Edelweiss Experience, Requirements and Thoughts

AARM Collaboration Meeting
Adam Cox - Karlsruhe Institute of Technology
22 June 2012

Experience

- Pia Loaiza, Vitaly Kudryavstev have most experience with ILIAS (Integrated Large Infrastructure for Astroparticle Science)
  - http://radiopurity.in2p3.fr/
  - http://ilias.in2p3.fr

List of Participants in 2009 for the database working group

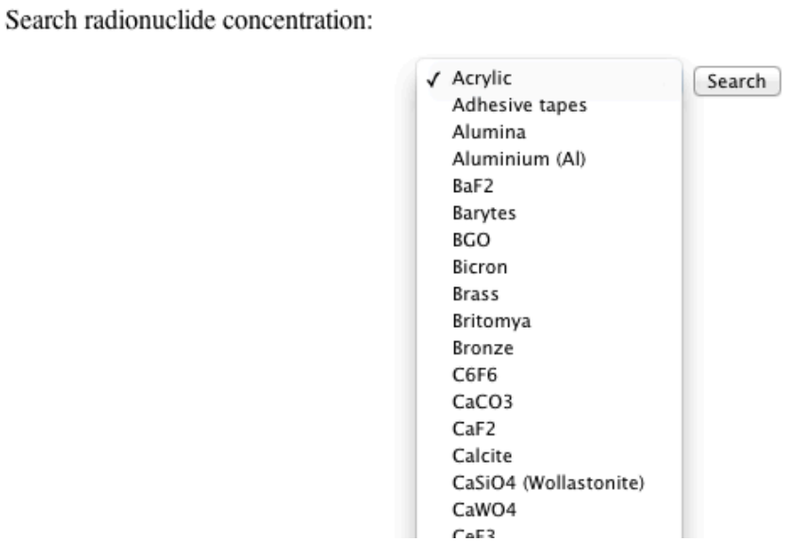
Coordinator: *Pia Loaiza* (LSM)

Participants:

LNGS: ***A. Ianni***, *B. Caccianiga*, *M. Laubenstein*, *C. Tomei*, *J. Kisiel*
LSM: ***P. Loaiza***, *C. Goldbach*, *Ph. Hubert*, *R. Gurriaran*, C. Marquet
LSC: ***J. Puimedón***, ***J. M. Carmona***, *M.L. Sarsa*, *A. Ortiz*
IUS: ***S. Paling***, *J. McMillan*, *J. Lewin*,
JRC: ***U. Waetjen***, *Mikael Hult*

http://ilias.in2p3.fr/ilias_site/meetings/documents/ILIAS_6th_Annual_Meeting/160209_Laubenstein.pdf

radiopurity.in2p3.fr



no search, just pulldown list

mysql database not public
only have web interface

Gamma spectrometry measurements:

The first table gives results from Ge Spectrometry, therefore listing the concentrations of the gamma ray emitters.

Errors in between brackets

Material	Type	Provider	Ref.	Measured by	Collaboration	Detector	Units	Uranium series			Th series							Comments
								^{234}Th	^{214}Pb	^{214}Bi	^{228}Ac	^{212}Pb	^{208}Tl	^{235}U	^{210}Pb	^{137}Cs	^{40}K	^{60}Co	
Brass *	Rod, leadless	Weber Métaux		C.Goldbach & G. Nollez	Edelweiss	Gentiane LSM	mBq/kg		<4	<5	<2	<10	<2		<2300	<2	<3	<3	
Brass *	Rod, Pb < 3000 ppm	Goodfellow	CU027930	C.Goldbach & G. Nollez	Edelweiss	Gentiane LSM	mBq/kg			<6			<7	<13	<360		<70	<3	

Other techniques measurements:

The following table contains data from the UKDM dark Matter Collaboration.

Analysis methods

Conversion factors ppb U, ppb Th, ppm K to Bq/kg

Material	Measured by	Method	^{238}U (ppb)	^{232}Th (ppb)	^{40}K (ppm)	Comments
Brass nuts (Clerkenwell) (used in GaAs rig)	Charles Evans/Cascade Scientific	GDMS	< 0.03	< 0.12	< 5	Lu < 53 ppt, Rb < 0.4 ppb

Experience

- Frequently asked questions related to database entries:
  - Who, What, When, Where, How?
  - History of material.
  - Discrepancies in measurements lead to many questions about the conditions of the measurements that were not recorded in the database.
- Database in MySQL.
  - wasn’t easily extensible
  - no database expert in charge.

Requirements

- None for Edelweiss
- Edelweiss 3 already designed - no use of AARM database
- EURECA under design - Conceptual Design Report
    - sooner implementation of database is helpful for technical design
- No legal issues, international agreements, requirements regarding location of data that I am aware of.
- Inclusion of ILIAS data contributors

Thoughts

- Ability to add information later
    - Flexibility of CouchDB schema-less format is endorsed.
- Ability for transportation of data from one format to another. (If we choose later to use a system other than CouchDB.)
- Links to published results
- Can we provide links to the database for material history?
    - Can we provide a separate material history database for collaborations to use that would provide an easy link (I know that MJ has a history database under construction)?
- links to simulation results?