GRCジオダイナミクスセミナー＆地球科学教室談話会

Variations of isotopic compositions of H, N and O between planets in the solar system

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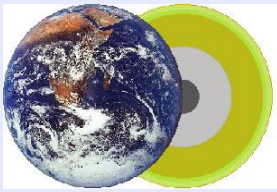

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Abstract

Hydrogen, Nitrogen and Oxygen are among the most abundant elements of the universe. Isotopic compositions of these elements are highly variable between the solar system objects comparing with isotopic variations of metal elements. For example, the earth, planets and comets are significantly enriched in heavy isotopes of these elements comparing with the Sun. Due to highly volatile nature of these elements, the chemical forms are easily changed between vapor and solid (so-called ice) by environmental temperature and pressure in the proto-planetary disk. Thus, planetary formation models of the solar system suggest that inner planets deplete these elements because these elements were in gas, but outer planets enrich these elements because these elements were in solids. Isotopic compositions for planets of these three elements might be determined spontaneously according to the planetary formation processes. Therefore, the isotopic variation between planets would be an important issue to clarify how to form planets in the solar system. In this report, we propose new systematic approach to infer isotopic compositions for H, N and O of solar system planets.

詳細は当センターホームページ：http://www.ehime-u.ac.jp/~grc/をご覧ください
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