

## PHYSICS

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### OXIDATION OF POLYCRYSTALLINE ALUMINIUM IN ULTRAHIGH VACUUM

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The problems associated with obtaining an atomically clean surface of polycrystalline aluminum, its typical Auger electron spectra, as well as the influence of residual oxygen of ultra-high vacuum environment and the electron beam on the surface state of polycrystalline aluminum. On an atomically clean surface of aluminum not only oxygen migrates from untreated areas of the sample with an oxide layer, but is its electron-stimulated adsorption of residual gas environment UHV. Was held Auger analysis of pure aluminum surface at low oxygen partial pressure of  $\sim 10^{-9}$  Torr and it is shown that under ultrahigh vacuum conditions is oxidized aluminum surface.

**Keywords:** oxidation, vacuum, adsorption, aluminium, Auger spectrum, the analysis, oxide, layer.

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### ANALYSIS OF GRAVITY WAVE EFFECTS IN THE UPPER ATMOSPHERE USING DIFFERENT PARAMETERIZATIONS

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*Investigation of coupling between atmospheric layers by waves with different spatial and temporal scales is an important problem of atmospheric dynamics. In this work, we study the influence of internal gravity waves (IGW) on the dynamics and thermal state of the upper atmosphere layers. We performed numerical simulations with the general circulation model of the middle and upper atmosphere (MUAM) using different parameterization schemes for breaking and/or saturation. Results of simulations that employed the parameterization of Lindzen–Holton and spectral scheme of Yigit and Medvedev will be analyzed. We will discuss the advantages and shortcomings of both parameterizations in general circulation modeling of the middle and upper atmosphere.*

**Keywords:** gravity waves, thermosphere, general atmospheric circulation.

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## NEW TYPE OF GEOMAGNETIC PULSATION IN TIME OF EARTHQUAKE

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*It is at first time consideration a new type of geomagnetic pulsation in time of active phase strong deep earthquake. The dependences of stadiated period and amplitude observation pulsation in time of strong deep earthquake from parameter L-height of power line on equator and l-length of power line from the observation place. We give short survey about ionospheric and geomagnetic data of main reports precursor of earthquake.*

**Keywords:** earthquake, variation of the Earth's magnetic field, pulsation's, ionosphere.

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## MODIFICATION PROPERTIES OF MATERIALS AT CREATION OF TRANSDUCERS WITH SPECIFIED CHARACTERISTICS

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*Proposed methods modifying the properties of chalcogenides elements of the first group. Investigated the possibility of achieving the optimal values of thermoelectric figure of merit by appropriate choice of the chemical potential and the concentration of charge carriers. Considered possible directions of change of electrophysical parameters of materials under the action of penetrating radiation and receiving the optimal values of quality factor. The annealing process ensures stabilization parameters of the test compounds. Is shown the possibility of optimizing parameters of compounds and receiving the maximum value of the thermoelectric efficiency.*

**Keywords:** efficiency, management, process, radiation, parameter, property, connections.

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provodimosti radiacionnymi defektami v poluprovodnikah //

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## ANALYSIS OF THE DYNAMICS MODE OF TOTAL AND MAXIMUM DAILY PRECIPITATION ACCORDING TO BUYNASK METEOSTATION (1961 – 2011)

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*On the basis of the total and maximum daily precipitation foothill station Buynask (1961 – 2011) rainfall regime was analyzed, the extreme values were revealed, statistical difference between the mean values and norms of precipitation was defined, trends of changes in precipitation were tested for stability, using the method of rescaled range (R/S analysis). It is shown that for precipitation and daily maximums don't observed statistical difference between the average and climatic norms, while autumn extremes stand for precipitation and spring for daily maximums. Increased spring daily maximums replaced their decreasing (series are antipersistent).*

**Keywords:** precipitation, seasons, extremes, distribution, asymmetry, excess, stability trends.

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