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**Near-field imaging and probe-assisted nano-mechanical control of plasmonic antennas** AITZOL GARCIA-ETXARRI, CSIC-UPV/EHU and DIPC, San Sebastian, Spain, ISABEL ROMERO, DIPC, San Sebastian, Spain, F. JAVIER GARCIA DE ABAJO, Institute of Optics, Madrid, Spain, RAINER HILLENBRAND, CIC nanoGUNE, San Sebastian, Spain, JAVIER AIZPURUA, CSIC-UPV/EHU and DIPC, San Sebastian, Spain — Imaging plasmon-resonant gold nanodisks acting as optical nanoantennas by scattering-type near-field optical microscopy (s-SNOM), we identify weak and strong coupling regimes between the near-field probe and the plasmonic nanoantenna sample. By means of rigorous electro-dynamical calculations based on a model system, we find that in the weak coupling regime, s-SNOM can be applied for direct mapping of plasmonic nanoantenna modes, while in the strong coupling regime, the near-field probe allows for high-precision opto-mechanical control of the antenna response.

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