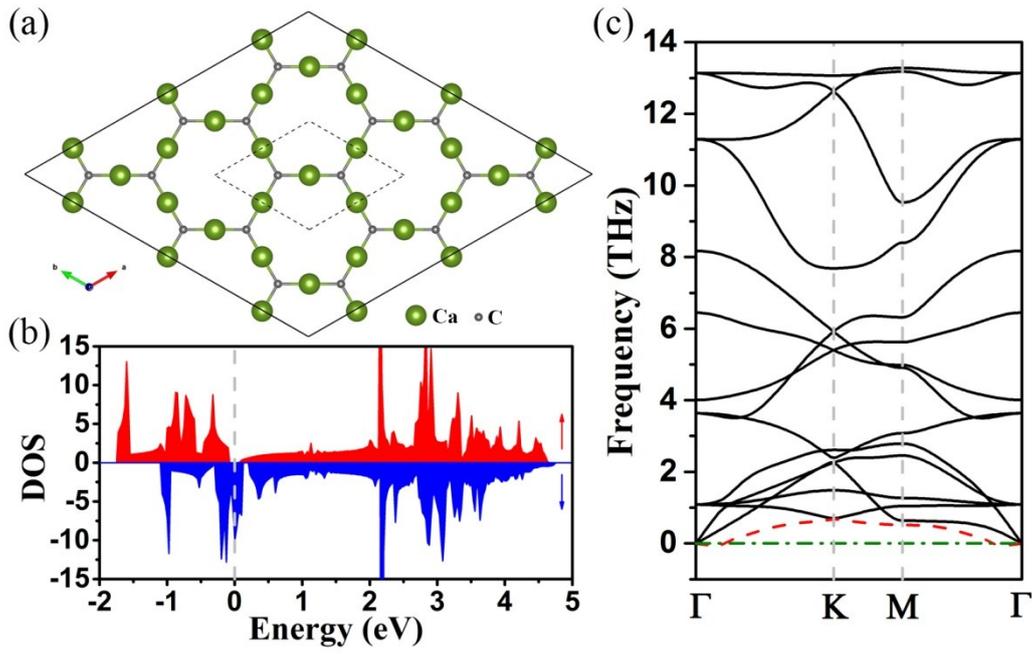


Fig. S3 (a) Top view of the optimized geometric structure, (b) spin-resolved total DOS, and (c) phonon spectrum of the Ca_3C_2 monolayer. The red dashed line in (c) indicates the out-of-plane transverse acoustical phonon branch with a small imaginary frequency near the Γ point.

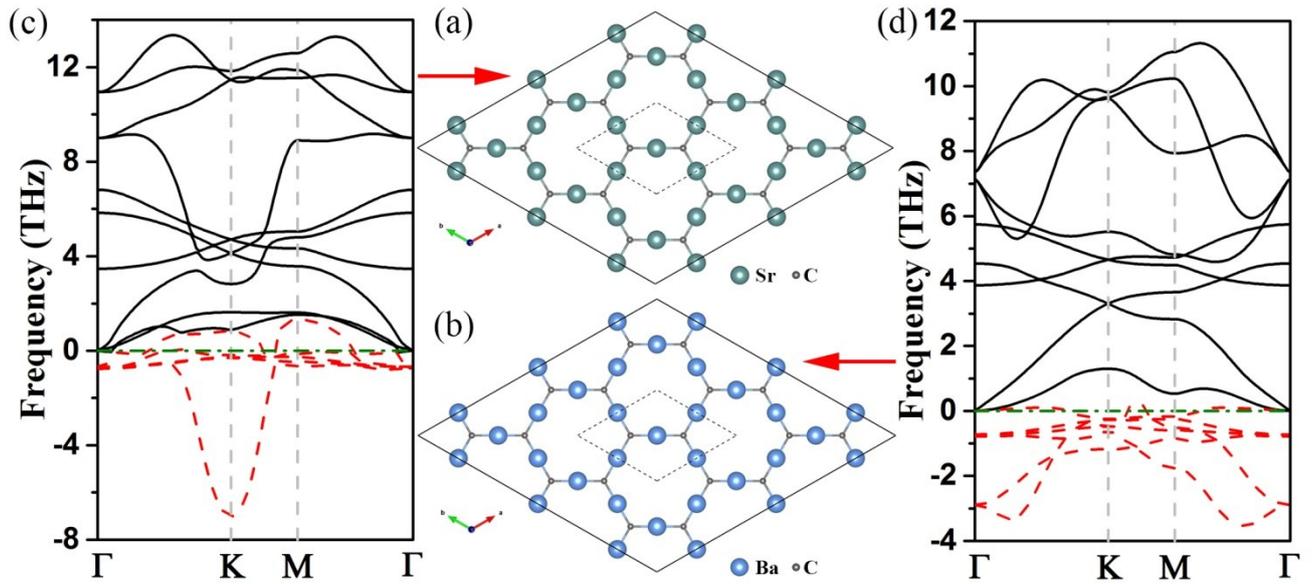


Fig. S4 Top views of the optimized geometric structures of the (a) Sr_3C_2 and (b) Ba_3C_2 monolayers. Parts (c) and (d) are their corresponding phonon spectra, respectively. The red dashed lines indicate the phonon dispersion curves with evident imaginary frequencies.