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Leakage radiation microscope for observation of non-transparent samples JUAN M. MERLO, FAN YE[1], MICHAEL J. BURNS, MICHAEL J. NAUGHTON[2], Boston College — Surface plasmon interactions are confined to be proximate to the surface on which they are excited, such that common optical microscopic imaging is precluded. In order to overcome this limitation, the leakage radiation microscopy technique can be employed to obtain images of interactions at a metallic surface where the surface plasmon propagates [1]. A disadvantage of this configuration is that the metallic layer must be optically thin, resulting in the (additional) direct observation of the excitation source. Here, we describe a leakage radiation microscope that can be used to observe plasmonic interactions in optically $non-transparent$ samples [2]. We show that theoretically-calculated values of the surface plasmon wavelength and propagation length agree with the measured values. This configuration opens the possibility to study important effects where samples are optically non-transparent, as in plasmonic cavities, without the use of time-consuming near-field scanning optical microscopy.
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