

E411

PROPOSAL FOR EXPERIMENT AT RCNP

11, July, 2012

TITLE:

Development on non-destructive elemental analysis of planetary materials by using high intensity μ^- beam

SPOKESPERSON:

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EXPERIMENTAL GROUP:

Name	Institution	Position
K. Terada	Department of Earth and Space Science, Osaka Univ.	(P)
H. Yabuta	Department of Earth and Space Science, Osaka Univ.	(RA)
S. Tachibana	Department of Natural History Sciences Hokkaido Univ.	(Lecturer)
T. Osawa	Quantum Beam Science Directorate, JAEA	(Ph. D.)
K. Ninomiya	Department of chemistry, Osaka Univ.	(RA)
A. Sato	Department of Physics, Osaka Univ.	(RA)
T. Shima	RCNP Osaka Uni.	(RA)
K. Takahisa	RCNP Osaka Uni.	(RA)

RUNNING TIME: 1 day \times 3 times (totally 3 days)

BEAM LINE: WSS

BEAM REQUIREMENTS:

Type of particle: proton
Beam energy: 392MeV
Beam intensity: 50 nA
Muon intensity: 3×10^4 counts/cm²/s

BUDGET: Nothing

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SUMMARY OF THE PROPOSAL

The planetary materials such as various meteorites and returned samples from Moon/asteroids/comets are valuable samples for understanding of the origin and evolution of the Solar System. Above all, since returned samples from asteroids/comets are small and rare, development on advanced non-destructive measurement has been desirable. Recently, a new muon beam channel which provides a high intense muon beam with a continues time structure, MuSIC, is established at RCNP, Osaka University, providing a potential to obtain the 3-D elemental map from the near surface to the interior of the sample. Here we propose a feasibility test of analytical system for planetary materials.