

# Intermediate bodies of Asteroids and the Moon from an Earth 3GMS model

Yasunori MIURA

*Department of Earth System Sciences, Faculty of Science, Yamaguchi University*

**Introduction:** Previous formation model of active water planet Earth has been static description of three material states (3MD) from various planetary and Earth sciences, which have been studied in details for more description as public definition from scientific researched fields to public library and museum for educated words. On the other hands, there are two unsolved items of 1) formation of active Earth planet, and 2) formation of inactive Asteroids and the Moon-Mars comparatively in the Earth-type planetary bodies. The main purpose of the paper is to new active Earth formation model called here as Active Three Material States (A3MS) to be continued to be young products on global and local sites of the planet now [1,2] (Table 1).

**Problem and characteristics of the previous 3MD model:** The previous 3MD model shows typical merits for the definition of each terminology word on educational sites of school, library, book and museum sites, though it shows some demerits for static description (without previous and future changes in details). This is mainly because planet Earth is not static but so active globally and locally as complicated phenomena to be changed one direction in wide Universe totally. In fact, we meet difficult spots (totally inactive with old history of primordial ages) to explain the details and comparison of extraterrestrial bodies of many Asteroids and the Moon and Mars even in neighbor celestial bodied in the Earth-type planetary bodies of the Solar System. We have to make more detailed figure of active planet Earth from various academic fields of geology, rocky minerals, mixed rocks, physics-chemistry-biology contently with news sciences of environmental and computer information. It is herewith keeping unsolved problem for many academic researched fields separated into individual academic fields [3,4].

**New model of present S3MS model:** It might be difficult to young scientists who study one of many academic fields preciously for present wide points of academic fields to be explained. However, new wider scientists (even older scientists) from fundamental Earth sciences (mineral-rock chemistry, micro-observation analyses and wide geological sciences) are possibly solved totally, where they should be studied also wide planetary fields of planet, physics-chemistry and active shock wave fields of quake-volcano-impacts (QVI) processes comparatively [5,6].

**Main points of new A3MS model:** The present A3MD model shows possible explanation for active process of rocky solid system of Earth which are activated energy naturally to change rocks from older to newer ages among three material states of solid, fluid liquid-to vapor air (SLV), which we can see younger trends of Earth totally. Compared short human life age, the solid of Earth are surely changed with longer times (due to life with light elements from carbon organic molecules with fluid system, compared with rocky system of Earth with longer ages of change comparatively with continued change processes).

**Meaning of existences of Atmosphere and Ocean systems on rocks (VLS) to Earth:** On primordial period of Earth, natural activation energy (QVI) has been started from no ocean system by gravitational quake (tidal) and rocky system to be found three planets and the Moon and Asteroids on the Earth-type planetary zone. However present earth site has change to produce, keep in side fluid and solid rock inside as mixture of fluids and vapors for some geological periods to be more active on dried primordial Earth with huge collisions (*i.e.* planetary-planetary, and/or multiple asteroids collision, where might be the most big chance of formation of global ocean mixed fluid system, where characteristic aspects of fluid liquid phases are showing boundary as image boundaries with irregular round shapes and light molecules with many elements involving between solid (rock) and vapor (air) phases formed as global ocean system on water planet Earth during decreased temperatures and continuous lower temperature among three material states (VLS) with new formed active phenomena of plate quake and volcano locally to keep moderate temperature kept in Earth system as moderate complex processes on active Earth now [2-4].

**Comparative differences of Earth and other celestial bodies:** The present A3MS model can be explained younger planet Earth

by natural active phenomena QVI events, which can be shown by major differences between young Earth and other bodies beyond Earth. The Mineral crystals defined from small to large sizes with colorful units of Earth can be formed by ocean plate activities of quake and volcano with interior magmatic melting with irregular but continuous movements under room-temperature condition of water-Earth, though inactive celestial bodies of Asteroids and the Moon show tiny assemblages of rocks with primordial ages. Continuous magma melting and metamorphic events are used to be formed final pure and large mineral crystal of quartz  $\text{SiO}_2$  and  $\text{CaCO}_3$  calcite carbonates (gem mineral) only water planet Earth. Ocean fluids are water mixed with many tiny elements from light to heavy metals brought by many asteroid impacts on ocean for longer geological periods, where as in similar process of mixed rocks to pure mineral crystal the mixed fluid of ocean water can be produces to pure water of rain and underground water or glacier ice globally as small percentage as pure products on active Earth. Life shows the similar A3MS assemblages on the rocks of water planet earth corporately as shown in different paper. This suggest comparatively organic life works can be seen in the complicated and continuous A3MS process discussed in this paper shortly, which it suggests that life system of organic compounds can be existed and continued the A3MS system on active Earth as we can observed clearly.

**Intermediate steps of various Asteroids 1M to the Moon 1M , and Mars 2MS from active planet Earth A3MS:** From whole differences between inactive 1MS (one material state) of Asteroids compared with 2MS (two material states) , the Asteroids show initial collision aggregates with various grains and rocks of Si-system (mountain rocks), Ca system (ocean rocks) and Fe-group system (heavy iron) with some contents of non-mineral elements of CO(HN)-systems synthesized in organic compounds on active planet Earth. From active A3MS model, products of non-mineral CHO-system are obtained in continuous and active planet Earth easily. For inactive Asteroids and the Moon, light element CHO-system groups are easily formed from products contained carbon elements (cf. steel parts) with impacted sample collections and/or analytical procedures by **collision less-shock** wave reactions by electron, ion and laser beam bombardments in analytical chambers are extremely carefully to be interpreted on the paper [5]. In short, many joined aggregates can be observed in many parts of the Asteroids before forming the Moon or Mars planet as intermediate solid-aggregated rocks before forming the water planet Earth with other active group of life-A3MS system groups [2].

Table.1 Comparison of material states MS of Earth, Asteroid and other extraterrestrial bodies.

Celestial bodies	Mineral or Rocks	Organic Life System
Earth (water planet)	Active three material states (A3MS) system	Non-mineral light elements (CHON) system
Asteroids, the Moon (Mars)	A material state (1MS) Intermediate mixture	Store in solid interior (mixture), Contamination?

**Summary:** The present work has been summarized as follows.

- (1) Active planet model A3MS can be explained on Earth, but others inactive bodies are 3MS on the Solar System.
- (2) This model can explain younger rock of Earth and older rocks of other bodies of Asteroids.
- (3) New large crystals and life system on Earth and mixed rocks on Asteroids might be explained in the model.
- (4) Aggregates observed in the Asteroids before forming the Moon or Mars planet as intermediate solid-aggregated rocks before forming the water planet Earth with other active groups of life system groups.

**References:** [1] Miura Y. (2018) IMA-22,1189. [2] Miura Y. (2023) JAMS. E5-15. [3] Wilson J.T. (1965) Nature, 207 (4995), 343-347. [4] Miura Y. (1996) Shock-Wave Handbook (SV, Tokyo),1073-1209. [5] Miura Y. and Kato T. (1993) AIP, 283, 488-492. [6] Miura Y. (1992) Celestial Mechanic. & Dynamical Astro. (KA), 54, 249-253.