

Asteroids as Localized Rocks with Mixed and Less Activity

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Introduction: Rocks beyond water-planet Earth have not discussed from those collection and laboratory classification comparatively because of less sampling projects through different celestial bodies widely in the Solar System. In order to make clear the differences with them including the Itokawa and the Rhygu Asteroids, the main points are described in this paper with short summary [1,2] (Table 1).

Rocks as all different bodies and planets: Planetary Earth System [3] is supported by fact that all different celestial bodies have different global data and collected meteorites, where activity factors of all rocks are different from aging data and variety of rock-type widely based on the youngest rocks of Earth (cf. Table 1).

Localized and globally melted rocks: All extreme condition are created by planet-type (volcano and quake) and by cosmic originated-types (impact and plasma), where the localized melted rocks are formed on all primordial bodies and planets including younger planet Earth. However, water-planet Earth shows the most active planet because of progressive global ocean-water system with dynamic separation of air-water-solid rock (VLS) phase widely to be possible for mixing and separation processes including purification to generate pure crystallized minerals and life with giant carbon-bearing molecules exclusively. In other words, planetary scientists should take care for any experiments on active space, reaction and description definitely (on volatile elements and molecule) including plasma-state reaction in any laboratory observation [1-8].

Significant roles of global VLS system: Although all localized impact event on all celestial bodies are produced a few melted and evaporated remains on the rock, the ranges are impacted areas with limited VLS growth during the melting. On the other hand, global VLS systems of Earth are produced solid system (continents and islands) changed as moved and changed with earthquake and volcano [5], and well-known geological impact layers [7,8] formed various kinds of rocks and many regional products. Therefore, local geological evidences produced regional products, however global system of Earth can form active factor of mixing and selection for rocks and life products exclusively [7,8]. Asteroids show limited mixing and selection of primordial products mainly.

Complicated formation VLS products locally in Asteroids: As there are evaporating elements and molecules beyond planet Earth, global VLS system of Earth are started as mixed grains of the VLS mixed micro-grains (as colloid solution and gel solid), which might be observed in the Asteroids separately as localized products (including plasma injection to the Asteroids' rocks). In Asteroids the localized products are the similar on the whole body with various impacts and injections [6,7,9,10].

Carbon-bearing grains in Asteroids: Carbon element is existed all meteorites and Asteroids micro- and macroscopically because it is stable molecules and solids after melting and pressing. Any Asteroids include texture of vacancy voids with carbon-bearing rims or grains formed by the plasma-injection (used by artificial technology). When it is formed mixed grains of colloids or quasi-solid, it might be remained in the rock's interior without separation (even at no global VLS system of any Asteroids), though mixed fluids are not pure water or CO₂ gas obtained in close system of Earth [2,5].

Less active life formation beyond Earth in the Solar System: Any mixed state grains with fluids are possible to bring to water planet or impacted planets under the room-temperature orbit zone even lower temperature as its unstable phase diagram. It might be exceptional case for mixed states of micro-gel states on the VLS planet Earth, where carbon-bearing VLS grains might kept in the void interiors of rock to produce pure water and CO₂ gas by slow and longer reaction process on dry Earth to water planet finally [11]. We can find carbon-bearing Egg shows mixed aggregates of colloidal solution and gel solids of organic compounds

in life-type event now (Table 1).

Problem of observation and analyses: The carbon and/or hydrogen-bearing grains under electron-beam or ion sputtering for longer experimental run which might be evaporated to reacted molecules (obtained at wide temperature). Impact-run collection to the Asteroids surface might be reacted between gun-metal with industry contamination (cf. metal with carbon buffer control to be broken at collected procedure) [7-9].

Naming of minerals on Asteroids and any planets: Mineral name is exclusively defined as well-crystallized end-products on globally VLS system of planet Earth. Therefore, mixed grains or reacted (at the Earth's experiments) are not used as its crystal name, but it is recommended to be used as fixed word before mineral names (cf. "celestial body name" + mineral) because of its mixture (especially volatile elements) [1,2].

Summary: The present results are summarized as follows:

- 1) Any rocks beyond Earth are not the same of water-planet Earth as mineral name used as paper, it should be used as adjective word before mineral names (cf. "celestial body name" + mineral) because of its mixture with volatile elements) for written paper.
- 2) All investigated rock data of planets and Asteroids previously are different in recorded database.
- 3) Melted rocks should take care for the effects from beam- and ion-sputtering naturally in the Solar System.
- 4) Local geology describes regional products, though global system of Earth can form active factor of mixing and selection processes for rocks and life products. Asteroids are the similar on the whole body by impacts and injections, where there is no global active factor triggered by the macro-ocean water system.
- 5) Carbon element is existed all meteorites and Asteroid, where they include texture of voids with carbon-bearing rims/grains formed by the plasma-injection as mixed grains of colloids, though mixed fluids are not pure water or CO₂ gas of Earth case.
- 6) Any mixed gel grain with fluids of Asteroids might be saved in the rocks globally. Carbon-bearing VLS grains might kept in the void interiors of rock to produce pure water and CO₂ gas by slow and longer reaction process on dry Earth to water planet.
- 7) The carbon and/or hydrogen-bearing grains under electron-beam or ion sputtering experimen might be evaporated to reacted molecules from previous impact-run collection.

Table.1 Characterization of mineral & life systems of Earth & extraterrestrial bodies.

Celestial bodies	Mineral	Life
Earth (water planet)	Earth Solid(3macro-VLS)	Water Earth (3micro-VLS)
Bodies (dry sites)	Returned &collected	No real samples (No fossil)

References:

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