Abstract Submitted
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Enhancement of Raman scattering from monolayer graphene by photonic crystal nanocavities[1] ISSEI KIMURA, The University of Tokyo and RIKEN, MASAHIRO YOSHIDA, RIKEN, MASAKI SOTA, TAIKI INOUE, SHOHEI CHIASHI, SHIGEO MARUYAMA, The University of Tokyo, YUICHIRO K. KATO, RIKEN — Monolayer graphene is an atomically thin two-dimensional material that shows strong Raman scattering, while photonic crystal nanocavities with small mode volumes allow for efficient optical coupling at the nanoscale.[2] Here we demonstrate resonant enhancement of graphene Raman G′ band by coupling to photonic crystal cavity modes. Hexagonal-lattice photonic crystal L3 cavities are fabricated from silicon-on-insulator substrates,[3,4] and monolayer graphene sheets grown by chemical vapor deposition are transferred onto the nanocavities. Excitation wavelength dependence of Raman spectra show that the Raman intensity is enhanced when the G′ peak is in resonance with the cavity mode. By performing imaging measurements, we confirm that such an enhancement is only observed at the cavity position.

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