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PLASMONIC DEVICE BASED ON METAL LAYERS WITH POROUS STRUCTURE

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The properties of surface plasmon can be tailored, which offer the potential for developing new types of photonic circuit with length scale that are much smaller than those currently achieved. Different devices are required for plasmonic waveguiding and processing. Here we report for a plasmonic device based on stratified medium consisted of noble metal layers and porous dielectric layers. The role of this device, as a part of plasmonic waveguide is studied. Different regimes of plasmon excitation as a function of incident angle and wavelength are examined. The main attention is paid to the configuration, pattern and dimensions of the porous structure. It is shown that plasmon excitation strongly depends on its parameters: the plasmonic device can act as a filter for desired wavelength range and have required dispersion characteristics in other. The application of proposed plasmonic device for sensors is also considered.