

Abstract Submitted
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Direct Magnetic Resonances with Infrared Light from Plasmonic Single Closed Ring Resonators¹ ZHAO HAO, MICHAEL C. MARTIN, Advanced Light Source, Lawrence Berkeley National Laboratory, 1 Cyclotron Rd, Berkeley, California 94720, BRUCE HARTENECK, STEFANO CABRINI, ERIK H. ANDERSON, Center of X-Ray Optics and Molecular Foundry, Lawrence Berkeley National Laboratory, 1 Cyclotron Rd, Berkeley, California 94720, WILLIE J. PADILLA, Department of Physics, Boston College, 140 Commonwealth Ave., Chestnut Hill, MA 02467 — We report here a spectroscopic study on plasmonic ring resonators at grazing angle incidence. With the magnetic component of the infrared light perpendicular to the ring plane (TM), we successfully observed a strong resonance signal at Mid- to Near-IR frequencies. Comparing to simulations, we identify that this signal is due to the resonance of the TM wave with the surface plasmon propagation of the metal rings. We provide a solution to measure direct magnetic resonance by using a grazing incidence objective on a FTIR microscope. We also demonstrate a method to realize magnetic resonance at optical frequencies by channeling the surface plasmon in a closed metallic ring.

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