LUNAR FLUIDS FROM CARBON AND CHLORINE CONTENTS OF THE APOLLO LUNAR SAMPLES.

Yasunori Miura, Graduate School of Sci. & Eng., Yamaguchi University, Yoshia 1677-1, Yamaguchi, Yamaguchi 753-8512 Japan. yasmiura@yamaguchi-u.ac.jp

Introduction: Contents of elements H, C, He, N and Cl do not be discussed so well for impact indicators and fluids for the collected lunar samples [1]. The present purpose of the present paper is that contents of H and C in the lunar rocos are very significant to estimate water and carbon dioxides (CO2) as fluids in the lunar interior for next exploration project [2, 3].

Three formation groups of lunar samples: Major three groups of the Apollo lunar samples are divided from the reported analyzed data to check behavior of elements H, He, N, C and l Cl [1] as shown in Table 1:

Table 1. Imformation of three groups of the Apollo lunar samples.

Mare basalt:	Interior contents (due to deep volcanism)
Regolith:	Impact and Solar winds (direct reservoir of impacts)
Polymict breccias	Information during impact (quenched impact materials)

Hydrogen content in the lunar interior: Few content of hydrogen (H) has been obtained in the Mare basalts [1]. Significant H amounts in the regolith and polymict breccias are obtained, which are transported from the solar winds activity with helium (He) content. This indicates that there are dry condition of water in the interior of the Moon as shown in Fig.1 which is the same results in the nitrogen (N) [1].

.

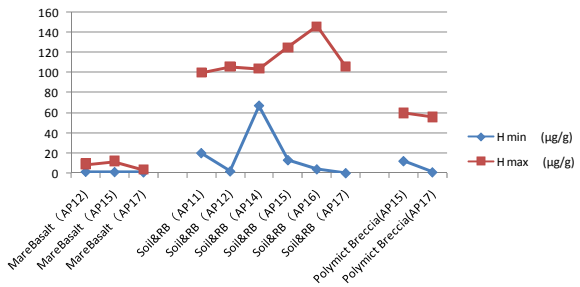

Fig.1 Hydrogen contents of three kinds of the Apollo lunar samples [1]. Poor hydrogen amounts of Mare basalts indicate short of water in the interiors.

Carbon contents in the Mare basalts: Significant content of carbon has been relatively obtained in the Mare basalts, compared with the hydrogen content [1]. Significant amounts in the regolith and polymict breccias are obtained, which are mainly transported from impact processes due to highest contenst in the polymict breccias samples. This indicates that there are CO2 fluids in the interior of the Moon as shown in Fig.2, which is the same results in the chlorine (Cl) [1].

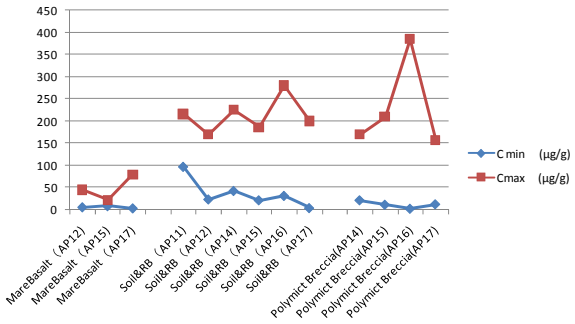

Fig.2. Carbon contents of three kinds of the Apollo lunar samples [1]. Significant carbon amounts indicate CO2-rich fluids in the lunar interiors.

Probable fluids of water and CO2 in the lunar interior: The lunar interior is considered to be CO2-rich fluids which are transported during impact condition shown in Fig.3, originally at giant impact process to deeper places of the Moon [2,3].

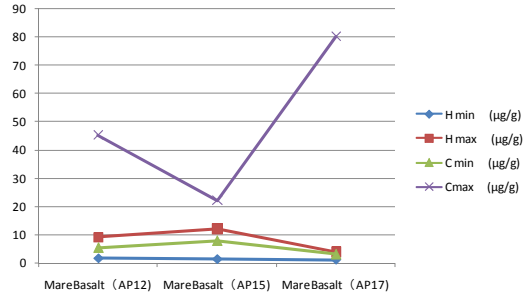

Fig.3. Higher carbon contents in the Apollo basaltic-samples, compared with hydrogen [1].

Summary: The Moon has carbon-rich fluids in the interior, compared with hydrogen (for water) amounts from the Apollo lunar samples. Main origons of carbon are dynamic giant impact between two original planets.

References: [1] Heiken G., Vaniman D. & French B. (1991): Lunar source book (Cambridge Univ.Press). 468-474. [2] Miura Y. (2009): *LPS XL*, Abstract #1090. [3] Miura Y. (2009) *LPS XL*, Abstract #1468.