Electronic Supplementary Material (ESI) for RSC Advances.

Theoretical studies on the structures and properties of doped graphenes with and without the external electrical field

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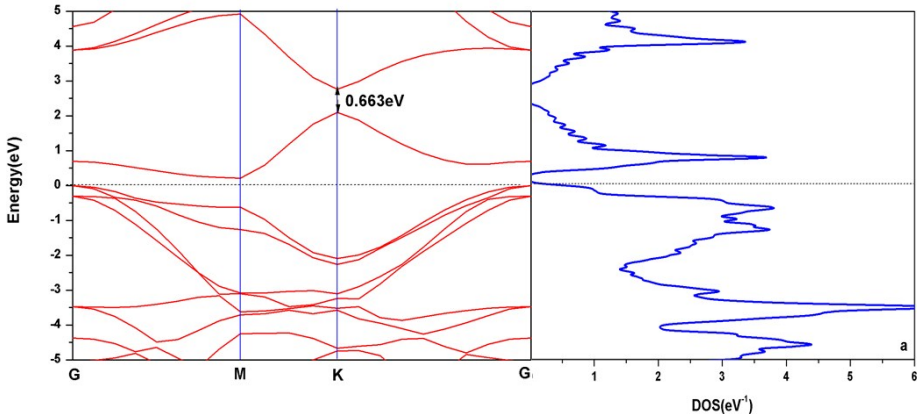
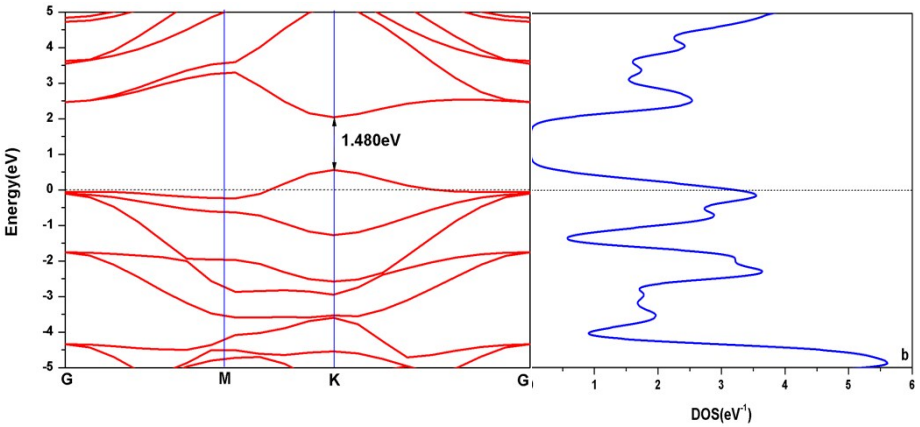
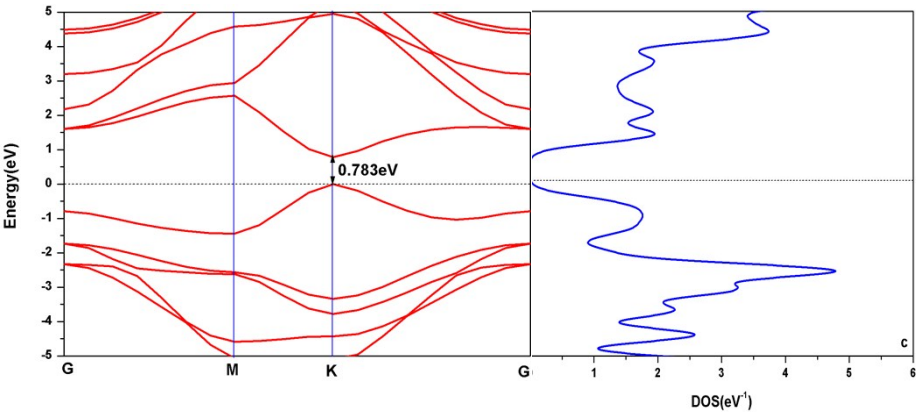

0.663eV
Energy(eV)
G
M
K
G
DOS(eV^{-1})
a

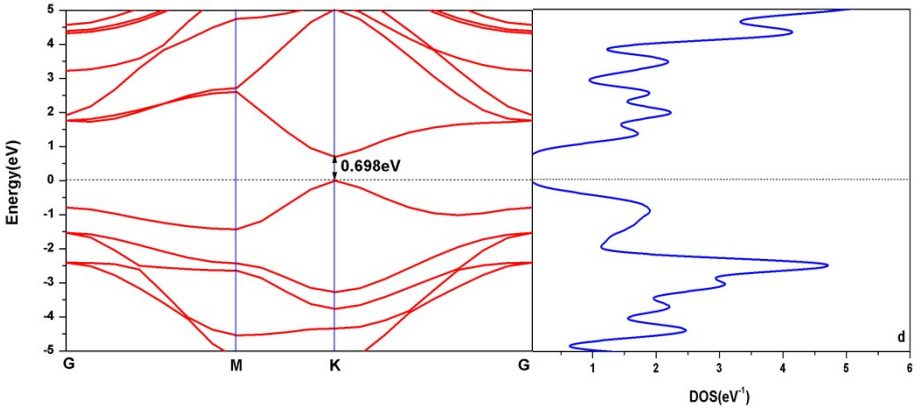
35


1.480eV
Energy(eV)
G
M
K
G
DOS(eV^{-1})
b

36


0.783eV
Energy(eV)
G
M
K
G
DOS(eV^{-1})
c

37


0.698eV
Energy(eV)
G
M
K
G
DOS(eV^{-1})
d

38

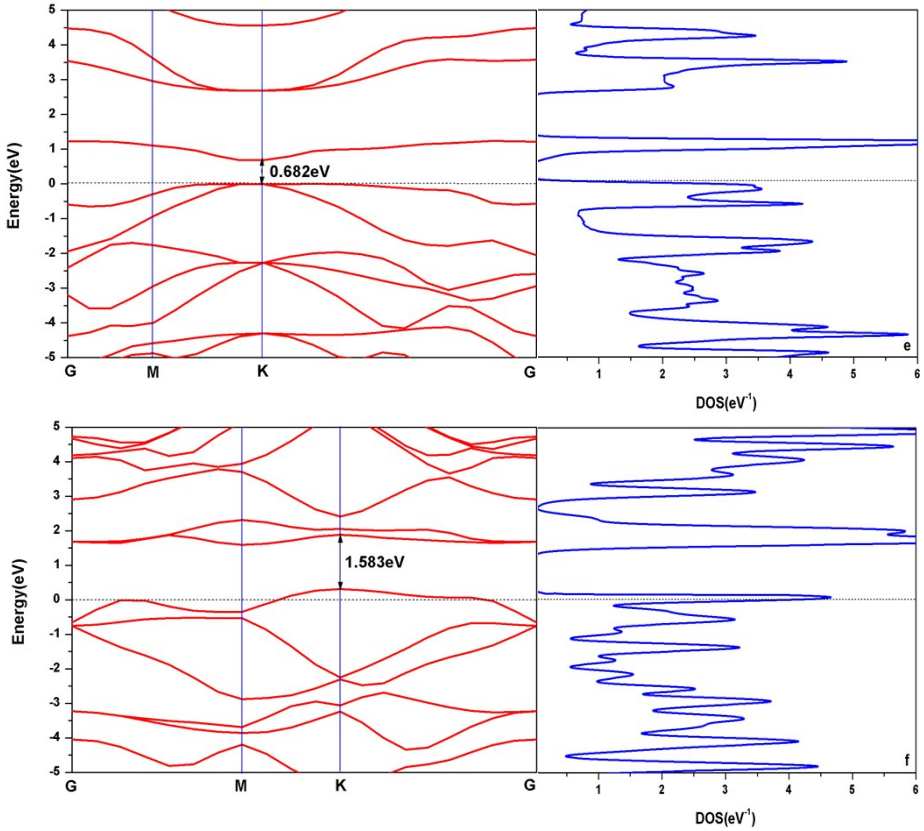


Fig. S1. The band gaps (left) and DOS (right) of doped graphenes: B-G(a), Al-G(b), Si-G(c), Ge-G(d), As-G(e), and Sb-G(f).

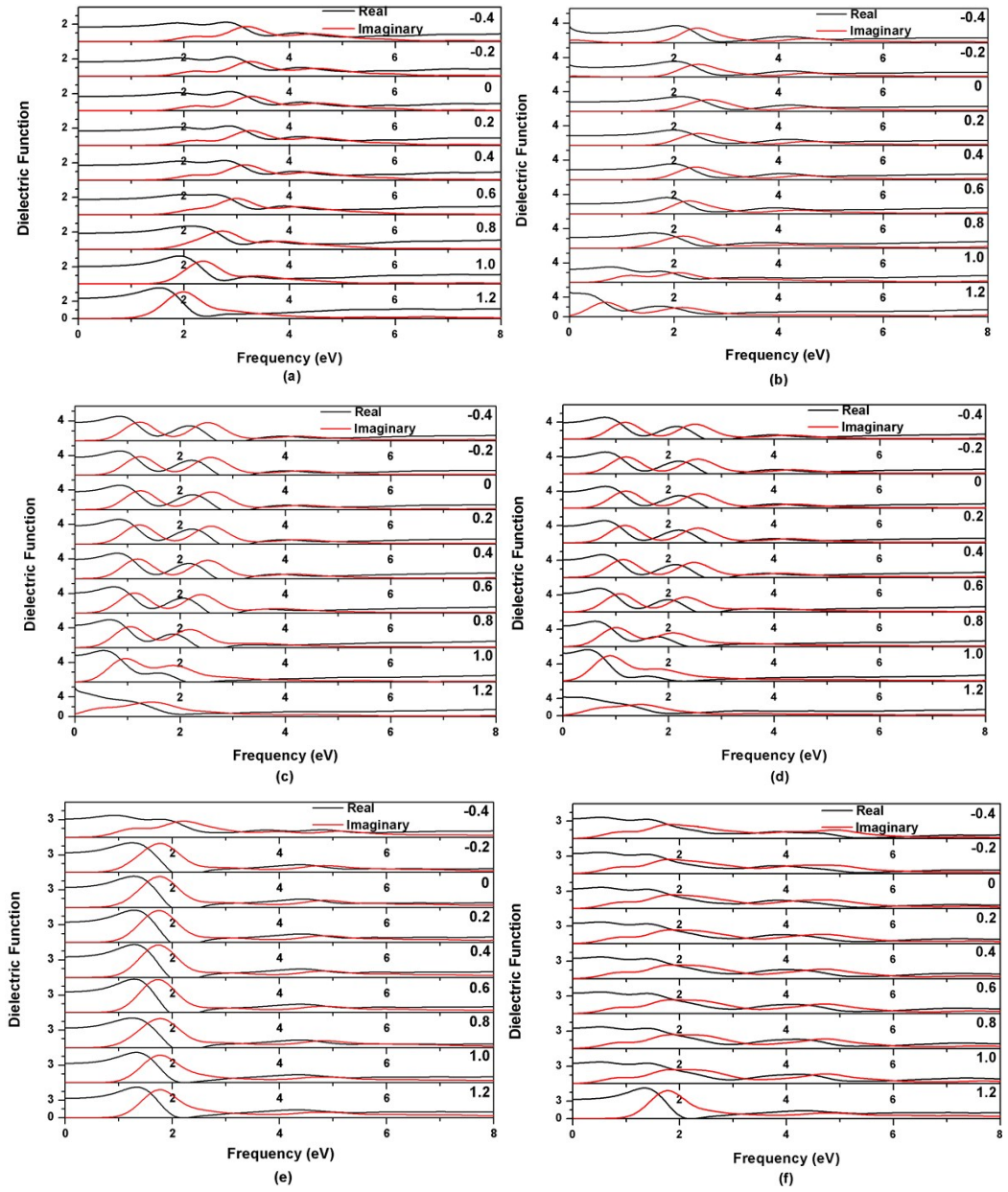


Fig. S2. Dielectric functions of B-G(a), Al-G(b), Si-G(c), Ge-G(d), As-G(e), and Sb-G(f) under different E_f ranging from -0.4 to 1.2 eV/Å.

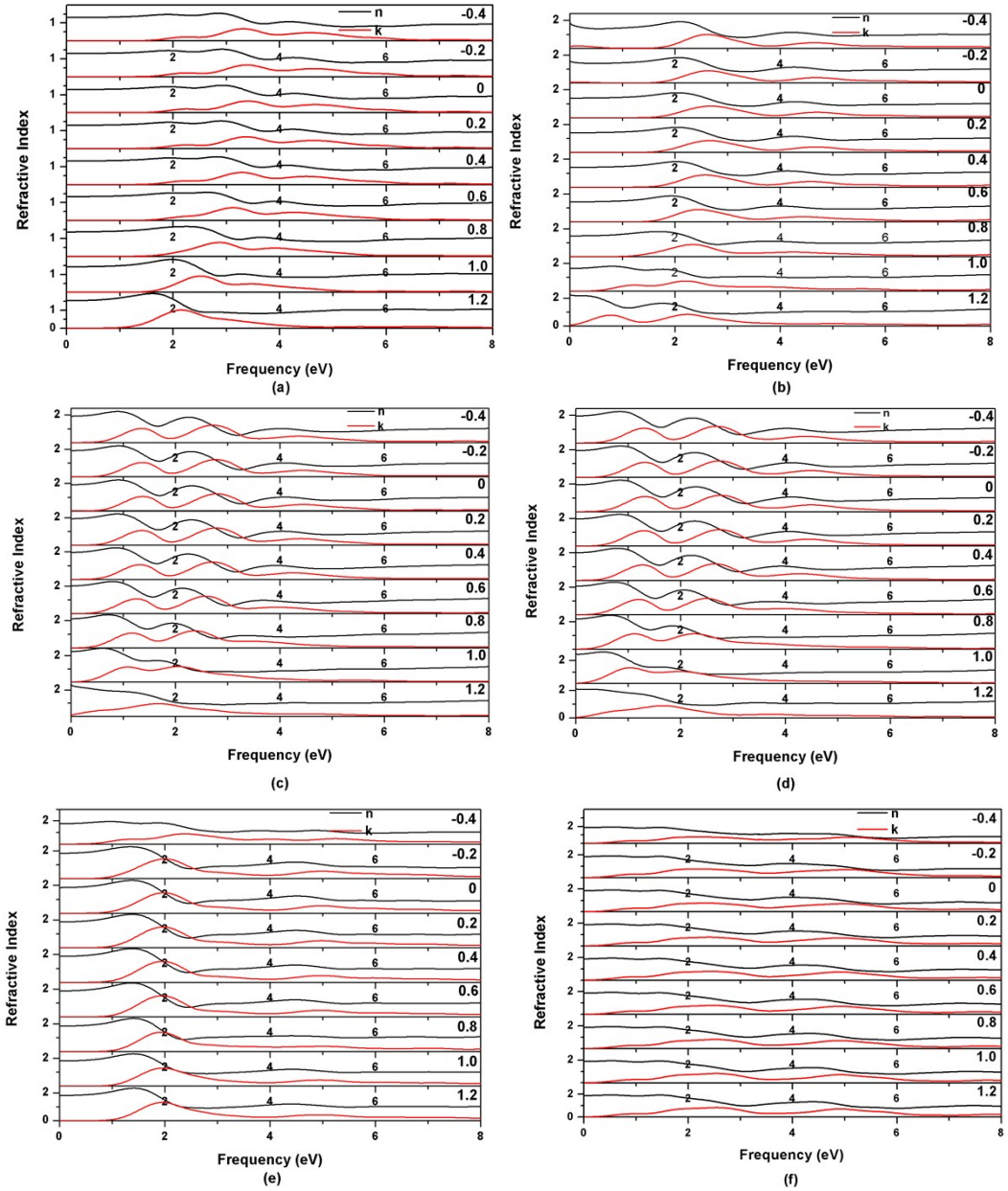


Fig. S3. Refractive indexes of B-G(a), Al-G(b), Si-G(c), Ge-G(d), As-G(e), and Sb-G(f) under different E_f ranging from -0.4 to 1.2 eV/Å.

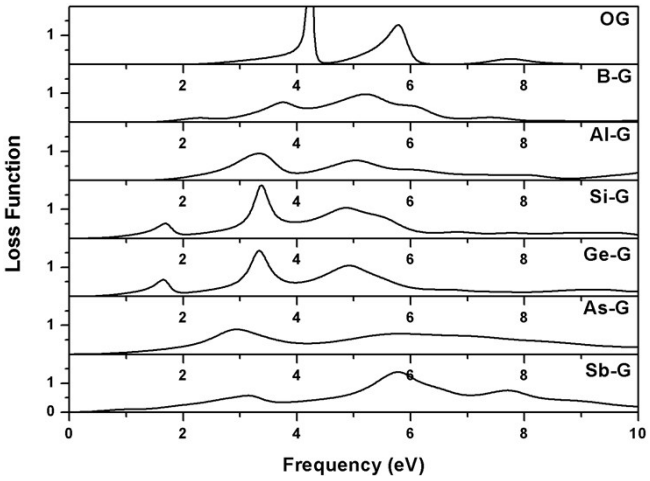


Fig. S4. Loss functions of OG, B-G, Al-G, Si-G, Ge-G, As-G, and Sb-G.

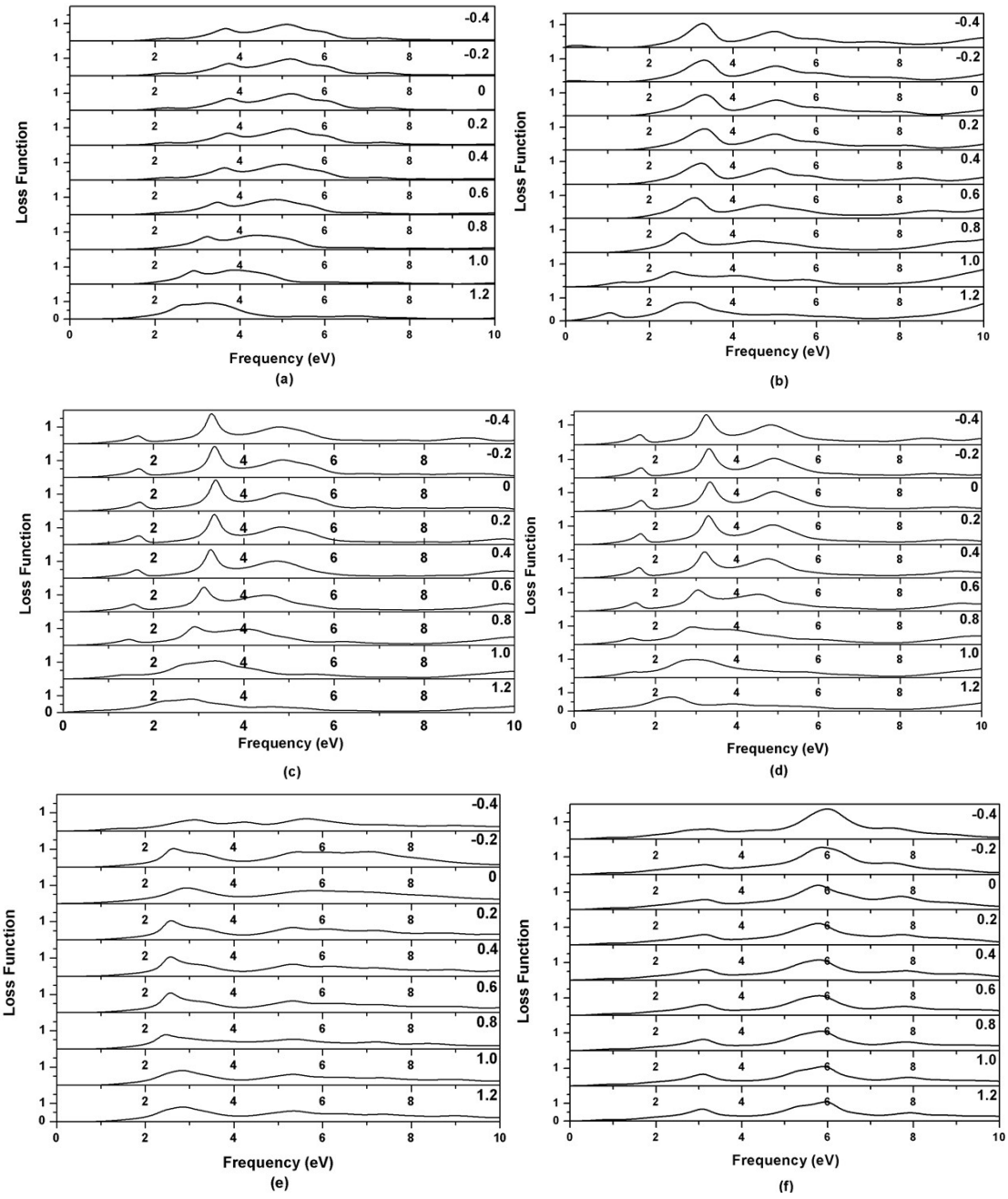


Fig. S5. Loss functions of B-G(a), Al-G(b), Si-G(c), Ge-G(d), As-G(e), and Sb-G(f) under different E_f ranging from -0.4 to 1.2 eV/Å.