

The comparison between the Moon and the Mars spectrum

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Abstract

The purpose of this project study spectrum of the moon and mars by comparing spectrum of both object and also comparing dark and bright area of the mars. The data was taken from 0.7 m telescope at Narit regional Observatory for the Public at Nakhon Ratchasima Province. We founded that the slope of spectrum of mars is higher than moon. From the result can be explain that Mars appear red. Furthermore, we compare between dark and bright area of the mars. The spectroscopy analysis of mars and moon are similar. Bright area have strong Al Ni C and N elements more than dark area. However, the reasons might be atmosphere of light scattering.

1. Introduction

Mars and Moon can't produce their own light. They are receive from sunlight. The spectroscopy method can detect a chemical element and compound. Both spectrum show absorption lines. This work show that the spectrum observed the reflected planet spectrum.

2. Materials and Method

- 1) Process spectra with the AudeLa software and reduce noise again with gaussian filter using Visual spec software.
- 2) Normalized spectrum by using ISIS software, analyzed the chemical with Visual spec software.

3. Result and Discussion

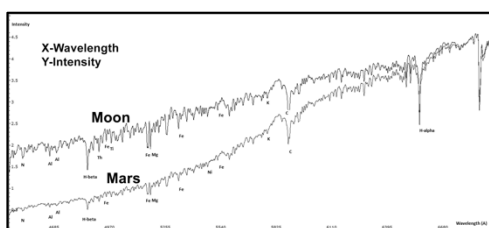


Fig.1 Spectrum of the Moon and Mar.

From Fig.1 comparing the spectrum of Mars and the Moon, The author found that there are absorption lines of Al, K, N, C, H, Fe and Mg. For absorption lines of Ti and Th found only in the spectrum of the Moon and absorption lines of Ni found only in the spectrum of Mars.

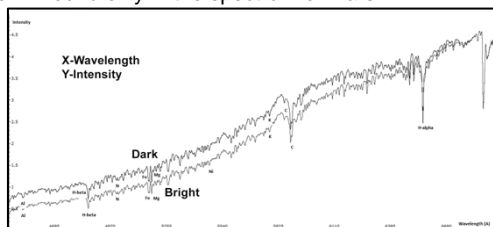


Fig.2 Spectrum of bright and dark area of Mars.

From Fig.2 there are absorption lines of Al, H, N, Fe, Mg on bright and dark area of Mars.

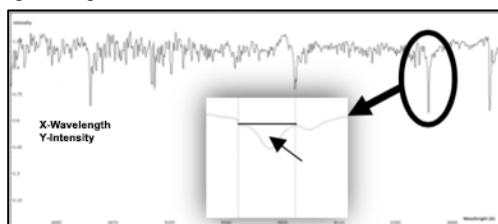


Fig.3 Normalized spectral and find area of elements.

From Table 1 (Compering spectrum of Mars and the Moon)

- 1) The author found that Mars has strong absorption lines of Fe, N, K and C but weak absorption lines of Al and Mg.
- 2) There is stronger absorption lines of N from bright area more than dark area on Mars.
- 3) There are the similar absorption lines of H on the Moon and Mars. This indicates that H is not found on both objects.

3. Conclusion

The spectrum present spectrum of mars and moon in different slope. Mars is higher slope than Moon. From the result can be explain that Mars appear red. A chemical element analysis in bright and dark area of mars show strong absorption lines of Al Ni C and N in bright area.

4. Acknowledgment

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Reference : Mars. [Online] Search from:<http://nso.narit.ro.th/index.php>.

$$\text{Spectrum ratio of mars and moon} = \frac{\text{Sun spectrum, Earth's atmosphere, Mars's atmosphere}}{\text{Sun spectrum, Earth's atmosphere, Moon's surface}}$$

$$\text{Spectrum ratio of bright and dark area of mars} = \frac{\text{Sun spectrum, Earth's atmosphere, Mars's surface, Mars's atmosphere}}{\text{Sun spectrum, Earth's atmosphere, Mars's surface}}$$

Table1 Ratio between Light Mars : Lunar and Light Mars : Dark Mars

element	$\lambda(\text{nm})$	Area of the absorption line		
		Lunar	Light Mars	Dark Mars
Al	452.88	1.34	0.90	0.87
	466.69	0.82	0.78	0.76
sum		2.16	1.68	1.63
Ratio			0.78	1.03
N	453.00	0.64	2.10	1.89
Ratio			3.28	1.11
K	578.20	0.33	0.37	0.37
Ratio			1.21	1
Fe	495.77	0.69	0.79	0.59
	516.76	2.70	2.42	2.64
	532.79	0.91	1.17	1.19
	558.67	0.37	0.49	0.45
sum		4.67	4.87	4.87
Ratio			1.04	1
H	486.13	1.90	1.90	1.90
	656.26	2.07	2.07	2.07
sum		3.97	3.97	3.97
Ratio			1	1
Mg	518.40	1.00	0.95	0.95
Ratio			0.95	1
C	589.00	0.52	1.32	1.28
Ratio			2.54	1.03
Ni	547.70	-	0.58	0.56
Ratio		-	-	1.04