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Analysis of the Planetary Atmosphere in the Solar System Using a DSLR Camera

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The planets in the solar system have different characteristics in their atmospheric composition. The atmospheric composition of a planet can tell us the evolution and activities that occur on the planet. In general, to identify planetary atmospheric composition is not common, expensive and utilizes advanced instruments. In this research, we proposed a simple and affordable technique to analyze the atmospheric compounds which can be applicable for small schools or institutes. Remotely luminous points in the night sky can be photographed by a digital single-lens reflex (DSLR) camera which is attached to a grating spectrometer and a small refractor telescope to obtain a spectrum band. The spectrum were analyzed in the absorption bands using RSpec (Real-time Spectroscopy) software. This study selected Mars and Jupiter to analyze the compositions of their atmosphere. The results are as follows: Mars absorbs the spectrum range of Ar, O I, Kr, CH4 and Ne elements; and Jupiter has absorption spectra of CH4 and He. These correspond to other standard information.

Keywords : Atmospheric compositions, Digital single lens reflex, Refractor telescope, Absorption spectrum

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