Portable Detectors Experimental Information

This file contains information about the reactor pulse and counting scheme used to collect mixed fission product spectra with portable detectors.

- For more information on sample preparation and reactor information, please see the "Experimental and Data Analysis" document.
- Portable detector data for a Canberra Falcon, Ortec Detective, and Ortec MicroDetective were collected for a pulse of U-235 under a thermal neutron spectrum. Portable detector data can be found in the U-235_thermal folder.
- Portable detector backgrounds and calibration files are in the "Detector background files" folder, under "Portable detectors." Note that no background was collected at the time of the experiment for the MicroDetective and data were analyzed using the background from the Detective detector that was collected. The two crystals are slightly different sizes (67 mm x 52 mm for the Detective, and 50 mm x 30 mm for the MicroDetective), but relative to the high specific activity of the fission product samples the difference in the background is expected to be negligible.

Sample mass: 0.05630 mg ^{235}U from NBL CRM U970

Pulse time: 12/8/2009 10:50:43

Detectors:

Canberra Falcon

Ortec MicroDetective

Ortec Detective

Flux wires:

Cu (4.563 mg) , Au-Al alloy (2.64 mg), Co-V alloy (1.938 mg), Fe (129.7 mg), Ti (11.59 mg)

Thermal Neutron fluence <0.5 eV: 1.85×10^{14} n/cm^2 (±2%)

Epithermal Neutron Fluence 0.5 eV to 1 MeV: 4.79×10^{13} n/cm^2 (±10%)

Fast neutron fluence >1 MeV: 2.69×10^{13} n/cm^2 (±9%)

Spectra Collected

Detector	Distance (cm)	Time/Date of Acquisition Start	Time Elapsed since Pulse (hh:mm)	Live Time (s)
MicroDetective	60	12/8/2009 11:04:11	00:13	267.5

MicroDetective	60	12/8/2009 11:09:43	00:19	273.9
MicroDetective	60	12/8/2009 11:15:10	00:24	278.2
MicroDetective	40	12/8/2009 11:21:59	00:31	532.4
MicroDetective	40	12/8/2009 11:32:45	00:42	547.5
MicroDetective	40	12/8/2009 11:43:07	00:52	557.4
MicroDetective	20	12/8/2009 11:53:57	1:03	765.6
MicroDetective	20	12/8/2009 12:09:30	1:19	790.3
MicroDetective	20	12/8/2009 12:25:14	1:35	810.4
MicroDetective	20	12/8/2009 12:41:49	1:51	1662.2
MicroDetective	10	12/8/2009 13:14:22	2:24	1499.9
MicroDetective	10	12/8/2009 13:44:53	2:54	1563.1
MicroDetective	10	12/8/2009 14:16:34	3:26	3249.8
MicroDetective	10	12/8/2009 15:18:30	4:28	3347.5
MicroDetective	10	12/8/2009 16:19:34	5:29	3413.1
MicroDetective	4	12/8/2009 17:30:13	6:40	59289.9
Detective	60	12/8/2009 11:04:14	00:14	266.6
Detective	60	12/8/2009 11:09:39	00:19	272.9
Detective	60	12/8/2009 11:15:14	00:25	277.4
Detective	40	12/8/2009 11:22:02	00:31	530.5
Detective	40	12/8/2009 11:32:42	00:42	545.8
Detective	40	12/8/2009 11:43:11	00:52	556.3
Detective	20	12/8/2009 11:54:12	1:03	780.4
Detective	20	12/8/2009 12:09:27	1:19	804.1
Detective	20	12/8/2009 12:25:17	1:35	821.8
Detective	20	12/8/2009 12:41:52	1:51	1680.1
Detective	10	12/8/2009 13:14:20	2:24	1593.8
Detective	10	12/8/2009 13:44:52	2:54	1637.8
Detective	10	12/8/2009 14:16:37	3:26	3360.0
Detective	10	12/8/2009 15:18:27	4:28	3426.9
Detective	10	12/8/2009 16:19:30	5:29	3464.0
Detective	4	12/8/2009 17:30:10	6:40	59452.2
Falcon	60	12/8/2009 11:01:46	00:11	300.0
Falcon	60	12/8/2009 11:07:55	00:17	300.0
Falcon	60	12/8/2009 11:13:34	00:23	300.0
Falcon	60	12/8/2009 11:19:05	00:28	300.0
Falcon	40	12/8/2009 11:25:58	00:35	600.0
Falcon	40	12/8/2009 11:36:50	00:46	600.0
Falcon	40	12/8/2009 11:47:49	00:57	600.0
Falcon	20	12/8/2009 11:58:42	1:08	900.0
Falcon	20	12/8/2009 12:15:26	1:25	756.5
Falcon	20	12/8/2009 12:49:45	1:59	1737.2
Falcon	10	12/8/2009 13:17:58	2:27	1655.0
Falcon	10	12/8/2009 13:48:40	2:57	1686.3
Falcon	10	12/8/2009 14:20:39	3:30	3432.4
Falcon	10	12/8/2009 15:22:16	4:33	3478.5
Falcon	10	12/8/2009 16:23:16	5:34	3504.4

Falcon	4	12/8/2009 17:33:52	6:43	61254.3