# Activity of the Measurement Coordination Panel

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**for**
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# MCP

- The Role of the Measurement Coordination Panel is to promote the exchanges of material, information, protocols and procedures among the various labs and to propose to the EB scientific initiatives within the project objectives, emphasizing the integration of the various techniques
- Members
  - Fabio Bellini (WP1)
  - Massimiliano Clemenza (WP2)
  - Jerzy Woiciech Mietelski (WP3)
  - Xavier Sarazin (WP4)
  - Luca Gironi (WP5)
  - Fedor Danevich represents the associated partner KINR
  - Dmitry Chernyak partially hired on ISOTTA funds
  - A Polish PhD or Post-Doc (missing) partially hired on ISOTTA funds

# Crystal-bolometers Measurement

- Different crystals we measured at LNGS:
  - ZnSe (see Pattavina's talk)
  - $ZnMO_4$ (see Gironi's talk)
  - $Li_2MO_4$ (see Pattavina's talk)

- Possibility to measure $CdWO_4$ crystals enriched in $^{106}Cd$($^{116}Cd$) as bolometers
  - they are already measured as standard scintillator (arXiv:1302.4905)

- We will measure a $ZnWO_4$:Sm crystal with enriched $^{148}Sm$ and $^{149}Sm$ for the study of rare alpha decays

# Crystal Database

- Goal: have all possibile informations on procedures and measured crystals in a single database
- Example

| PartType | barcode prefix | examples | attibutes* | DataStored example |
|---|---|---|---|---|
| elemental natural raw material | 01 | Zn, Se, Te, Mo | purity (critical elements) | DataStored-01.txt |
| elemental enriched raw material | 02 | $^{82}Se$, $^{130}Te$, $^{100}Mo$ | purity, isotopic distribution | similar to 01 |
| natural component raw material | 03 | ZnSe, $TeO_2$, ZnO, $MoO_3$ | purity (critical elements) | similar to 04 |
| enriched component raw material | 04 | $Zn^{82}Se$, $Zn^{100}MoO_4$ | purity, isotopic distribution | DataStored-04.txt |
| reagent | 05 | water, nitric acid, clorhidric acid, ammonia, etc | purity | |
| equipment for chemical synthesis | 06 | vessels, reactors, coatings, etc | | |
| consumable | 07 | gloves, polishing powder, graphite felt, polishing pads, packaging material, etc | | |
| crystal seed | 08 | | | |
| crucible | 09 | graphite, glassy graphite, Mo, Pt, Ir | purity, density | |
| crystal ingot as grown | 10 | | weigth, dimensions, visual inspection, photo | |

# Crystal Database

- Example:DataStored-01.txt

```
</StartOutcome:0/>
LocalDataBase:  INFN Roma
ActivityName:   register
PartType:       elemental natural raw material
barcode:        01$$$$$$$$
sampleID:       Zn_Puro INFN-01
nature: Zn
weight (kg):    210.389
dimensions:     NULL
producer:       Johnson Matthey
filiation:      NULL
ID at producer: 9025-6
ProductionDate: 2011-10-23
PurchaseDate:   2012-4-14
Buyer:  INFN Sezione di Roma
Funding:        esperimento Pippo
price:  1000Euro
current location:       LNGS Stefano Pirro
proof files:    Zn-01$$$$$$$$.jpg, Zn-01234AquisitionBill.pfd
registering person:     Fabio Bellini
comment:        Ambaraba' cicci' cocco' Tre civette sul como'
time stamp:     2012-10-2/h:14:48:26
</EndOutcome:0/>

</StartOutcome:1/>
```

```
</StartOutcome:1/>
LocalDataBase:  Roma
MeasurementType:        HPGe
barcode:        01$$$$$$$$
sampleID:       Zn_Puro INFN-01_HPGtest
SampleWeight:   2kg
LiveTime:       1525494 s
Laboratory:     LNGS
Detector:       GeMPI
Operator:       Matthias
registering person:     Ioan
HPGe results:
isotope mBq/kg  g/g
Th-232
Ra-228  <1.4    <3.4E-10
Th-228  <0.27   <6.6E-11
U238
Ra-226  <0.57   <4.6E-11
Pa234m  <44     <3.6E-9
U-235   <3.9    <6.9E-9
K-40    (320+-30)       (1.0+-0.1)E-5
Cs-137  (4.0+-0.6)
Co-60   <0.21
comment:        Zn perline , campione Zn_Puro
Ra-228 from Ac-228; Th-228 from Pb-212 & Bi-21
original file:  LUCIFER10120403.TXT
time stamp:     2012-10-2/h:14:49:00
</EndOutcome:1/>
```

# Crystal Database

- If we would like to proceed with the database we need:
  - feed-back from experts in order to define all relevant entries into the database
  - collect all available informations and convert them in a "databse compliant form"

- On the technological side:
  - An official server for the database
  - A skilled person for a user friendly interface
  - We (Rome) can provide support for the sql database structure

# Radioactivity measurement

- We have several powders From LUCIFER and CUORE(Se, Zn, ZnSe,TeO2,..) enriched and natural
- We propose to measure contaminations and isotopes ratio by ICPMS in Krakóv Facility. A cross check between the results obtained in Milan will be useful