ABSTRACT

In this work the four Plasmon modes are analyzed, the symmetrical (S_b) and asymmetrical bounded (a_b); the core (l_n) and covering leaky modes (l_c), that propagate in weakly guided optical fibers with a metallic film around that. In the metallic film a layer extra dielectric is deposited and above this, another layer denominated covering. The analysis will be developed for metallic films of the Silver, Palladium and Gold.

This structure is very useful to making optical sensors.
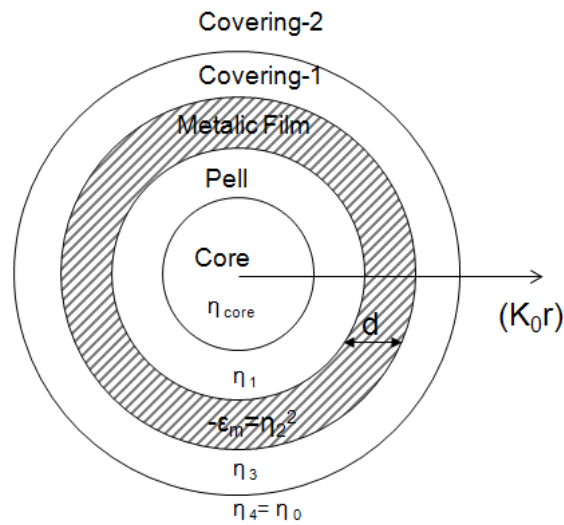

Illustration 1 - Structure object of this work. An optical fiber, covered by metallic film, envolved by two dielectric layers, covering-2 and covering-1 that the last one is a extra dielectric layer between the covering and the metallic film..

Key words - Plasmon Modes, TM_{01} Formulation, cylindrical-circular Helmholtz equation, respective modes effective index, borders conditions, optical sensors.