Material evidences of giant impact on Earth

Yasunori Miura[1]

[1] Earth Sci., Yamaguchi Univ

1. Introduction:

An intermediate plagioclase with multi-layer texture which is studied by author, is considered to be recrystallized to magmatic texture (ca.3.0Ga ago) at the rim of stable continents before continental drift of Earth. There are only four locations to find these older minerals on Earth. Author recently found large samples to investigate in details on the older rocks of Earth and indicated that shocked glasses can be started to crystallized in solid-state reaction for long slow heating. The main purpose of the present study is to describe material evidence of giant impact to Earth.

2. Estimation of giant impact:

There is few material evidence of giant impact to the primordial Earth to form the Moon and topographic surface of Earth which is estimated by the facts of same oxygen isotope of the Moon and Earth, and of shocked lunar rocks with heavier elements after the impact reaction. Computer simulation supports that Mars-size parent body hits primordial Earth to make ring of Earth to form present Moon.

3. New evidence of shocked textures on older rock:

Recently author has reported as follows:

1) There is relict of shocked texture within each block of older feldspar-rich rocks.
2) Shocked glasses of older rocks are found mainly at the rim of stable continents on Earth.
3) The rim of the continents is place to be heated by igneous magma under solid-solid reaction.
4) There are other cracks on the older rocks which are formed during continental uplifting or continental drift.

4. Conclusion:

The resent results are summarized as follows:

1) New evidence of shocked impact rocks of giant impact to form the Moon (ca. 4.0Ga ago) is found on plagioclases which are recrystallized to magmatic texture (ca.3.0Ga ago) at the rim of stable continents before continental drift of Earth.
2) Impact glasses can be formed present texture of feldspar minerals.
3) It is the first result of material evidence of giant impact on Earth by author.