

過去の深海堆積物から太陽系外ダストを探る Exploring extrasolar dusts from ancient deep-sea sediment

山本 伸次^{1*}, 藤崎 渉², 中根 布美子², 丸山 茂徳²

YAMAMOTO, Shinji^{1*}, FUJISAKI, Wataru², NAKANE, Fumiko², MARUYAMA, Shigenori²

¹ 東京大学大学院総合文化研究科広域科学専攻 広域システム科学系宇宙地球科学教室, ² 東京工業大学大学院理工学研究科地球惑星科学

¹Department of Earth and Astronomy Graduate School of Arts and Sciences The University of Tokyo, ²Department of Earth and Planetary Sciences, The Tokyo Institute of Technology

If our solar system encounters the dense molecular cloud and near explosion of supernovae, the flux of galactic cosmic ray and extrasolar dust into Earth's atmosphere will increase and may cause an extreme environmental change (snowball earth and mass extinction). To investigate a causal connection between mass extinction events and encountering the molecular clouds we focus on the geological samples which record both ancient environmental change and cosmic dust, that is deep-sea sediment in an accretionary complex on land. We collected more than 400 samples of thin shale interlayer between cherts in the Inuyama-area, which include T/J boundary and Toarcian anoxic event. If extrasolar dust particles are found from terrestrial sample, they would be similar to presolar grains. Thus we performed acid treatment to recover residual mass because most presolar grains are recovered as acid residue. Known types of presolar materials include carbonaceous phases such as nanodiamond, silicon carbide, graphite, and, probably, organic materials, as well as silicon nitride and oxide phases such as corundum, spinel, hibonite and silicate. We challenge the exploration of extrasolar dust particles from deep-sea sediment and will provide our preliminary results.

キーワード: 大量絶滅, 太陽系外ダスト, 深海堆積物, 付加帯

Keywords: mass extinction, extrasolar dusts, deep-sea sediment, accretionary complex