

182

标题: Selective detection of bacterial layers with terahertz plasmonic antennas

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摘要: Current detection and identification of micro-organisms is based on either rather unspecific rapid microscopy or on more accurate but complex and time-consuming procedures. In a medical context, the determination of the bacteria Gram type is of significant interest. The diagnostic of microbial infection often requires the identification of the microbiological agent responsible for the infection, or at least the identification of its family (Gram type), in a matter of minutes. In this work, we propose to use terahertz frequency range antennas for the enhanced selective detection of bacteria types. Several microorganisms are investigated by terahertz time-domain spectroscopy: a fast, contactless and damage-free investigation method to gain information on the presence and the nature of the microorganisms. We demonstrate that plasmonic antennas enhance the detection sensitivity for bacterial layers and allow the selective recognition of the Gram type of the bacteria.

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