

2014B 期 採択長期利用課題の事後評価について - 2 -

公益財団法人高輝度光科学研究センター
利用推進部

2014B 期に採択された長期利用課題について、2017A 期に3年間の実施期間が終了したことを受け、第 64 回 SPring-8 利用研究課題審査委員会長期利用分科会（2018 年 12 月 13 日および 14 日開催）による事後評価が行われました。

事後評価は、長期利用分科会が実験責任者に対しヒアリングを行った後、評価を行うという形式で実施し、SPring-8 利用研究課題審査委員会で評価結果を取りまとめました。以下に評価を受けた課題の評価結果を示します。研究内容については本誌の「最近の研究から」に実験責任者による紹介記事を掲載しています。

なお、2014B 期に採択された長期利用課題 3 課題のうち残り 2 課題の評価結果は、「SPring-8/SACLA 利用者情報」Vol.23 No.1（2018 年 2 月号）に掲載済みです。

課題名	Energy scanning X-ray diffraction study of extraterrestrial materials using synchrotron radiation
実験責任者(所属)	Michael Zolensky (NASA)
採択時課題番号	2014B0113
ビームライン	BL37XU
利用期間/配分総シフト	2014B~2017A/54 シフト

[評価結果]

This long-term project has attempted to characterize the crystal structures of minerals in the primitive asteroid and comet regolith samples and the effects of impact shock on asteroid and comet regolith samples, and to determine the origin and early history of aqueous fluids in the early solar system. For these works, the project leader has proposed an energy scanning X-ray diffraction technique at BL37XU, in which the x-ray energy is adjusted by changing the undulator gap and the angle of the monochromator, and diffraction patterns are collected on a two-dimensional detector. This approach to extraterrestrial fine particle is unique and needs

continuing investigations to reach the final goal of understanding the birth and early evolution of the solar system.

For the project period, the project team has measured several samples, including the comet Wild-2 samples, asteroid Itokawa samples, and demonstrated that the energy scanning X-ray diffraction is successfully applicable to crystallographic characterization of extraterrestrial minerals. They have reported the results regularly in related conferences and meetings.

The committee appreciates their attempts, and found that some experimental results show a significant piece of information in planetary science. On the other hand, publication in a journal is delayed. The committee encourages the project team to publish the research results in order to share the information in the science community.

[成果リスト]

(査読付き論文)

[1] SPring-8 publication ID = 31999

Q. Chan *et al.*: “Magnetite Plaquettes are Naturally Asymmetric Materials in Meteorites” *American Mineralogist* **101** (2016) 2041-2050.

[2] SPring-8 publication ID = 37205

K. Joy *et al.*: “Identification of Magnetite in Lunar Regolith Breccia 60016: Evidence for Oxidized Conditions at the Lunar Surface” *Meteoritics and Planetary Science* **50** (2015) 1157-1172.