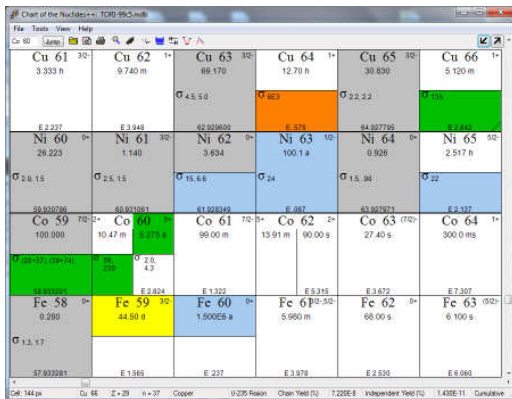# Nuclides++

An interactive Chart of the Nuclides

- Multiple chart formats displaying different nuclear properties and processes

- Multiple databases shared with SYNTH and SuperSYNTH

- TORI-99c5 Database: 3,742 Nuclides; 128,527 Gammas w/ cascade coincidence data; 24,305 Betas; 2,127 Alphas

- Displays nuclide details + emissions data + spectra

- View summary decay schemes for A=1 to A=277

- Displays natural decay chains for: ^{232}Th, ^{233}U, ^{238}U, and ^{235}U

- Nuclide ID possibilities via a constrained database search based on observed gamma rays

- Decay Calculator for simple and complex decay chains

Nuclides++ primary user interface

Who We Are

The Gamma-Ray Spectroscopy Tools are developed and maintained by Dr. Walter Hensley
Email: Dr.Walter.Hensley@Gmail.com

The software packages are distributed by Visual Editor Consultants .

Contact Us

Email: RandySchwarz@mcnpvised.com
Web: http://www.mcnpvised.com/
        gammaspectools.html

System Requirements

Windows XP, Windows 7, Windows 8

Limited support is available for Linux and OSX systems running the open source implementation of the .Net framework available from the Mono Project (www.mono-project.com).

**** Now available ****

Nuclides++ Mobile for iPads and iPhones at the Apple iTunes App Store

Nuclides++ Mobile for Android tablets and phones at the Google Play App store

****

Gamma-Ray Spectroscopy Tools

SYNTH 7
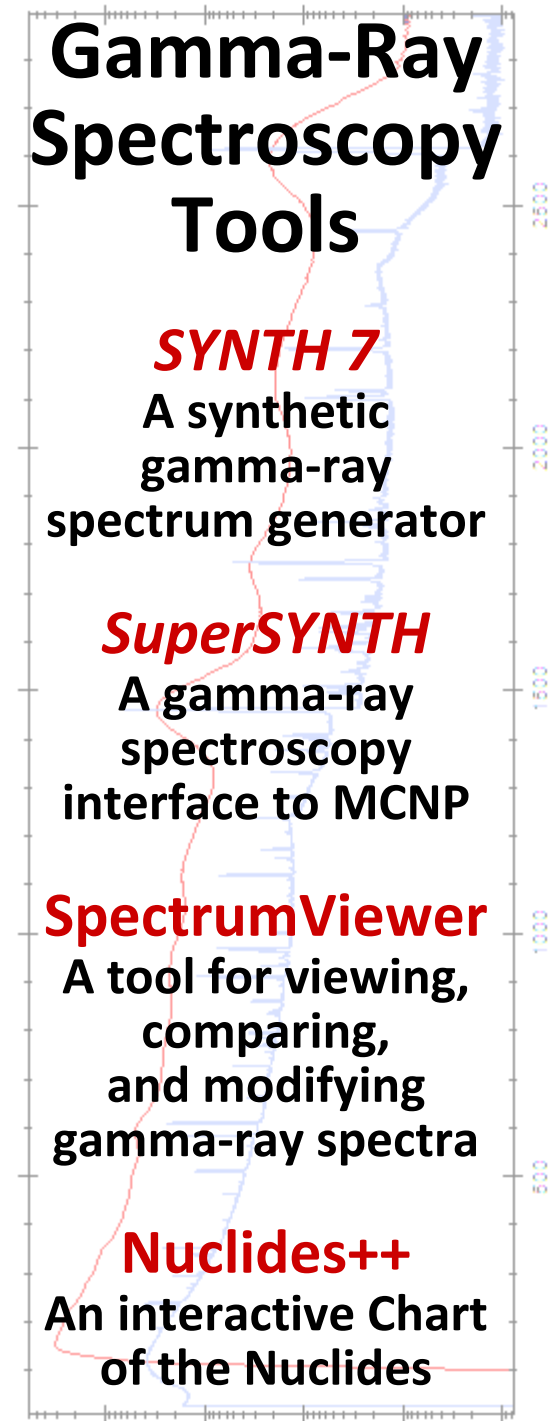**A synthetic gamma-ray spectrum generator**

SuperSYNTH
A gamma-ray spectroscopy interface to MCNP

SpectrumViewer
A tool for viewing, comparing, and modifying gamma-ray spectra
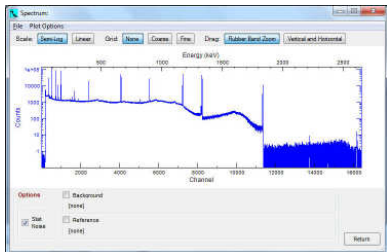
Nuclides++
An interactive Chart of the Nuclides

SYNTH 7

A synthetic gamma-ray spectrum generator

- Access to the same databases as Nuclides++ and SuperSYNTH, and generated peak lists can be used with MCNP Sdef declarations

- Simplified models and physics (e.g. "transport" is $e^{-\mu x}$, no scattering, no buildup, etc)

- Emphasis is on spectroscopy, and the focus is on peak energies, intensities, and shapes

- The procedure is organized into five logical steps

- Because the process is deterministic (hard coded algorithms), as opposed to stochastic (Monte Carlo methods), the spectrum is generated in minutes and is independent of "count time"

- A spectrum is generated that can be viewed and saved in a number of different spectral data formats
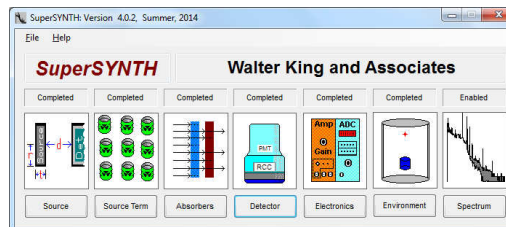

SYNTH 7 generated gamma-ray spectrum

SuperSYNTH

A gamma-ray spectroscopy interface to MCNP5/X/6

- Access to the same databases as Nuclides++ and SYNTH

- A graphical user interface designed to simplify modeling of laboratory and real world gamma-ray spectroscopy measurements with MCNP

- MCNP is required to be installed and functioning to generate spectra (MCNP is not required when only generating an MCNP input file)

- The procedure is organized into six logical steps

- A fully commented and functional MCNP input file is generated

- SuperSYNTH runs MCNP, then parses the generated mctal file to produce a spectrum that can be viewed and saved in a number of different spectral data formats
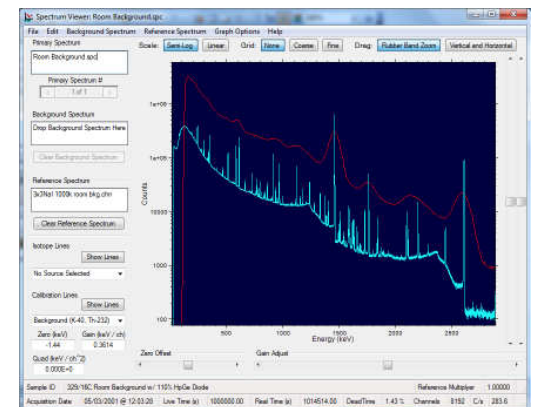

SuperSYNTH primary user interface

SpectrumViewer

A tool for viewing, comparing, and modifying gamma-ray spectra

- Displays and compares data by energy or channels

- Ability to display and edit spectral header information

- Reads and writes multiple spectral formats

- Spectral modification tools
  - Spectral smoothing
  - Multiply spectral data by a constant
  - Smear spectral resolution
  - Gain shift
  - Correct spectrum for NaI intrinsic nonlinearity

SpectrumViewer primary user interface