**FORMATION OF IMPACT TARGETS ON THE MOON AND MARS OF BRECCIAS WITH FLUIDS.**

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**Introduction:** Carbon-bearing materials found at Mars and the Moon [1] are discussed on $CO_2$ fluid-air relation, volatiles characteristics of $H_2O$ and OH, and air-solid Interaction on Mars [2] . Formation of atmosphere is proposed the following two models: 1) Air from interior crustal rock by volcanic process (as the present Earth). 2) Air by evaporation with impact process as the main purpose of the present paper, where above volcanic air can be explained by solidification of interior air and fluid triggered by original impact process.

Formation of carbon dioxides ($CO_2$) in natural air system is not clear except ocean water by evaporation in the previous model [2-13]. However, author proposes new model of solidified isolation by original impact evaporation due to carbon characteristics of stable existence at higher temperature and pressure as main purpose in this study.

**Model and problem on present air planet Mars:** Previous model of air-planet Mars which has been obtained by present air-planet Mars and Martian meteorites (SNC) is considered to be similar with water-planet Earth [2]. However, air and water-planet Earth is described by the detailed description of water, air and rock materials which are considered to be (a) separated formations of solid, water and air (called as VLS in this paper), and (b) fundamental crystalline minerals formed by magmatic melting with plate-tectonics under ocean bottom. Problem of the present air-planet Mars is explained by water-planet Earth, because there are not so many direct many collected materials on Mars though there are many remote-sensing images on the surface (without in-situ materials). Recently in-situ analyses of Martian rovers (Sprint, Pathfinder and Curiosity) have been analyzed on Martian soils, but these data are selective data on robotic analyses which are completely different identification methods with terrestrial data identification (mainly by X-ray diffraction, electron micro-analyzer and analytical electron microscopy). This means that any fluids existed on Martian interior might be different with global ocean water system on water-planet Earth for formation process and distribution relatively.

**Present model on air planet Mars:** Proposed model including Mars is based on materials as global circulation of three state systems (solid, atmosphere and ocean water) as follows [2, 6, 9-12] (Fig.1). 1) Fundamental idea of active three VLS material state changes are existed from primordial periods of asteroids and planets, though major sold S state with local and minor liquid L and vapor V states. 2) Planet 1 (Mars, Venus and primordial Earth) formed mainly solidified states of the VLS materials (as in Martian interior) are uplifted to form atmosphere by separated gas V state as follows:

*M (total) = M (crystalline, mineral) + M (amorphous rock) {= Mfs (fluid solidified) + Mvs (vapor solidified) ⇒Mgv (gas in vapor : Atmophere1)}*

Earth's ocean water L is quenched fluid state (Mqf) from solid 2 and atmosphere1 by shock wave process in the interior finally to form solid3 and atmosphere2.

3) Life formation with local three VLS states might be existed in global VLS circulation systems. 4) Resent in-situ observations on Mars (by Curiosity etc.) which are bubble-bearing rocks, thin layered rocks and no ocean-bottom-type sediments can be explained by the proposed model with local interior-fluids topography.

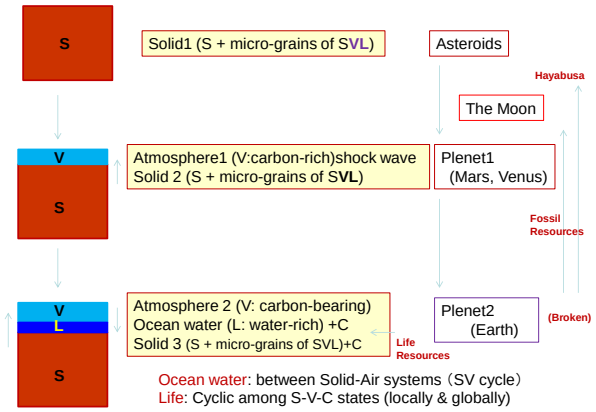


Fig.1. Proposed formation process of three VLS states of asteroids, planets 1 and 2 (including Mars) [2, 6, 9-12].

**Model and problem on present air planet Mars**

Previous model of air-planet Mars which has been obtained by present air-planet Mars and Martian meteorites (SNC) is considered to be similar with water-planet Earth [2]. However, air and water-planet Earth is described by the detailed description of water, air and rock materials which are considered to be (a) separated formations of solid, water and air (called as VLS in this paper), and (b) fundamental crystalline minerals formed by magmatic melting with plate-tectonics under ocean bottom. Problem of the present air-planet Mars is explained by water-planet Earth, because there are not so many direct many collected materials on Mars though there are many remote-sensing images on the surface (without in-situ materials). Recently in-situ analyses of Martian rovers (Sprint, Pathfinder and Curiosity) have been analyzed on Martian soils, but these data are selective data on robotic analyses which are completely different identification methods with terrestrial data identification (mainly by X-ray diffraction, electron micro-analyzer and analytical electron microscopy). This means that any fluids existed on Martian interior might be different with global ocean water system on water-planet Earth for formation process and distribution relatively.

**Explanation by the model to previous Martian questions:** The proposed model can be explained following Martian problems [6, 9, 10,12] (Fig.2):

1) Interior local fluid zones triggered by original impact process through aggregated rocks shows anomalous flow topography (based on short vaporization under the ground without

much liquid water, but weathering surfaces) between global atmosphere and solid systems.
2) There are many cratering surface on Mars, but not Earth-type volcanoes and quakes (based on ocean water and plate-tectonics).
3) Martian solid systems of crust-mantle is not the same of water planet Earth, where there are many solids 1 to 3 with solidified fluid and gas states including carbon-bearing light elements.
4) As there are no global circulation of VLS states on Mars, we should bring own local VLS cycle system from water-Earth (such as astronaut suits, or special habitable room) on Mars.
5) Different northern and southern solid-hemispheres of Mars are considered to be result of only solid surface without global water system easily reformed the surface for long geological history.
6) Martian volcanism near the equator is considered to be tidal forces by rotation and planetary gravity.
7) Martian erosion patterns on the surface are almost straight or liner based on impact direction.
8) Subterranean water on Mars is based on local and irregular storage triggered by original impact process.
9) Mars of possible life-bearing planets has been product anomalous products of nano-fossil-like product reacted with fluid, impact reaction and carbon-bearing products.
10)Material changes of VLS states can be formed at impact reaction locally and irregularly, but it is not enough at present Mars for macro-life circumstance of global water support.

**Summary:** The results in this study are summarized as follows.

1) Previous data of Earth-type planets (Mars etc.) should be reconsidered to be light elements-bearing solid rocks with mixed VLS states (as results by collision blocks), as found in the Moon, and Asteroids etc. (without ocean system) with light-elements.

2)The present model (mixed VLS cycle) can explain formation of $CO_2$-rich atmospheres on Mars and Venus (with primordial Earth) and air, ocean-less bodies (the Moon and Asteroids).

3) Ocean water can be remained mainly by stopping with larger planetary impact (to Earth).

4) OH-ion is formed at any VLS state changes, but $H_2O$ molecule can be obtained by quenching process at medium temperature-pressure liquid range between vapor and solid phase range.

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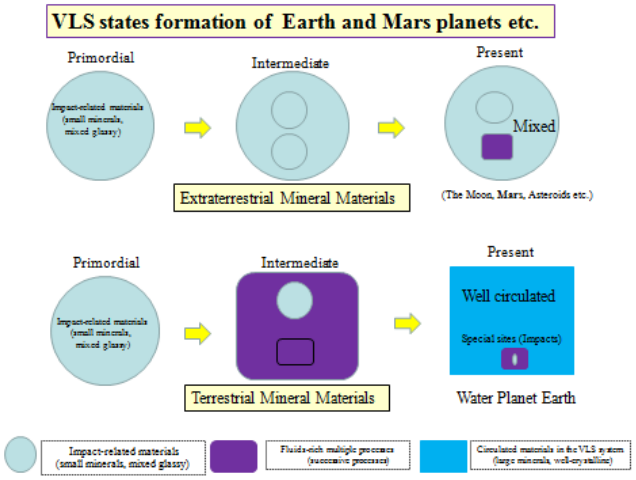


Fig.2. Material states VLS formed on Earth and extraterrestrial bodies (including Mars) based on material aggregates [2, 6, 9-12].