
	Experimental Report 	提出日 Date of Report
		2014.06.01.
実験装置名／BL番号 Name of Instrument/BL02 (2013I0002)		
Biomolecular Dynamics Spectrometer (D N A) / B L - 0 2		
実験装置責任者 Name of the person responsible for the instrument:		
Nobuaki Takahashi -> Kaoru Shibata		
所属 Affiliation: Japan Atomic Energy Agency		

1. 研究成果概要 (a)装置グループ内の成果、(b)ユーザー課題実装時における特筆すべきサポート、(c)ユーザー課題の執行状況について、まとめてください。A4 サイズ用紙使用のこと。

Outline of your activities. Following results at your instrument should be reported in A4 size papers: (a) results of your instrument group, (b) significant user support works, and (c) statistical summary of user experiments.

(a)The results of BL02 instrument group

The instrument group are permitted only commissioning experiment to confirm the development and the improvement of the spectrometer, Therefore, we report of commissioning experiments.

The no.1 pulse shaping double disk chopper was evaluated the performance of double disk counter rotation at 225Hz, We determined the best parameters for the no.1 pulse shaping double disk chopper. Condition for pulse shaping at 225Hz counter rotation, the evaluation of the energy resolution was performed using standard samples with the slit width 10mm, 30mm, for each case. These values, respectively, $dE = 2.4$, was 3.6 [micro eV]. At the same time, it became clear that the signal to noise ratio is more than 100,000. It is very nice performance, not possible with other backscattering spectrometer.

The 3 units of crystal analyzer unit with Si111 plane reflection were added to a total of 13 units, it is performed to horizontal angle $-18^\circ \sim +138^\circ$ continuous coverage. (Momentum measurement range $Q = 0.08 \sim 1.86$ [1 / Å]). It was developed one crystal analyzer unit of Si311 plane reflection.

About diffraction detector, It was carried out adjustment and performance evaluation for new on bank in conjunction with existing two banks. Using these, we performed diffraction experiment test.

Corresponding to the enhancement of the proton beam output, the beam stopper, the shield enhancement of scattering vacuum chamber entrance section was performed.

(b) The significant user support works on BL02

The improvement in performance of sample environment apparatus (top loading furnace cryostat for BL02) was performed adjustment. (Expanding the temperature range: 3.5K ~ 700K) also, as a new backup top loading furnace cryostat for BL01, BL02 shared, was produced.

In CROSS development issues as an option in the sample environment equipment, a water vapor atmosphere device was manufactured and established. It was starting to use in the project experiment. As a result, the in-situ water vapor adsorption experiments were became to be carried out.

1. 研究成果概要(つづき) Outline of experimental results (continued).

(c) statistical summary of user experiments.

[2013A]

Operated days/Scheduled days	37days/93.5days=0.3957 (39.6 %)
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[BL-02] approved public proposal (DNA)

No.	Title of experiment	Principal investigator	Affiliation	Beamline	Selection Committee		Carried out days	Implementation rate %
					Beamtime (days)	Recommendation		
2013A0093	Dynamic heterogeneity and anomalous glass transition of ultra-thin polymer films	Kanaya Toshiji	Kyoto University Institute for Chemical Research	BL-02	10	Approved	7.5	75
2013A0099	Low-energy collective excitations of skyrmion lattice in Cu ₂ OSeO ₃	Sato J Taku	Tohoku University Institute of Multidisciplinary Research for Advanced Materials	BL-02	7	Approved	0.0	0
2013A0054	Tetrahedron dynamics in the Zn ₆ Sc 1/1 approximant to the quasicrystal	de Boissieu Marc	SIMAP CNRS Metal Physics	BL-02	6	Approved	6.0	100
2013A0162	Dynamics of methanol confined in mesoporous silical MCM-41 C18 and ordered mesoporous carbon OMC78	Yamaguchi Toshio	Fukuoka University Department of Chemistry	BL-02	5	Approved	5.0	100
2013A0204	Spectrum distribution of skyrmion lattice fluctuations under current flow	Sato J Taku	Tohoku University Institute of Multidisciplinary Research for Advanced Materials	BL-02	3	Approved	0.0	0
2013A0055	Does the inclusion of paclitaxel in iron oxide-hydroxyapatite-chitosan composites modify the H-bonds of this antitumor drug?	Bordallo Heloisa	Univ. of Copenhagen Niels Bohr Institute	BL-02	6	Approved	0.0	0
SUM					37.0		18.5	50

[BL-02] trial use proposal (DNA)

2013A0013	Neutron Quasi-Elastic Scattering of Amin molecules adsorbed on CaCO ₃ Surface	hara hiroki	アイシン精機株式会社		4.0		0.0	0
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[BL-02] Project proposal (DNA)

2013P0402	Structural properties of soft matter and the dynamics of soft confined water	Nobuaki Takahashi	J-PARC Center		10.0		4.0	40
2013P0502	Analysis of the dynamics of the proteins and protein complexes by neutron inelastic scattering	Satoshi Fujiwara	Japan Atomic Energy Agency		5.0		0.0	0
2013P0902	Project research on structure and dynamics of protonic, superionic and amorphous functional materials using BL02	Yukinobu Kawakita	Japan Atomic Energy Agency/J-PARC Center		11.0		0.0	0
SUM					26.0		4.0	15

[BL-02] CROSS development proposal (DNA)

2013I0102	Development of sample environmental equipment including high pressure and gas atmosphere introduction	Takeshi Yamada	Comprehensive Research Organization for Science and Society		4.0		3.0	75
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Not implementation proposal is due to the operation stop for the hadron facility accident.

[2013B]

Operated days	38.5days
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[BL-02] approved public proposal (DNA)

No.	Title of experiment	Principal investigator	Affiliation	Beamline	Selection Committee		Carried out days	Implementation rate %
					Beamtime(Days)	Recommendation		
2013B0051	Low-energy collective excitations of skyrmion lattice in Cu ₂ OSeO ₃ (2013A0099)	Sato J Taku	Tohoku University Institute of Multidisciplinary Research for Advanced Materials	BL-02	6.0	Approved	6.0	100
2013B0064	Slow localized mode in the polar cluster of relaxor ferroelectrics	Masato Matsuura	Comprehensive Research Organization for Science and Society (GROSS)	BL-02	5.0	Approved	5.0	100
SUM					11.0		11.0	100

[BL-02] trial use proposal (DNA)

2013B0103	中性子準弾性散乱による二次電池電極表面での電解質溶液のダイナミクスの解明	Toshio Yamaguchi	Fukuoka University Department of Chemistry	BL-02	1.9		1.9	100
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[BL-02] Project proposal (DNA)

2013P0402	Structural properties of soft matter and the dynamics of soft confined water	Shiniti takata	J-PARC Center		3.0		3.0	100
2013P0502	Analysis of the dynamics of the proteins and protein complexes by neutron inelastic scattering	Satoshi Fujiwara	Japan Atomic Energy Agency		4.0		3.0	100
2013P0902	Project research on structure and dynamics of protonic, superionic and amorphous functional materials using BL02	Yukinobu Kawakita	Japan Atomic Energy Agency/J-PARC Center		4.0		3.0	100
SUM					11.0		11.0	100

[BL-02] CROSS development proposal (DNA)

2013I0102	Development of sample environmental equipment including high pressure and gas atmosphere introduction	Takeshi Yamada	Comprehensive Research Organization for Science and Society		4.0		4.0	100
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All of approved proposals was performed as scheduled.

必要に応じて、A4 サイズの用紙に続きを記入して下さい。

Please use A4-size papers for further reporting, if necessary.