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Title:Physical characteristics with SPP in the metallic nanowires structure
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Abstract:In this work, the terahertz (THz) electromotive force (EMF) of the surface plasmon (SP) electric field and field strength was investigated in its propagation direction. Based on the nanowires structure, we introduced physical models which were light wave energy of surface plasmon polariton (SPP) pulse and the variation of EMF changes in the active condition. Results of theory and verification showed SPP generated EMF with 10sup-2/sup-10 V among wire radii of 5-30 nm; the electric field was up to 10sup5/sup-10sup6/sup V/cm in the radius of 5 nm; the electric field intensity induced localization at Λ=850 nm, and at the same time light intensity amplified 40 times. The characteristics which are femtosecond SPP pulse response and force-field amplifier in this work are significant for nonlinear spectroscopy research. © Science China Press and Springer-Verlag Berlin Heidelberg 2012.
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