

Supporting Information

Hydrogenated boron phosphide THz-metamaterial based biosensor for diagnosing COVID-19: A DFT coupled FEM study

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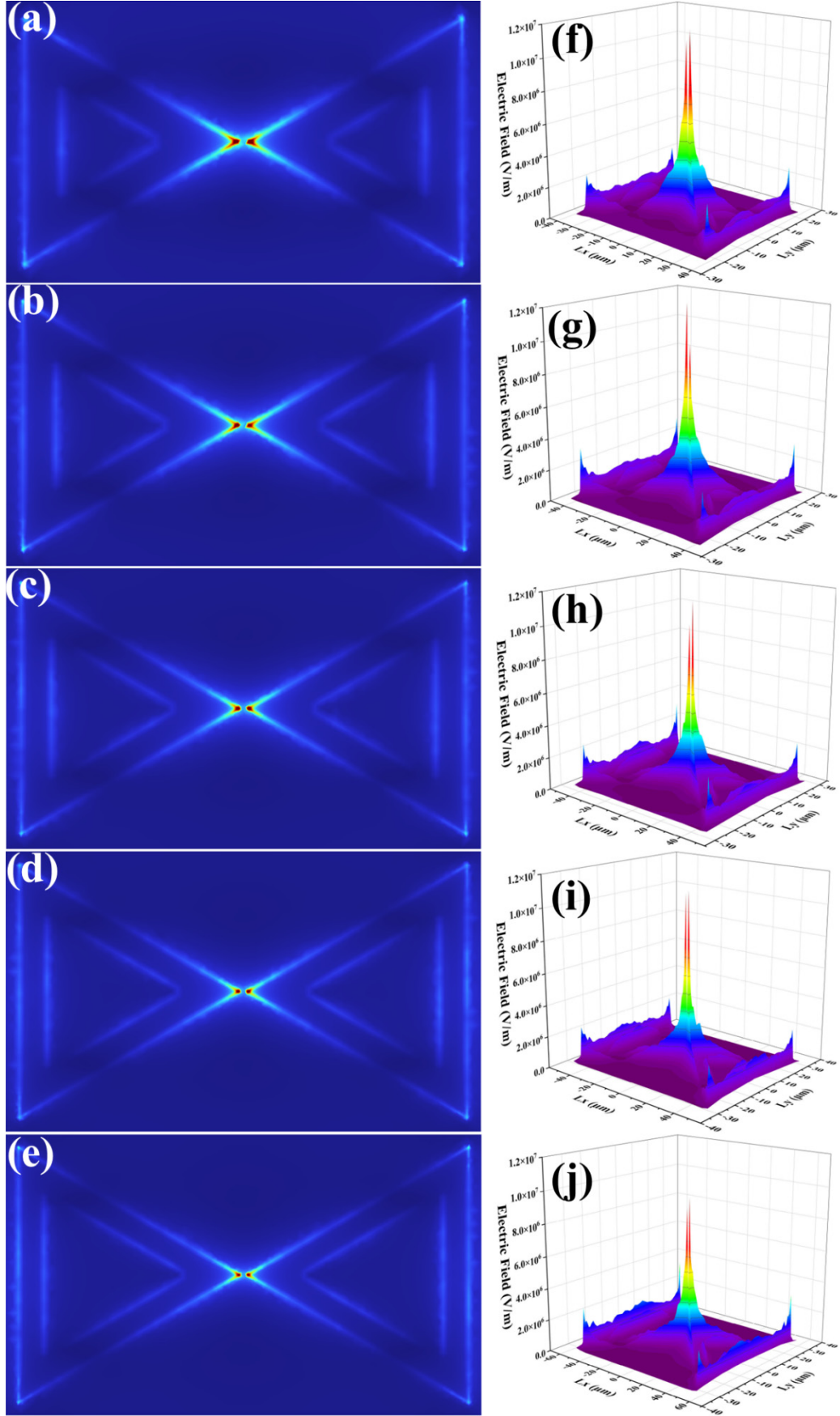


Figure S1. Distribution of electric field at the transmission valleys for different L_y . These valleys are

corresponded to the frequencies: (a) and (f) 1.69 THz for 40 μm , (b) and (g) 1.46 THz for 45 μm , (c) and (h) 1.27 THz for 50 μm , (d) and (i) 1.12 THz for 55 μm , (e) and (j) 0.99 THz for 60 μm , respectively. Note that the rainbow range is set to 0 to 8×10^6 to better observe the divergence of electric field between different L_y .

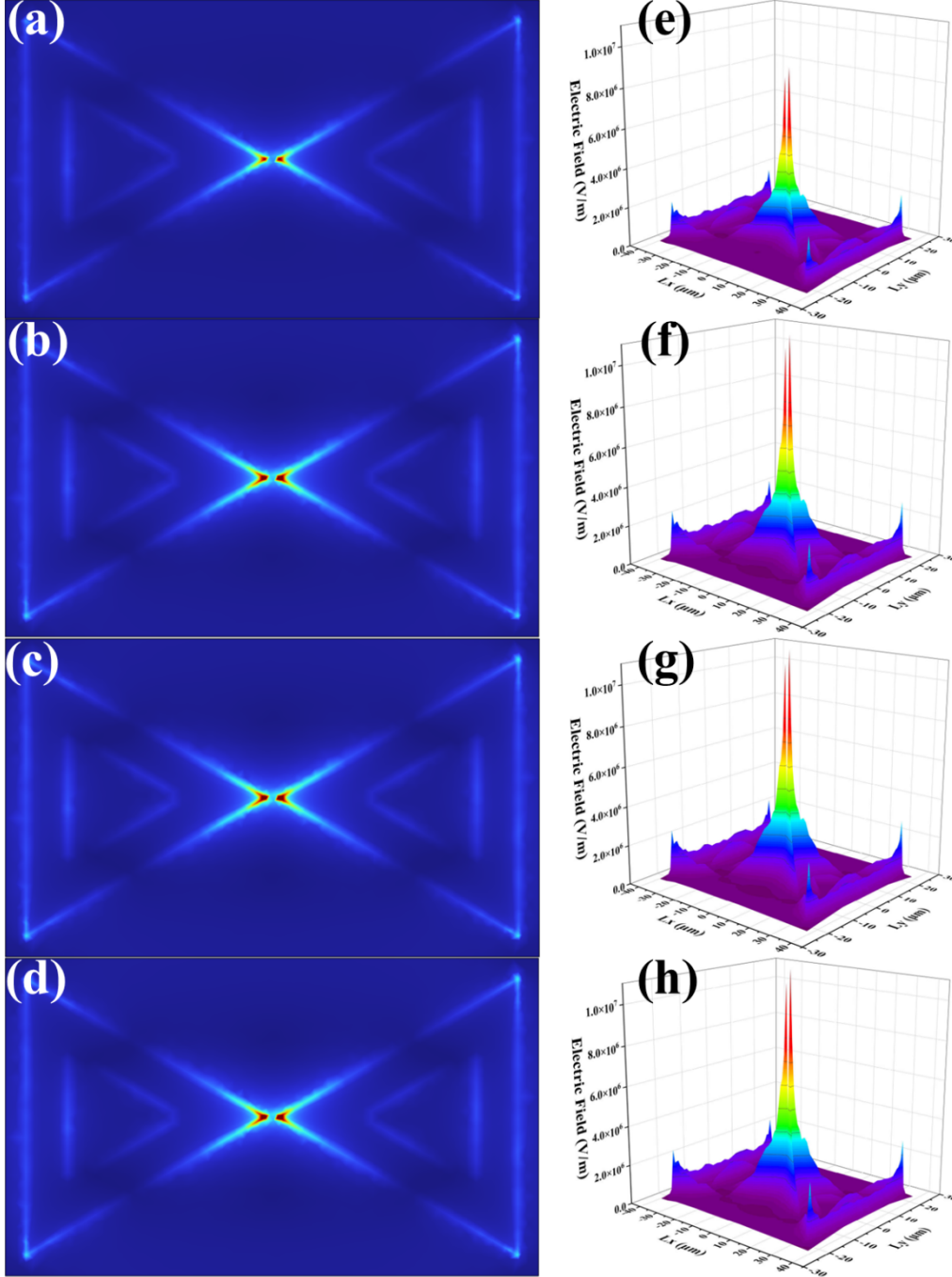


Figure S2. Distribution of electric field at the resonant frequencies for different carrier densities. (a) and (e) 1.61 THz for $1 \times 10^{15} \text{ cm}^{-2}$, (b) and (f) 1.68 THz for $1 \times 10^{16} \text{ cm}^{-2}$, (c) and (g) 1.69 THz for $1 \times 10^{17} \text{ cm}^{-2}$, (d) and (h) 1.69 THz for $1 \times 10^{18} \text{ cm}^{-2}$. The rainbow range is from 0 to 8×10^6 .

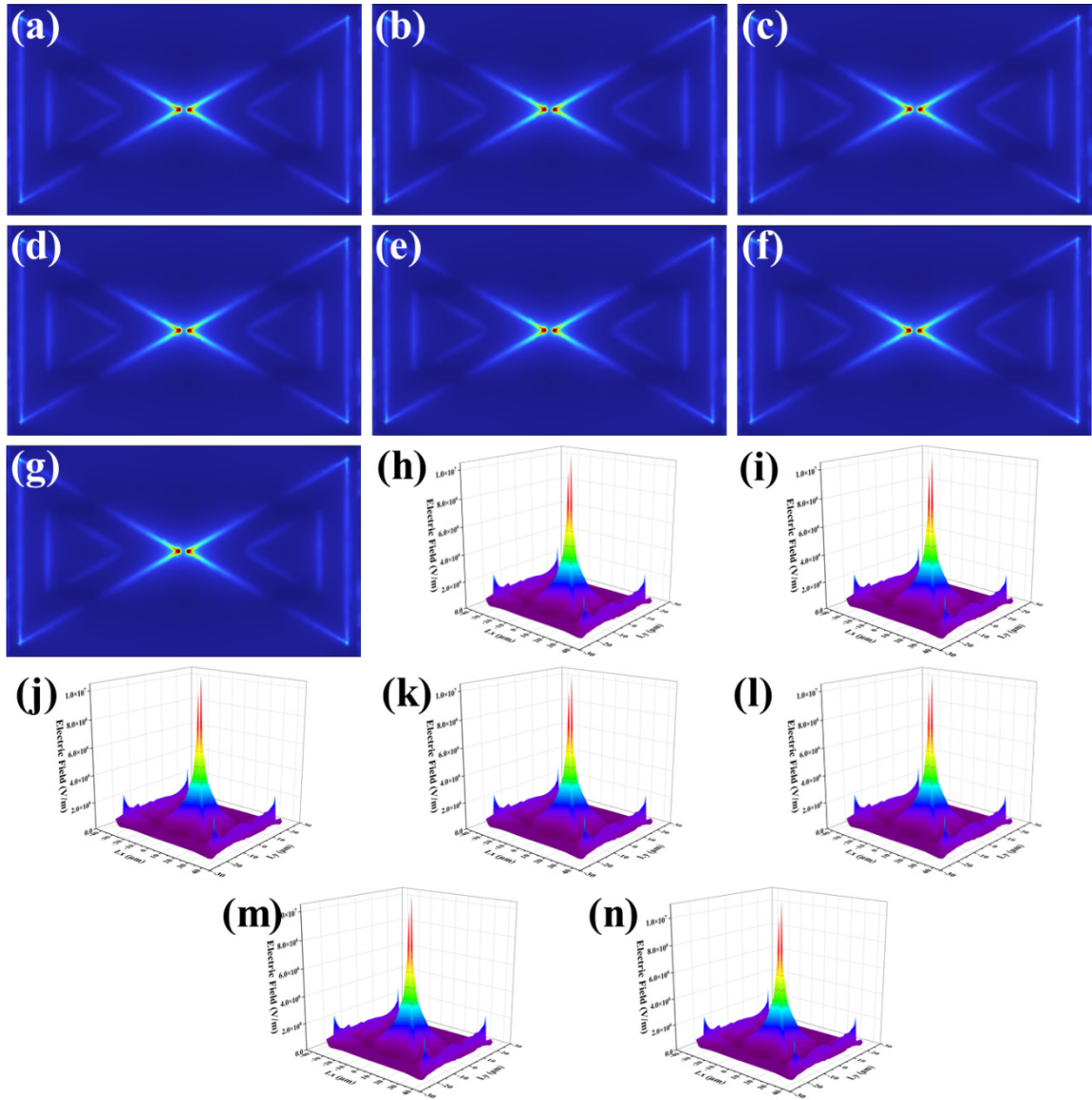


Figure S3. Distribution of electric field for the transmission valleys at different permittivity reduction. The rainbow is cut from 0 to 8×10^6 . Notably, (a) and (h) normal blood, (b) and (i) 1% reduction, (c) and (j) 3% reduction, (d) and (k) 5% reduction, (e) and (l) 7% reduction, (f) and (m) 9% reduction, (g) and (n) 11% reduction.