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Characterization of plasmon propagation in graphene on PZT substrates via infrared nano-imaging M.D. GOLDFLAM, Univ of California - San Diego, GUANGXIN NI, Univ of California - San Diego, National University of Singapore, ZHE FEI, A.S. MCLEOD, Univ of California - San Diego, BARBAROS OZYILMAZ, ANTONIO CASTRO NETO, National University of Singapore, MICHAEL FOGLER, D.N. BASOV, Univ of California - San Diego — Using scattering-type scanning near-field optical microscopy, we have characterized graphene plasmons on a graphene-lead zirconate titanate (PZT) back-gated structure. By applying modest back-gate voltages of ± 1 V across the PZT, we have been able to induce variations in the graphene plasmon wavelength of more than $\sim$200 nm. The change in plasmon wavelength we observe corresponds to a shift in carrier concentration in the graphene by more than one order of magnitude. Additionally, we describe the plasmonic losses originating from the presence of PZT in such a device. Our results also suggest that persistent tuning of the graphene plasmon may be achieved by utilizing the ferroelectric nature of PZT.

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