



CANBERRA



Current status of isotopic codes support and development

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Canberra and Safeguards Community



- ▶ **Continuous support of isotopic codes**
 - ◆ receiving feedback
 - ◆ answering questions
 - ◆ providing software resolutions

- ▶ **Sustainability efforts and further development of MGA and MGAU based on the user's feedback**
 - ◆ updated algorithms
 - ◆ new improved versions

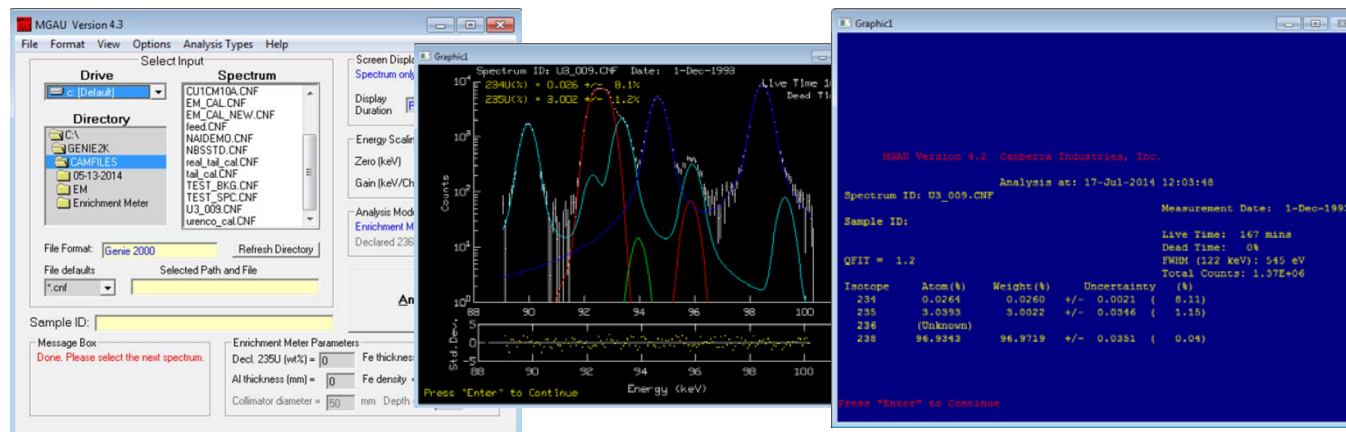
MGAU v4.3

- ▶ 64-bit support (Windows 7)
- ▶ improved analysis of U/Th items

“MGAU Enrichment Measurements of U/Th Compounds: Challenges and Results”

Tuesday, July 22nd @ 3:40PM

- ▶ improved error trapping for poor quality spectra
- ▶ available by end of August 2014



MGA v10.1

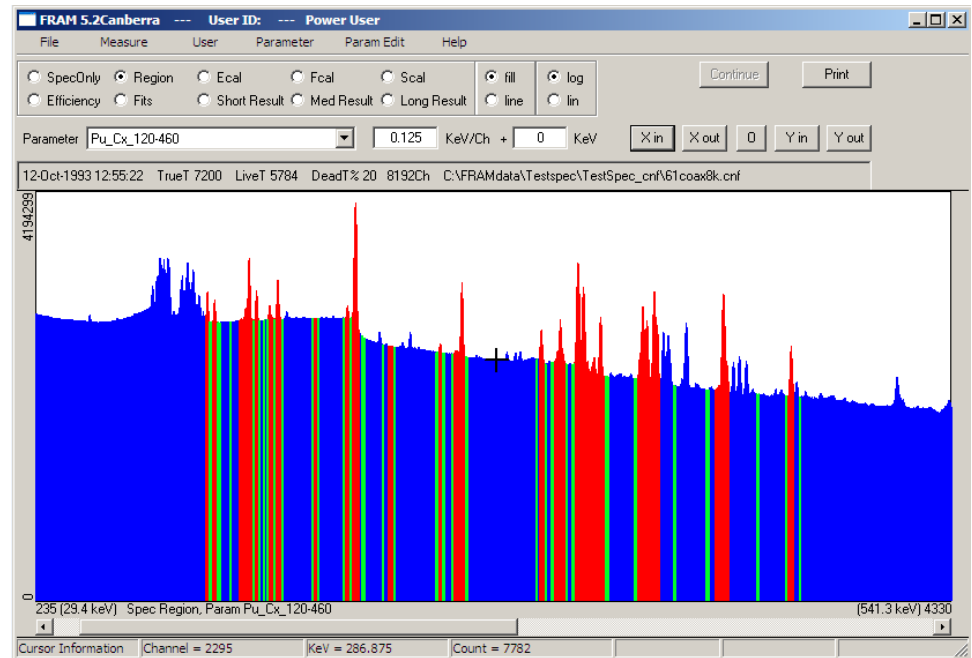
- ▶ 64-bit support (Windows 7)
- ▶ improved hardness of the code when analyzing spectra of very poor counting statistics
- ▶ aligned the coding for the standalone and Genie2k versions
- ▶ available by end of August 2014

The screenshot displays the MGA Version 10.1 software interface. The main window shows a file selection dialog with a directory tree on the left and a list of files on the right. The 'Spectrum' window displays a plot of Counts vs. Energy (keV) with a yellow spectrum and a blue fit curve. A smaller window shows a zoomed-in view of the 94-104 keV region. The 'Report' window displays the following text:

```
Report generated 17-Jul-2014 12:13:41
Spec. ID: CBNM61L.CNF                      LT: 38.9 Mins DT:44%
Measurement Date: 8-Sep-1992 Declared Date: 8-Sep-1992
Sample ID:
FU g/cm2 = 2.7056 CD thickness = 1.35 mm FWHM at 122 keV = 531 eV
QPIT = 1.60 Gain = 75.154 eV/ch at 208 keV = 663 eV
NOFIT= 1.007
ISOTOPIIC ANALYSIS AT
RELATIVE % %* MEAS. DATE DECLARED DATE SPECIFIC POWER
ABUNDANCE ERR ERR WT.PCT. %ERR WT.PCT. %ERR (MILLIWATTS/GM)
Pu238 = 0.018208 0.2 0.7 1.16741 0.65 1.16741 0.65 6.62589
Pu239 = 1.000000 0.6 0.0 64.11562 0.51 64.11562 0.51 1.23666
Pu240 = 0.407647 0.5 0.8 26.13654 0.69 26.13654 0.69 1.85109
Pu241 = 0.078905 0.1 0.7 5.05902 0.62 5.05902 0.62 0.17261
Pu242 = (Default Algorithm) 3.5214 (10) 3.5214 (10) 0.00408
Am241 = 0.050407 0.2 0.6 3.23185 0.61 3.23185 0.61 3.69077
**Error in Ratio (1 Sigma Error) TOTAL= 13.581 +/--0.51%
241Am Separated About 10.227 +/--0.069 Years before Measurement.
Pu-240 effective = 34.99 (at meas. date) 34.99 (at Decl. date) +/-- 1.83%
```

FRAM v5.2

- ▶ major improvement over previous v4.x in terms of the usability
- ▶ improved treatment of uncertainties
- ▶ modified parameter sets
- ▶ batch analysis
- ▶ already available



Enrichment Meter applications

- ▶ growing demand for measuring UF₆ cylinders
 - ◆ re-feeding tail material
 - ◆ converting tail material
- ▶ portable HPGe with MGAU (or custom software)

“Enrichment Meter Measurements with Falcon 5000”

to be presented during the poster session

Tuesday, July 22nd @ 12:30 PM – 3:00 PM

