Supplemental Material

Carrier mobility and superconducting properties in monolayer oxygen-terminated functionalized MXene Ti_2CO_2

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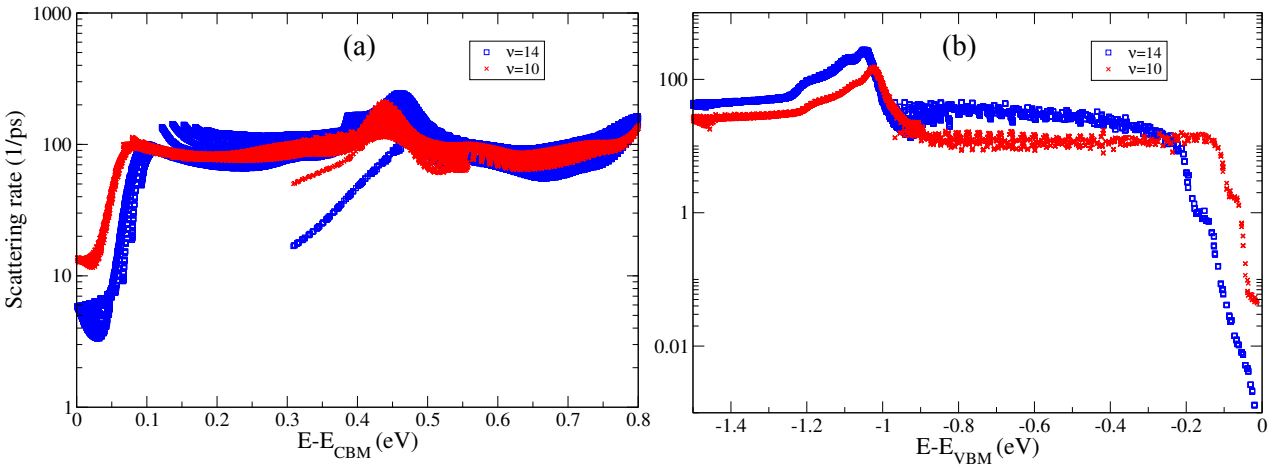

FIG. S1: The scattering rates of the two most effective optical modes ($\nu = 10$ and 14) as functions of energy for the (a) n- and (b) p-type (0.01 el/cell) Ti_2CO_2. The temperature was assumed to be 300 K.

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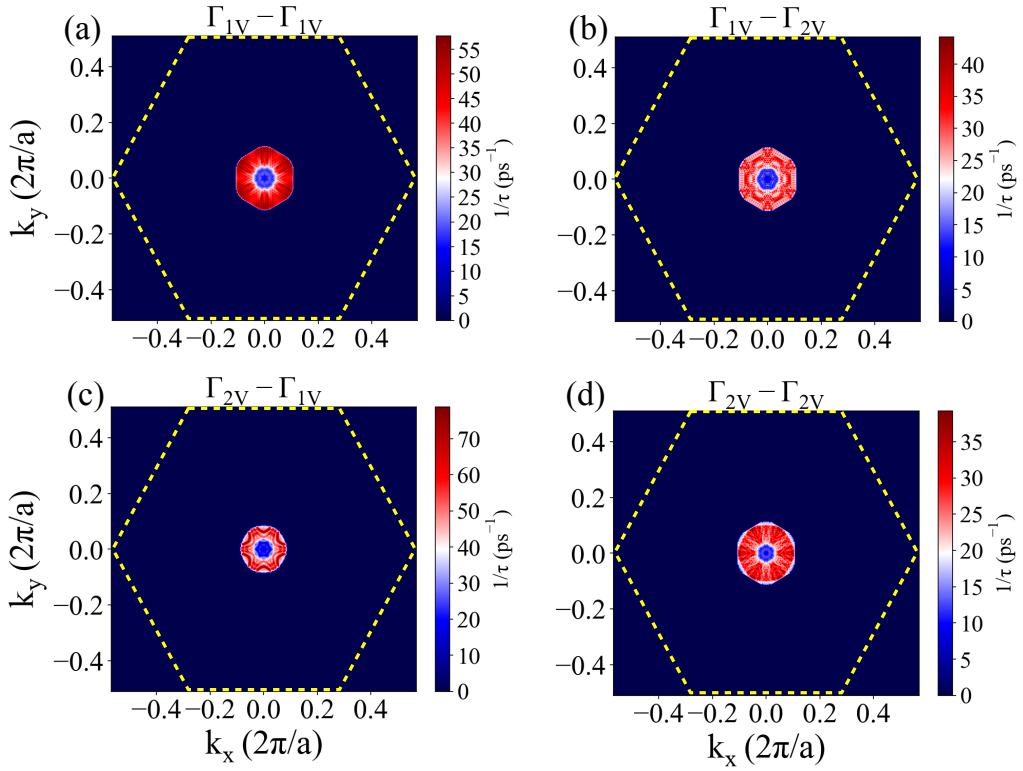

FIG. S2: Valley-dependent hole scattering rates (1/ps). Hole concentration and temperature are assumed to be 0.01 el/cell and 300 K, respectively. The possible intra/inter-valley transitions are illustrated in (a-d).

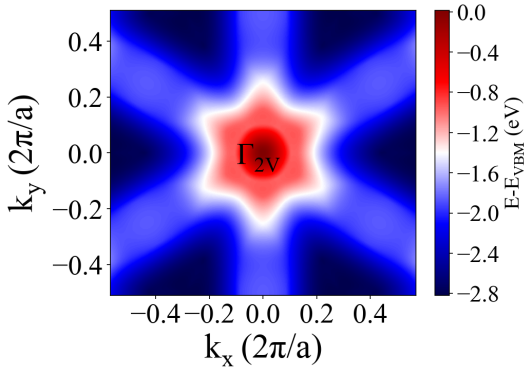

FIG. S3: The Fermi surface of the valance band consisting of Γ_{2V} valley.

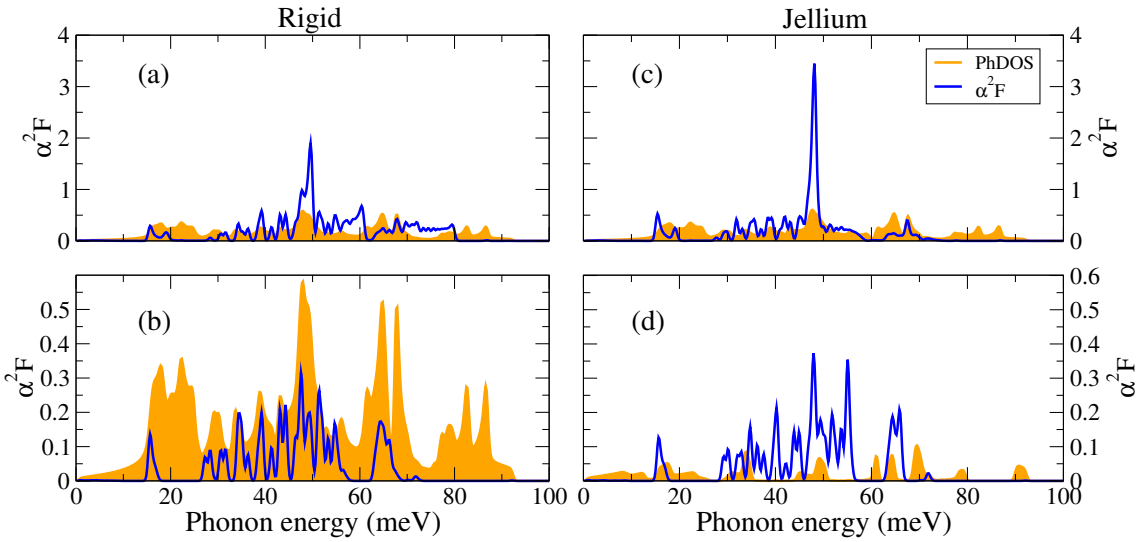

FIG. S4: Isotropic Eliashberg spectral function (α^2F) and phonon density of states (PhDOS) for monolayer Ti_2CO_2 within both the rigid and the jellium regimes. The rigid band α^2F and PhDOS of (n-type) -0.01 el/cell (a) and (p-type) +0.01 el/cell (b) are illustrated. (c) and (d) are the same as (a) and (b) except in the jellium regime.