Study on New Model of Interior Reservoir of Light Elements on the Moon and Earth-Type Planets

Yasunori Miura1*

1 Visiting (Universities)

The following problems are existed interior reservoir and circulation of light elements on the Moon and Earth-type planets (i.e. primordial Earth and water-less planets of Mars and Venus) as follows:

1) Few systematic models of light elements and the Solar System materials of the Moon, Earth-type planets and smaller bodies are proposed, but only time and location data of the remained solid rocks are obtained at the primordial to the present bodies.

2) Little hard and wide rocks on the water-less Moon are existed except the breccias and fine void-rich regolith soils.

3) Light elements on the Moon are lost to form high-temperature minerals and rocks.

4) Few models of light elements to penetrate and reserve in the interior against the gravitational forces are proposed on water-less Moon and other planets.

The following models of impact growth process are proposed to explain the above problems (Miura, 2013; in press).

1) Impact growth model is applied to remained solid rocks from fine-grains to breccias.

2) Wide and hard continental rocks which have been formed by plate-movements, subduction and magmatic melting with uplift eruption of ocean-planet Earth, cannot be applied for the Moon and other water-less planets.

3) The Moon rocks without light elements and high-temperature minerals and rocks are not formed by continuous smaller impacts, but by giant impacts with two planetary bodies with much light contents), called as step 1 process.

4) On the later Moon surfaces with mixed with smaller blocks, light elements are penetrated and stored in the interior by later impact, called as step 2 process.

In short, there are major two types light elements of steps 1 and 2 processes on solidified rock and regolith on the Moon. The process of light elements as multi-steps are applied to water-less Venus and Mars.

The present Earth light elements are not used for the Moon and primordial Earth-type planets model, because the Earth is changed so much by ocean water system.

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