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**Dark Field Imaging of Plasmonic Resonator Arrays** ATILLA AYDINLI, SINAN BALCI, ERTUGRUL KARADEMIR, COSKUN KOCABAS, Bilkent University — We present critical coupling of electromagnetic waves to plasmonic cavity arrays fabricated on Moiré surfaces. The critical coupling condition depends on the superperiod of Moiré surface, which also defines the coupling between the cavities. Complete transfer of the incident power can be achieved for traveling wave plasmonic resonators, which have relatively short superperiod. When the superperiod of the resonators increases, the coupled resonators become isolated standing wave resonators in which complete transfer of the incident power is not possible. Dark field plasmon microscopy imaging and polarization dependent spectroscopic reflection measurements reveal the critical coupling conditions of the cavities. We image the light scattered from SPPs in the plasmonic cavities excited by a tunable light source. Tuning the excitation wavelength, we measure the localization and dispersion of the plasmonic cavity mode. Dark field imaging has been achieved in the Kretschmann configuration using a supercontinuum white light laser equipped with an acoustooptic tunable filter. Polarization dependent spectroscopic reflection and dark field imaging measurements are correlated and found to be in agreement with FDTD simulations.

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