

Magnetoplasmonic nanocavities for the enhanced magnetic control of light polarization via hybridization with dark plasmons

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Abstract

Magneto-optical (MO) effects are widely used in studying magnetic materials as well as to realize optical devices exploiting non-reciprocal propagation of light. Enhancing MO effects is crucial for size reduction of key photonic devices based on non-reciprocal propagation of light and to enable active nanophotonics. Here, we disclose an approach that exploits multipolar Fano resonances excitable in symmetry broken magnetoplasmonic nanocavities and arising from the hybridization of dark plasmons with dipolar plasmonic resonances to achieve an unprecedented amplification of magneto-optical activity.