

Structuring of Database for ICCHIBAN Experiments and Brief Reports on the Ongoing Experiments

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ICCHIBAN Project

InterComparison for Cosmic-rays with Heavy Ion Beams At NIRS

- Motivation:
 - Recommendation of intercomparison of space radiation dosimeters in 4th WRMIS (http://wrmiss.org/workshops/fourth/dir.pdf)
- Aims:
 - Determine **the response of space radiation dosimeters** to heavy ions of charge and energy similar to that found in the galactic cosmic radiation (GCR) spectrum.
 - **Compare response and sensitivity of various space radiation monitoring instruments. Aid in reconciling differences in measurements made by various radiation instruments during space flight.**
 - Establish and characterize a heavy ion “**reference standard**” against which space radiation instruments can be calibrated.

History of ICCHIBAN Experiments

Year	NIRS-HIMAC	Other Accelerators	Space Intercomparison (SI)
1999	Recommendation of intercomparison of space radiation dosimeters in 4 th WRMISS		
2000			
2001			
2002	1 st ICCHIBAN	2 nd ICCHIBAN	
2003	3 rd ICCHIBAN	4 th ICCHIBAN	
2004	5 th ICCHIBAN	1 st Proton ICCHIBAN (Loma Linda Univ.)	SI-1 Jan. 29 to Apr. 30, 2004 (91.5 days)
2005	7 th ICCHIBAN	6 th ICCHIBAN	
2006		1 st NSRL ICCHIBAN (NSRL, BNL)	
2007		8 th ICCHIBAN	SI-2 May 12 to Oct. 22, 2007 (163 days)
2008		1 st CERF ICCHIBAN (CERF, CERN)	SI-3 / CR-39 ICCHIBAN May 14 to Oct. 24, 2008 (163 days)
2009		CR-39 ICCHIBAN	
2010		2 nd Proton ICCHIBAN (NIRS Cyclotron)	

Active Detector
 Passive Detector
 Both

14th WRMISS

Concept of ICCHIBAN Data Base

- “To aid in reconciling differences in measurements made by various radiation instruments”, the ICCHIBAN working group (ICWG) decides to collect and summarize the results from past ICCHIBAN experiments.
- Submitted groups
 - Passive: SCK-CEN, NPI
 - Active: TEPC(ARC), DB-8 (IBMP), Liulin (IBMP), Liulin-5 (STIL-BAS)
- Collected data will be opened on the internet for ICCHIBAN participants.

Parameters for Active Detectors

- LET Distribution
 - Fitted to Gaussian distribution
 - FWHM(calculated from sigma), mean value, etc.
- Dosimetric Parameter
 - Dose, dose equivalent
- LET distribution

definition of parameters, see Yukio's presentation in 13th WRMISS,
<http://wrmiss.org/workshops/thirteenth/Uchihori.pdf>

Parameters for Passive Detectors

- Luminescence detectors (TLD, OSL, Glass,...)
 - Dose
 - TL-efficiency
- Track detectors (PNTD, Nuclear Emulsion,...)
 - Dose, Dose Equivalent
 - Average Track Diameter, Bulk Etch (for PNTD)
 - Fluence
- Combined data
 - Dose, Dose Equivalent

Web site (Under constructing)

Passive Detectors - Mozilla Firefox

ファイル(E) 編集(E) 表示(V) 履歴(S) ブックマーク(B) ツール(I) ヘルプ(H)

http://crmac01/~kitamura/Passive/index.php?Detector=MTS-7

Passive Detectors Database

Luminescence

Type Model Select submit

[Al2O3](#)

[MCP-7](#)

[MSO](#)

[MTS-7](#)

[MTT-7](#)

TLD [TLD-100](#)

[TLD-300](#)

[TLD-600](#)

[TLD-600H](#)

[TLD-700](#)

[TLD-700H](#)

OSL [Luxel](#)

[AIP](#)

Glass [GD](#)

[GR](#)

Track

Type Model Select submit

[BARIOTRACK](#)

[PAGE](#)

[CR-39](#) [TASTRACK05](#)

完了

14th WRMIS

Language : PHP
Database: PostgreSQL

On-going ICCHINBAN Experiments

- CR-39 ICCHIBAN / 3rd Space Intercomparison (SI-3)
- 2nd Proton ICCHIBAN
 - Yukio will talk about it on 10th September.

CR-39 ICCHIBAN

- Significant differences (**25 to 35%**) exist in the average quality factor from particles of $LET_{\infty H_2O} \approx 10 \text{ keV}/\mu\text{m}$ measured in CR-39 exposed in low-Earth orbit (LEO) and these differences are too large.
- The discrepancy in average quality factor measured by different laboratories from controlled irradiations carried out as part of the ICCHIBAN project tend to be significantly smaller (**10 to 20%**).
- **Why ? What different ?**
- To resolve this difference, we promoted two CR-39 exposure experiments: Ground-base experiments using accelerator beams and space experiments on ISS.

See Nakahiro's presentation in 13th WRMIS, <http://wrmiss.org/workshops/thirteenth/Yasuda.pdf>

CR-39 ICCHIBAN

- Space experiment
 - Period
 - May 14, 2008 to Oct. 24, 2008 (163 days)
 - Location
 - Russian Service Module
 - Status
 - Detectors already were sent to the participants
- Baseline beam experiments on Ground
 - Heavy Ions using the NIRS-HIMAC accelerator
 - Ions: C, Ne, Si, Ar, Fe, Kr
 - LET in water : 13 – 500 keV/um
 - Status
 - ICWG will finish exposures at October 2009.
 - After then, we will send them to participants.

Call for Data !!

- Please send the data **until the end of 2009** (31th Dec. 2009) .
 - Summarizations of the past experiments for database
 - Space Intercomparison 2
 - ICWG will send the announcement soon.
 - CR-39 ICCHIBAN (SI-3)
- For Baseline experiment of CR-39 ICCHIBAN, the dead line is **31th March 2010**.

Summary

- ICWG started summarizing the past experiments data as the database.
- The database will be opened on the internet.
- Please send the data (including CR-39 ICCHIBAN & SI-2) **until the end of 2009**.