Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)
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MTT37-04 Room:101B Time:May 21 09:45-10:00

Depth profile analysis of light elements using J-PARC MUSE

TERADA, Kentaro[1*], Takahito Osawa[2], TACHIBANA, Shogo[3], UESUGI, Masayuki[4], Kazuhiko Ninomiya[2], Yasuhiro Miyake[5], Kenya Kubo[6], Naritoshi Kawamura[5], Wataru Higemoto[2], TSUCHIYAMA, Akira[7], EBIHARA, Mitsuru[8]

[1]Osaka University, [2]Japan Atomic Energy Agency, [3]University of Tokyo, [4]Japan Aerospace Exploration Agency, [5]High Energy Accelerator Research Organization, [6]International Christian University, [7]Kyoto University, [8]Tokyo Metropolitan University

Recently, the intense pulsed muon source, J-PARC/MUSE has been constructed (Miyake et al. 2009), providing the potential of the 3-D elemental map from the near surface to the interior of the planetary materials.

Here, we report on the depth profile analysis of the four layered sample that consists of SiO_2, C (graphite), BN (boron nitride) and SiO_2 changing the Muon's momentum from 37.5MeV to 57.5MeV/c. Muonic X-ray from B, C, N and O are successfully detected through SiO_2 plate of which thickness is about 1 mm.

Keywords: Muon, J-PARC, Characteristic X-ray, Non-destructive measurement, depth profile analysis