Abstract
We describe a methodology to explore optimal conditions to excite surface modes in a glass - metamaterial - vacuum system (Kretschmann configuration) using both P and S polarized light. We calculate the electromagnetic dispersion relation of a metamaterial surface by solving Maxwell equations for both polarizations with appropriate boundary conditions. The dispersion relations define the frequency domain of the surface mode existence for the surface modes (with S polarization) and surface plasmons (with P polarization). In this work we report reflectivity spectra calculations, the numerical simulation of the attenuated total reflectivity technique and the electric field variations within the layer system.

Keywords
Plasmons on surface and interface; Metamaterials.