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Title:Rainbow trapping of surface plasmon polariton waves in metal-insulator- metal graded grating waveguide
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Abstract:A new metal-insulator-metal (MIM) graded grating waveguide, based on surface plasmon polaritons (SPPs), is proposed and numerically investigated to realize the rainbow trapping of SPP waves. We find that the localized positions of SPP waves depend on the frequencies of the incident light. The theoretical results show that the trapping time of SPP waves can be up to 83.4 fs and the proposed compact configuration can be operated in a broad bandwidth of 90 THz. Our MIM graded grating waveguide may find significant applications on plasmonic slow-light systems, especially chip-based optical buffers and spectrometers. 
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Main heading:MIM devices
Controlled terms:Electromagnetic wave polarization - Finite difference time domain method - Particle optics - Plasmons - Surface plasmon resonance - Terahertz waves - Waveguides
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