[EJ] Evening Poster | P (Space and Planetary Sciences) | P-PS Planetary Sciences

[P-PS06]Formation and evolution of planetary materials in the Solar System

convener:Akira Yamaguchi(National Institute of Polar Research), Wataru Fujiya(Ibaraki University, College of Science), Yoko Kebukawa(横浜国立大学 大学院工学研究院, 共同), Masahiro KAYAMA(Department of Earth and Planetary Material Sciences, Faculty of Science, Tohoku University)
Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
This session will focus on the evolution in the Solar System with interaction and co-evolution in minerals, water, organic matter, and noble gas in meteorites and interplanetary dust particles. New innovative analytical and theoretical techniques in various fields will be discussed. The developing methods are welcome to submit for the future mainstream of meteorite study. In order to explore the planetary materials and their evolution, both meteorite studies and experimental approaches are necessary. In this session, we will discuss these topics from extraterrestrial sample analyses and experimental works. Research works on undifferentiated and differentiated meteorites and parent body processes such as aqueous alteration, thermal metamorphism, shock metamorphism, volcanic activity, and core-mantle-crust differentiation are especially included in this session.

[PPS06-P08]Mineral inclusions and microstructure of carbon aggregates in ureilites Novo Urey and JAH 054

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Ureilites contain up to 6 wt.% C as interstitial aggregates in peridotite matrix along with sulfide and iron phases. They are scarcely studied by means of transmission electron microscopy. Here we performed detailed mineralogical and microstructural study of ureilites Novo Urei and JAH 054 with particular attention to identification of microinclusions in carbon aggregates. The samples were polished using Ar-ion milling to avoid contamination of sample surface during conventional polishing. Samples for TEM were prepared using FIB technique. In carbon aggregates we identified diamond, graphite and lonsdaleite. The crystals in Novo Urey (up to 20 µm) were much larger than in JAH 054 (<100 nm). Diamond zones in carbon aggregates do not contain any inclusions, whereas graphite-bearing zones contains inclusions of kamacite and Fe-Cr sulfide. We also investigated microinclusions in “smelted” zones of olivine and orthopyroxene recristallization around carbon aggregates. These zones contain abundant voids and also sulfides, cohenite and possibly lawrencite. In JAH 054 most sulfide is replaced by anhydrite. Minor interstitial glass contains up to 85 wt % SiO_2. Quenched SiO_2 crystals in this glass are represented by cristobalite (identified by Raman spectroscopy). New mineralogical findings support multistage origin of ureilite during stochastic impact events at least one of which was of catastrophic characters.
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