Numerical Investigations of SPPs at Chiroferrite–Metal Interface

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Abstract

We have developed a theoretical model to explore some novel features of surface plasmon polaritons (SPPs) at the chiroferrite–metal planar interface. The dispersion relation has been calculated by applying boundary conditions at $x = 0$ on EM fields component of chiroferrite and metal medium. Numerical investigations have been conducted to study electromagnetic surface waves properties such as effective mode index, propagation loss, phase velocity, and propagation length versus angular frequency. It is shown that the EM surface waves traits for the proposed structure are very sensitive to chiroferrite features, i.e., chirality and gyrotropy. The ability to tailor the characteristics of SPPs for the proposed structure can be used to fabricate THz chips in the plasmonic sector.