E380

RCNP EXPERIMENT E

PROPOSAL FOR EXPERIMENT AT RCNP

11 July 2011

TITLE:
Beta NMR study of ^{8}Li in Li ion batteries

SPOKESPERSON:

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EXPERIMENTAL GROUP:

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Koudai Iwamoto	Department of Physics, Osaka University	(M1)
Masaru Wakabayashi	Department of Physics, Osaka University	(M1)
Masaki Yaguchi	Department of Physics, Osaka University	(Research Student)
Daiki Nishimura	RIKEN Nishina Center	(Special Postdoctoral Researcher)
Sadao Momota	Kochi Institute of Technology	(AP)
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Takashi Ohtsubo	Department of Physics, Niigata University	(AP)
Takashi Nagatomo	International Christian University	(RA)
Kenya Kubo	International Christian University	(P)
Tadanori Minamisono	Fukui University of Technology	(P)
Jun Sugiyama	Toyota Central R & D Labs., Inc.	(Prime Researcher)

RUNNING TIME:

Installation time without beam	7 days (for each beam time)
Feasibility study (^{7}Li)	2 days
Feasibility study (^{11}B)	2 days
Data runs	6 days
Total	10 days

BEAM LINE: Ring : EN course

BEAM REQUIREMENTS:

Type of particle	^{7}Li, ^{11}B
Beam energy	$65A$ MeV
Beam intensity	$\geq$ 6 pnA
Any other requirements	nothing special

BUDGET:

Travel expenses	500,000 yen
β-NMR chamber	500,000 yen
Total	1000,000 yen

TITLE:
Beta NMR study of ^{8}Li in Li-ion batteries

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SUMMARY OF THE PROPOSAL

The lithium diffusion in lithium insertion materials is one of the most important intrinsic physical properties for the Li-ion batteries. For further development of the batteries, it is imperative to have a reliable probe to study the Li diffusion for all the components of the battery such as electrodes and electrolyte as a function of Li content. The β-NMR technique is potentially useful for this study and we propose experiments on the β-NMR of ^{8}Li in Li-ion battery materials to study Li diffusion.