

MAPPING OF THE PHYSICAL CHARACTERISTICS AND MINERAL COMPOSITION OF A SUPERFICIAL LAYER OF THE MOON OR MARS AND ULTRA-VIOLET POLARIMETRY FROM THE ORBITAL STATION. A. P. Vid'machenko¹, A. V. Morozhenko¹. ¹Main astronomical observatory of the NAS of Ukraine, 27 Zabolotnogo St., Kyiv, Ukraine; vida@mao.kiev.ua, mor@mao.kiev.ua.

Already more 30 years the problem of remote mineralogical mapping of the Moon' or Mars' superficial layer by using of spectrophotometric observations in visual and near infrared wavelengths ranges is important. However the decision of such task was very ambiguous. It is caused by what even intensity of such widely researched absorption band as piroxen, - substantially depends on effects of multi-scattering in a superficial layer. We suggest simplifying the decision of this task considerably. With this purpose we proposed using remote observational data of value of the second Stokes parameter Q . It is known that value of this parameter mainly formed in process of single scattering only. Taking into account some technical complexity of such experiment, at the first stage we suggest using observational data on measurements of degree of linear polarization of ultraviolet light at phase angles in limits from 80^0 up to 120^0 , that is, in those limits in which values of Brewster's angles are practically for all ground materials.

Reflectivity of the Moon superficial layer is about 1% for wavelengths smaller 300 nm. Therefore intensity of the diffusely-reflected radiation is formed practically only at single reflection. It will allow to determine with a high degree of reliability the size of real part of a refraction parameter from value of phase angle at which it is observed a maximal value of a degree of polarization (that is, at Brewster's angle)

Development and manufacturing of equipment, which necessary for carry out of such work, formulation of a corresponding scientific task and the subsequent processing of an observational material [1,2] - can be successfully executed by specialists of the Main astronomical observatory of the NAS of Ukraine.

References: [1] Morozhenko A., Vid'machenko A. Abstracts NATO Advanced Study Institute on Photopolarimetry in Remote Sensing and Workshop on Remote Sensing Techniques and Instrumentation: International Cooperation. Edited by G.Videen, Ya. Yatskiv, A. Vid'machenko, etc., Yalta - Kyiv, Ukraine, p.64, 2003. [2] Shkuratov Yu.G., Lytvynenko L.M., Shulga V.M., Yatskiv Ya.S., Vidmachenko A.P., Kyslyuk V.S. Objectives of a prospective Ukrainian orbiter mission to the Moon // Adv. Space Res., v.31, No 11, p.2341, 2003.