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Abstract: Terahertz functional devices are as important as sources and detectors in many terahertz systems. Photonic crystal structures designed with band gaps and surface plasmon polaritons on corrugated metallic surfaces are two excellent ways to control the propagation of terahertz wave, which is suitable for designing and fabricating various kinds of functional devices in terahertz region. Some typical terahertz devices based on photonic crystals and surface plasmon polaritons are investigated in this paper, such as terahertz wideband filter, terahertz band-stop filter, terahertz waveguide, terahertz resonant cavity.

Keywords: Terahertz devices, Photonic crystal, Slab, Surface plasmon polaritons