GANAAS
Nuclear Analysis Software

Features:

- **Gamma- and Neutron Activation Analysis Software package**
- **Energy-, FWHM and Efficiency calibration**
- **Nuclide Library Manager with editor**
- **NAA Library Manager with editor**
- **Gamma Analysis function**
- **NAA Analysis with calculation of concentrations**
- **Example Spectrum**

Description:

The GANAAS is one of the family of software analysis packages developed under the auspices of the International Atomic Energy Agency in Vienna. It is an "Open Domain" software that can be copied and used by anyone exept for commercial purposes.

GANAAS consists of several program modules that can be installed on the harddisk as required. The program will operate on practically any 386 or 486 with a EGA or VGA monitor. For 386 computers a mathematical coprocessor is useful to speed up the operation, but the program will also run without it.

The programmes allow for an intensive dialog with the operator, a function particularily important when the calibration and setup procedures are made. Batch operation is also possible.
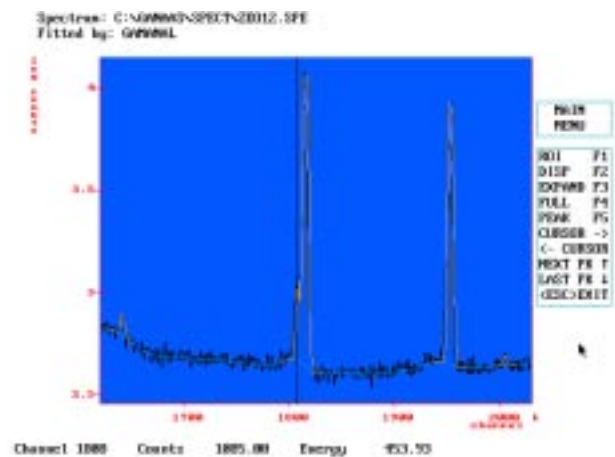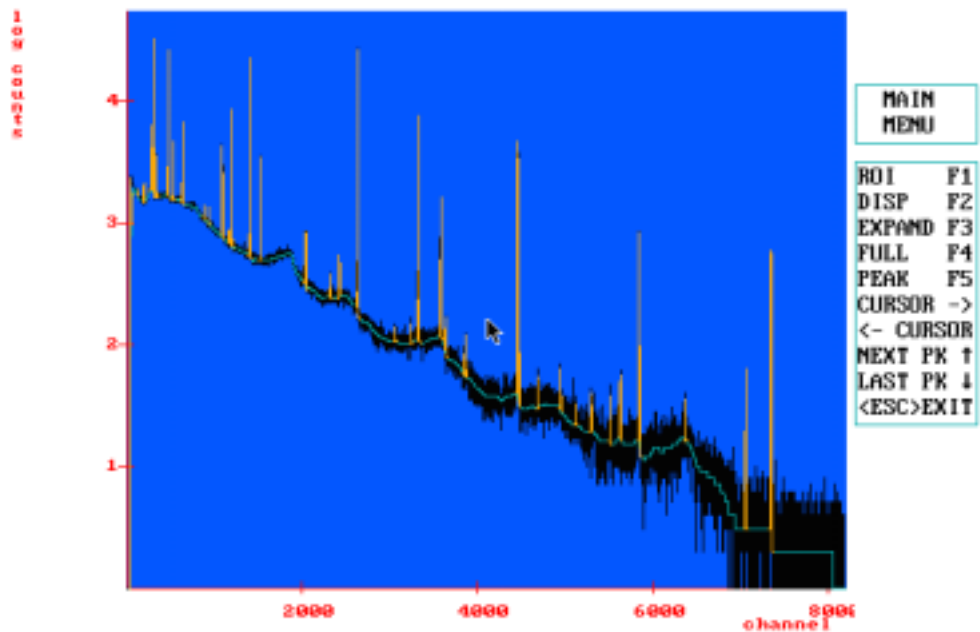
GANAAS consists of the following main modules:

MAIN INSTALLATION MODULE: organizes the computer in respect to the programmes, file handling, graphics and setup prodedures.
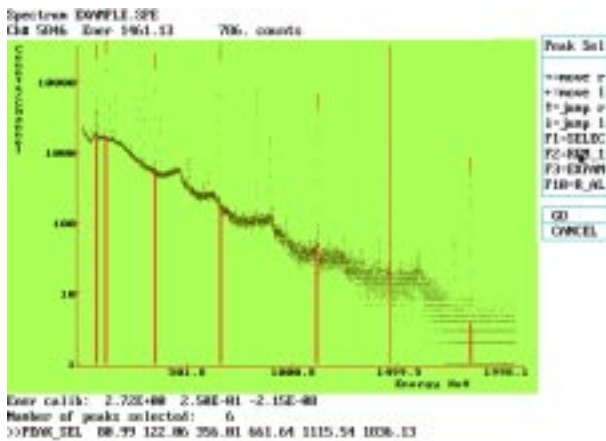
PARAMETERS SETUP: routines include different calibration procedures and result in an input file (*.PAR) which specifies all the parameters required for analysis of a spectrum.

ANALYSIS: this program permits the selection of the appropriate input file and the spectra to be analyzed, performs the gamma ray spectrum analysis and displays the results.

ACTIVITY ANALYSIS: results in a report on the activity of the measured radioactive isotopes assuming that a correct system efficiency calibration has been performed.

CONCENTRATION DETERMINATION: is intended for neutron activation analysis work. It proceeds in two steps: an estimation of the concentrations for the elements in a sample can be made using fundamental parameter

Spectrum: C:\GANAAS\SPECT\EXAMPLE.SPE
Fitted by: GAMANAL

Spectrum: C:\GANAAS\SPECT\ZB012.SPE
Fitted by: GAMANAL

Spectrum EXAMPLE.SPE
Ch# 5046 Ener 1061.13   706. counts

Ener calib: 2.720e+00 2.50E-01 -2.15E-08
Number of peaks selected: 6
>>PEAK_SEL 00.99 122.06 356.01 661.64 1115.54 1036.13

Peak selection for calibration

Spectrum: C:\GANAAS\SPECT\EXAMPLE.SPE
Fitted by: GAMANAL

Channel 290   Counts   5753.00   Energy   75.10

Fit of Multiplet

GANAAS Efficiency plot : Dual power + exponential   20-2000 keV
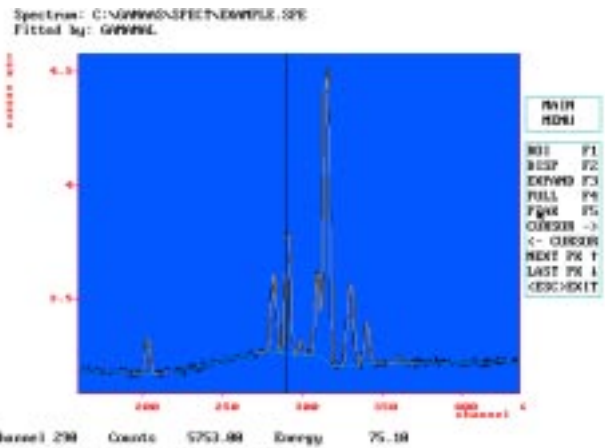
Press any key or click mouse to exit
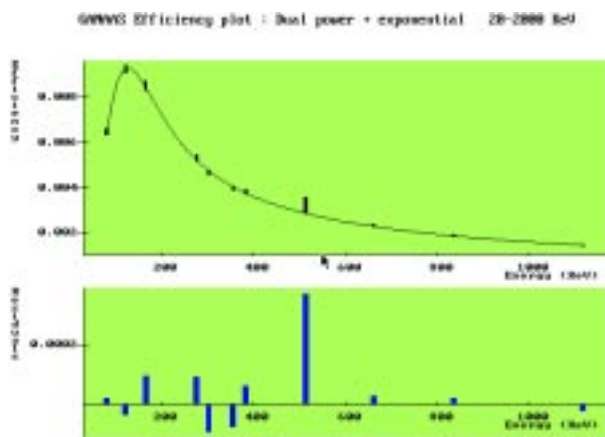
Efficiency Calibration

G A N A A S
LIBRARY DIRECTED QUANTITATIVE ACTIVITY REPORT
short report format

Processed file   C:\GANAAS\SPECT\EXAMPLE.GSR

Nuclide	activity (Bq)		error
Ba133	580 +		4.83
Ba133	635 +		4.16
Tm170	< 1.04e+005	=	Detection Limit
Ta182	< 2.14e+006	=	Detection Limit
Tb160	< 5.64e+006	=	Detection Limit
Pu239	< 2.13e+004	=	Detection Limit
Co57	< 586	=	Detection Limit
Eu152	2.39e+004+		4.75e+003
Ir192	< 1.16e+006	=	Detection Limit
Sr85	< 1.48e+007	=	Detection Limit
Cs137	1.33e+003+		5.55
Mn54	< 142	=	Detection Limit
Co60	< 2.39	=	Detection Limit
K40	942	+	15.4

SPECTRUM ANALYSIS RESULTS
SPECTRUM IDENTIFICATION:
DATE COLLECTED: 10-31-1990 10:16:00
LIVE TIME [s]: 50400 REAL TIME [s]: 50469
CAL PARAMETER
ENERGY: $2.719e+000+2.496e-001xch\#-2.154e-008xch\#^2$
FWHM: $3.007e-001+1.841e-003xE+0.000e+000xE^2$

FITTED BY: GAMANAL

PEAK #	CHANNEL	FWHM (keV)	ENERGY (keV)	AREA [counts]		QUALITY OF FIT
1	52.91	0.569	15.92	4468 ±	1074	67.00
2	56.04	0.569	16.71	2467 ±	570	13.00
3	130.91	0.656	35.40	516 ±	205	1.00
4	202.98	0.734	53.38	2114 ±	271	1.00
5	282.01	0.759	73.11	7348 ±	290	1.00
6	290.68	0.744	75.27	14662 ±	285	1.00
7	299.06	0.744	77.36	876 ±	233	1.00
8	309.30	0.696	79.92	7148 ±	241	1.00
9	314.86	0.696	81.31	93473 ±	391	1.00
10	330.12	0.973	85.12	8823 ±	408	1.00
11	340.49	0.859	87.70	3274 ±	232	1.00
12	361.03	0.816	92.83	445 ±	228	1.00
13	479.48	0.744	122.39	84576 ±	492	1.00
14	514.75	0.582	131.19	327 ±	209	1.00
15	536.74	0.786	136.68	10716 ±	368	1.00
16	632.88	0.826	160.68	2165 ±	236	1.00
17	653.85	0.804	165.91	18189 ±	295	1.00

calculations, in the second stage, improved by using a standard for calibration.

UTILITIES: two library managers are provided. The nuclide library is used in spectrum analysis and for calculation of activity. The NAA library is more complex and is used for quantitive analysis and calculation of concentrations.

For getting familiar with GANAAS sample spectra are included which can be easily analyzed. The user familiarizes himself with the operation of the program. The results are shown in the operating manual and enable the user to immediately see possible errors he made.

Spectra and results can be viewed on screen in sharp, crisp displays.

Other analysis programs available:

QXAS: Quantitative X-ray analysis program

POSFIT: Positron annihilation fitting procedure.

and more to be announced shortly.