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ABSTRACTS

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In agreement with experimental studies of the LSMO (001) surfaces with terminated layers Mn–O and Sr–O were considered as possible for 6T/LSMO heterostructures formation. LSMO films with a thickness of six atomic layers with edge layers of Mn–O and Sr–O were prepared by cutting an LSMO crystal along the (001) crystallographic plane. The 4x2 supercell of the LSMO surface was used for electronic structure calculations of the 6T/LSMO spin interface containing one 6T molecule coordinated either to the MnO surface or to the SrO surface.

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METHOD OF FEMTOSECOND LIBS FOR REMOTE SENSING OF AEROSOL ATMOSPHERE

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A feature of the propagation of high power femtosecond laser radiation in the atmosphere is self-focusing with further filamentation, which leads to the formation of plasma at some distance from the laser system. In the problem of sensing by femtosecond laser radiation, these features make it possible to implement the method of remote identification of an impurity substance contained in the form of a droplet or solid aerosol, and determination of its concentration, known in foreign literature as R-FS-LIBS (Remote Femtosecond Laser Induced Breakdown Spectroscopy) [1, 2, 3]. Work on controlling the position of the filamentation zone is carried out both abroad [4] and in Russia [5, 6].

The report presents the results of evaluating the angular distribution of emission from the breakdown region of the aerosol atmosphere by femtosecond pulses in the range from 6 to 180° and the intensity of the emission line depending on the concentration of impurity for the problem of remote sensing by the method of laser induced breakdown.

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THEORETICAL AND EXPERIMENTAL ESTIMATION OF COPPER BROMIDE VAPOR QUANTUM AMPLIFIER SENSITIVITY

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Quantum amplifiers are devices, which allow to amplify the electromagnetic waves by means of stimulated emission. Such amplifiers operate in different wavelength regions, including optical. The sensitivity is one of most important features of the quantum amplifiers. This parameter means a minimal power of input signal (P_{min}), which can be amplified in active medium of the quantum amplifier. The sensitivity should significantly exceed the own noise of quantum amplifier, which is due to spontaneous emission.