

Abstract Submitted
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Coupling between Surface Plasmon Resonance and electric current in Au stripes¹ MIGUEL ANGEL GARCIA, AIDA SERRANO, JOSE DE LA VENTA, Dpt. Material Science. University Complutense at Madrid, Spain. — Surface Plasmon Resonance (SPR) is the most outstanding feature of noble metal films. SPR consists on a collective oscillation of the conduction electrons when excited optically in the appropriate geometrical and energy conditions. The electrical current passing through the metal film involves also the movement of conduction electrons. Thus, coupling effects are expected between SPR and electrical resistivity. A modification of the SPR when a electrical current passes through the film, could allow the modulation of an optical signal by a electrical one. Similarly, when the film is illuminated at the SPR conditions, the oscillation of the conduction electrons and local heating can induce an enhancement of the electric resistivity that can be used to translate an optical signal into a electric one. Those effects could be useful in the development of new fast optoelectronic transducers. We present here results on Au stripes illuminated to induce the SPR while electric currents flow with different orientation with respect to the light polarization

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Miguel Angel Garcia
Dpt. Material Science. University Complutense at Madrid, Spain.

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