Valley splitting of monolayer $Hf_3C_2O_2$ by spin-orbit coupling effect: First principle calculation using the *HSE06* methods

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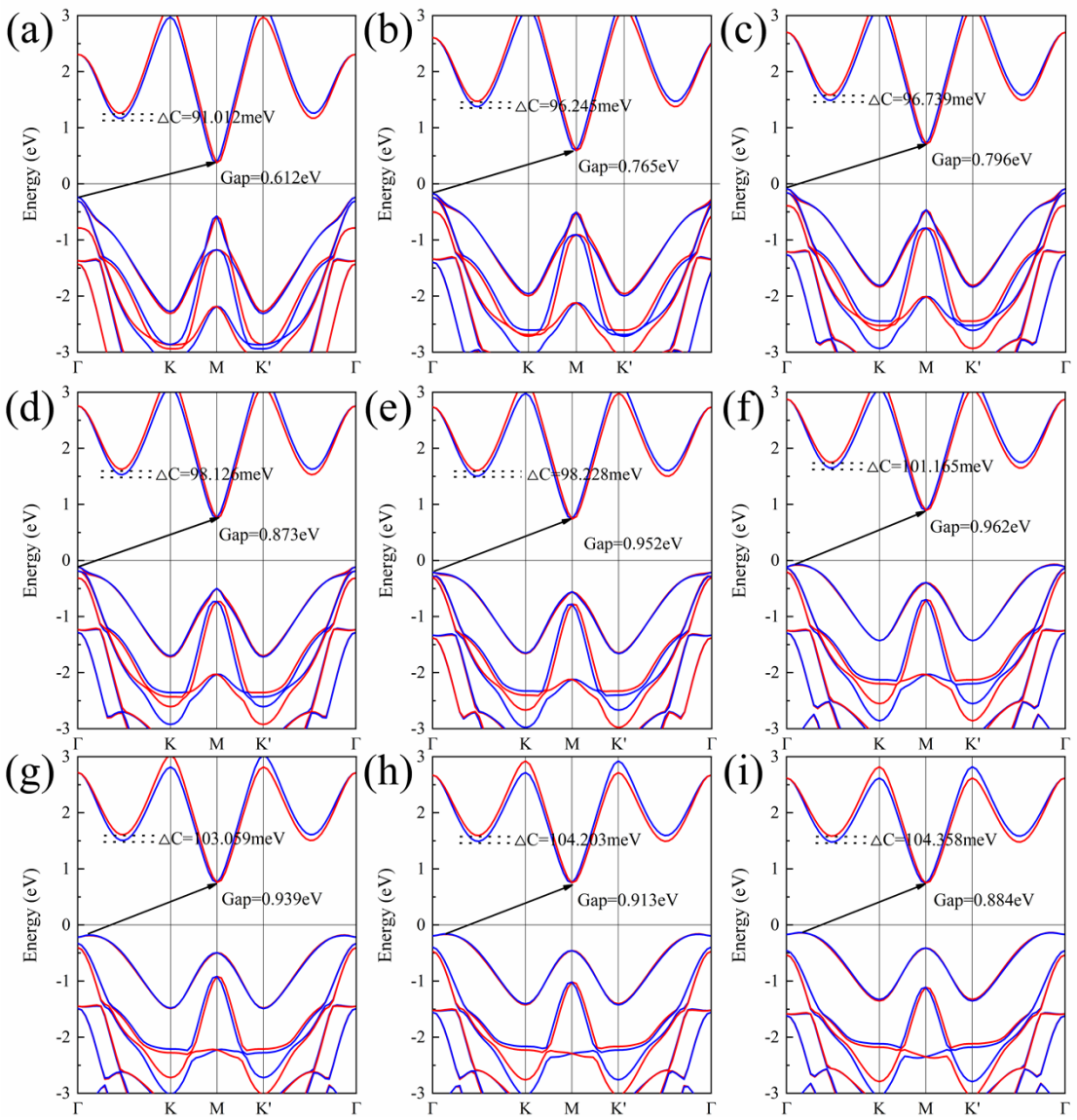

Figure S1. (a)~(i) The band structure of *1L* $Hf_3C_2O_2$ under biaxial strain from -4% to 4%.

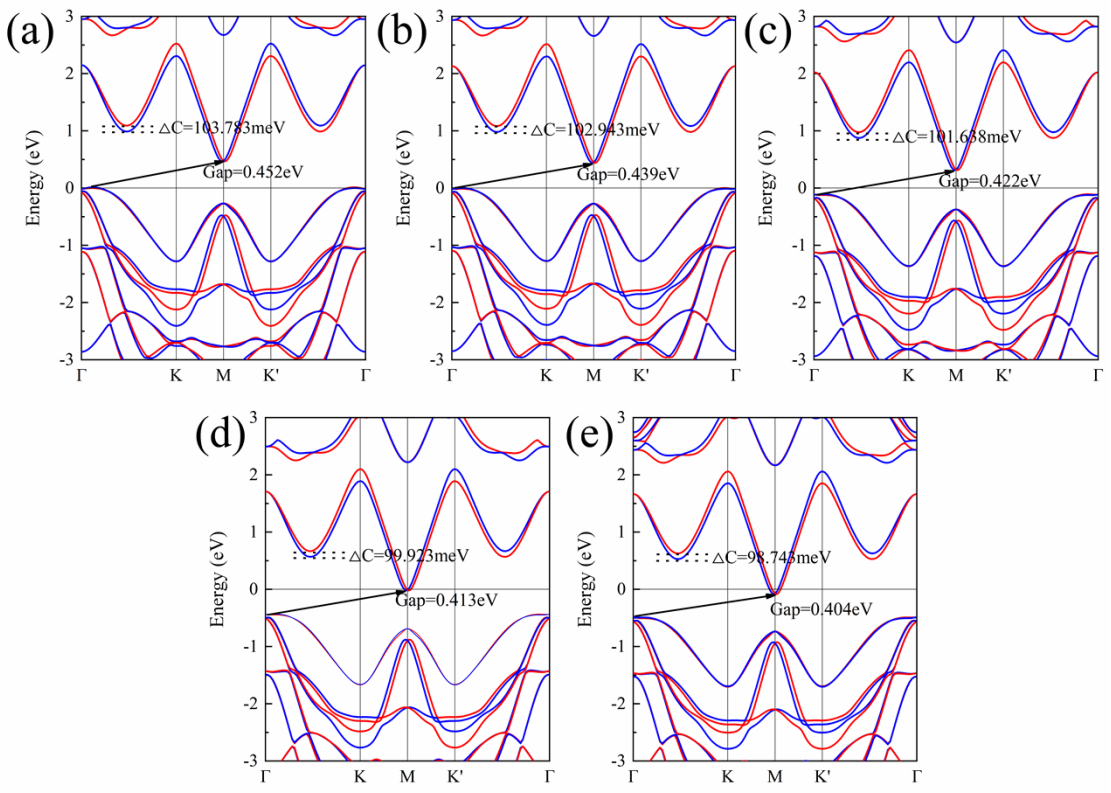

Figure S2. (a)~(e) The band structure of *1L* $Hf_3C_2O_2$ at doping concentrations ranging from -0.1electron/unit cell to 0.1 electron/unit cell. (The interval is 0.05 electron/unit cell)