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ATOMIC SUBSHELL PHOTOIONIZATION CROSS SECTIONS AND ASYMMETRY PARAMETERS: $1 \leqslant Z \leqslant 103$

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Atomic subshell photoionization cross sections and asymmetry parameters are calculated with the Hartree–Fock–Slater one-electron central potential model (dipole approximation) for all elements Z = 1–103. The cross-section results are plotted for all subshells in the energy region 0–1500 eV, and cross sections and asymmetry parameters are tabulated for selected energies in the region 10.2–8047.8 eV. In addition, more detailed graphs are given for the $4d$ (Z = 39–71) and $5d$ (Z = 64–100) subshell cross sections in the vicinity of the Cooper minimum. These data should be particularly useful for work based on spectroscopic investigations of atomic subshells using synchrotron radiation and/or discrete line sources.

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CONTENTS

INTRODUCTION

Photoabsorption cross sections have been studied extensively, for many years both experimentally and theoretically. Detailed tabulations[1–4] are available over large energy regions. In the vacuum ultraviolet and soft x-ray spectral regions, however, much less attention has been paid to the energy dependence of photoionization cross sections of the atomic subshells. From a spectroscopic point of view this is a very important spectral region[5] and knowledge of the energy dependence of subshell photoionization cross sections is of great value and necessity for a large number of spectroscopic experiments on atomic and molecular gases, physi- and chemisorbed atoms and molecules, solids, and liquids.

The advent of synchrotron radiation[6] (with its continuous spectral distribution) as a radiation source has greatly enhanced the ability to determine the energy dependence of subshell photoionization cross sections experimentally.[7] In turn, many synchrotron radiation experiments are critically dependent on knowledge of ionization probabilities of electrons in different subshells. This paper is intended to give convenient access to these partial cross sections in the energy region 0–1500 eV for all subshells and for all elements. In addition, the cross sections are tabulated for the most common photon energies available with discrete line sources and for a few intermediate photon energies typically used in synchrotron radiation research.

This paper is an extention of work previously published by S. M. Goldberg *et al.*[8] The major difference is that the theoretical Hartree–Fock–Slater binding energies are used to calculate the initial wave functions instead of experimental ones used in Ref. 8. The photoionization cross sections are calculated from the wave function data of Herman and Skillman[9] by using the Manson–Cooper algorithms.[10,11] Calculations were done within the dipole length, velocity, and acceleration approximations. In most cases the results of these approximations agree to within 1%. Therefore results are presented only for the dipole length approximation.

Detailed comparisons between the theoretically calculated and experimentally determined cross sections are available over an extended energy region in only a few cases, and are beyond the scope of this paper. The reader is referred to the literature for details.[12,13] Recently, attention has also been paid to the extent to which chemisorption and solid-state effects may cause deviation from the atomic behavior of cross sections.[14,15] Many-electron effects can be of importance (in some cases the dominant mechanism) in excitation processes of certain subshells. Again the reader is referred to the literature for a detailed discussion of the breakdown of the one-electron approximation.[16,17]

Subshell photoionization cross sections and asymmetry parameters have also been tabulated by Band et al.[18] for 14 discrete photon energies in the range 132.3 to 4509 eV. Their results are based on a relativistic calculation using Dirac–Slater potentials and include all of the multipoles of the radiation field; it is thus a more advanced theoretical treatment than the one given here. The work of Band et al. takes account of the j splitting of subshells, i.e., spin–orbit split peaks, which is not available within the framework of the calculations pre-

sented in this paper. The present work provides data for energies below 132.3 eV and in addition contains cross-section graphs over continuous spectral regions from 0 to 1500 eV. Moreover, data are presented with a specific orientation toward synchrotron radiation applications. The reader should take note that in the paper by Band et al. subshell cross sections are given for completely filled shells whereas the results here are for actual occupation numbers, as indicated on the plots. Direct comparisons of the subshell photoionization cross sections between these two calculations show that the simpler method used here still yields very good agreement with the results of Band et al. in the overlapping photon energy range, i.e., above 132 eV.

Summary of the Theoretical Model

This section gives a short introduction to the theoretical background of the numerical calculations. The most relevant equations are summarized briefly to facilitate a comparison between the model used here and other calculations. The readers are referred to the references mentioned in the text below for more details. The atomic subshell photoionization cross section in the dipole length approximation, after summing over final states and averaging over initial states, can be expressed as[10,11,19]

$$\sigma_{nl}(h\nu) = \frac{4\pi^2 \alpha_0 a_0^2}{3} \frac{N_{nl}}{2l+1} h\nu[lR^2_{l-1}(\epsilon_{kin}) + (l+1)R^2_{l+1}(\epsilon_{kin})], \quad (1)$$

where σ is in cm^2, α_0 is the fine-structure constant, a_0 is the Bohr radius, N_{nl} is the number of electrons in the nl subshell, $R_{l\pm1}(\epsilon_{kin})$ are one-electron radial dipole matrix elements between the initial discrete energy state ϕ_{nl} and the final continuum energy state $\phi_{\epsilon,l'}$, and $\epsilon_{kin} = h\nu - E_{nl}$ (in rydbergs) is the kinetic energy of the ionized electron (the difference between the photon energy and the binding energy of the electron in the nlth subshell). The matrix element $R_{l\pm1}$ can be expressed in different dipole approximations. In the case of the dipole length approximation

$$R_{l\pm1} = \int_0^\infty P_{nl}(r) r P_{\epsilon,l\pm1}(r) dr, \quad (2)$$

where $P_{nl}(r)/r$ and $P_{\epsilon,l\pm1}(r)/r$ are the bound (initial) and continuum (final) single-particle radial wave functions. In the dipole velocity approximation we have

$$R_{l\pm1} = \frac{2}{\epsilon - E_{nl}} \int_0^\infty P_{nl}(r)\left[\frac{d}{dr} \pm \frac{2l+1\pm1}{2r}\right] P_{\epsilon,l\pm1}(r) dr, \quad (3)$$

and the dipole acceleration approximation form is

$$R_{l\pm1} = \frac{4}{(\epsilon - E_{nl})^2} \int_0^\infty P_{nl}(r) \frac{dV_{nl}(r)}{dr} P_{\epsilon,l\pm1}(r) dr. \quad (4)$$

If the incident photon is linearly polarized, as is the case for synchrotron radiation, the subshell photoionization cross section can be approximated by[19-21]

$$\frac{d\sigma_{nl}(h\nu)}{d\Omega} = \frac{\sigma_{nl}(h\nu)}{4\pi}[1 + \beta_{nl}(h\nu)P_2(\cos\gamma)], \quad (5)$$

where $P_2(\cos\gamma) = \frac{1}{2}(3\cos^2\gamma - 1)$, $\beta_{nl}(h\nu)$ is the energy-dependent asymmetry parameter of the subshell ϕ_{nl}, and γ is the angle between polarization vector and photoelectron direction. This calculation is based on the Hartree–Fock–Slater approximation which assumes that the initial state of an electron is in a central field potential and thus the radial part of one-electron Schrödinger equation can be simplified as

$$\left(\frac{d^2}{dr^2} + V(r) + E_{nl} - \frac{l(l+1)}{r^2}\right) P_{nl}(r) = 0 \quad (6)$$

for an electron in the nl shell with binding energy E_{nl} (negative), wherein $V(r)$ is the sum of the Coulomb potential and the free electron exchange potential $-6((3/8\pi)\rho(r))^{1/3}$ with $\rho(r)$ the charge density. In the Manson–Cooper algorithm,[11] the final state is approximated by the same potential field except the electron is removed to a continuum state with positive kinetic energy ϵ_{kin}. Thus the Schrödinger equation becomes

$$\left(\frac{d^2}{dr^2} + V(r) + \epsilon_{kin} - \frac{l'(l'+1)}{r^2}\right) P_{\epsilon,l'}(r) = 0 \quad (7)$$

with the same potential $V(r)$ and $l' = l \pm 1$ by the conservation of angular momentum. Obviously, this model completely ignores the reorganization of the atomic system after photoionization.

Accuracy of the Numerical Calculations

The accuracy of the results presented in this paper can be discussed in two aspects: the model itself and the numerical calculation. Since there have been extensive discussions of various theoretical models in the literature,[9,11,12,20] only the accuracy, or consistency, of the numerical calculations is discussed here. The initial radial wave functions of an atom can be obtained by solving the Hartree–Fock equations in Slater's central field approximation. For the work reported in this paper we used the program developed by Herman and Skillman[9] to obtain the binding energy and wave function of each atomic orbital. The final-state wave functions are solved numerically by the Manson–Cooper algorithm.[10,11] With the initial- and final-state wave functions, the radial matrix elements in different dipole approxi-

mations can be calculated and therefore the photoionization cross sections and the asymmetry parameters can be solved. If the exact initial wave functions (and thus the self-consistent binding energies) can be solved analytically, the partial photoionization cross sections and asymmetry parameters in different approximations will be identical. Conversely in the numerical calculation, the deviations of these values calculated via different approximations can be treated as an indication of the self-consistency of the entire calculation. This is the reason that we have chosen the theoretical binding energies instead of the measured ones as in the previous work by Goldberg et al.[8] and Band et al.[18] Useful recent compilations of experimentally determined binding energies are available in the literature.[22-25] The self-consistent theoretical binding energies give deviations lower than 1% between the dipole length, velocity, and acceleration approximations in all core-level orbital partial photoionization cross sections. For most valence orbitals, the deviations are within 10% if the kinetic energies are greater than 100 eV. The worst cases are the photoionization cross sections of orbitals 6*s* and 7*s* in the dipole acceleration approximations with deviations of 30% from the dipole length and velocity approximations. Because the deviations are less than 1% in most cases, only the results of the dipole length approximation are presented here. A few test calculations were done by using the experimentally determined binding energies as input. In those cases there were typically 10–20% deviations between the dipole length, velocity, and acceleration approximations. As mentioned earlier, this was the main reason why we chose the theoretical binding energies instead of the measured ones. As for the comparison with the results of Band et al., it is limited to photon energies above 132 eV because of the lack of data points below 132 eV in their paper. In a few specific cases, we did a direct comparison between the results, e.g., for the Rb 3*d* and Au 4*f* subshells, and found good agreement for both the absolute values of the cross sections and the shape of the curve. The positions of the Cooper minimum were also checked for a few 4*d* subshell partial photoionization cross sections, e.g., Cs, Xe, and Ba, and also found to be in good agreement. The simple calculation given here thus appears to be adequate for most spectroscopic applications. This may not be too surprising since Band et al. used the same physical model in their relativistic treatment.

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EXPLANATION OF TABLES AND GRAPHS

TABLE I. Atomic Subshell Photoionization Cross Sections, $1 \leq Z \leq 103$

TABLE II. Atomic Subshell Asymmetry Parameters, $5 \leq Z \leq 103$

The partial photoionization cross sections and asymmetry parameters are tabulated at most used discrete line sources and some intermediate photon energies that are useful in synchrotron radiation research: 10.2 (H), 16.7 (Ne_I), 21.2 (He_I), 26.8 (Ne_{II}), 40.8 (He_{II}), 132.3 (Y $M\zeta$), 151.4 (Zr $M\zeta$), 1041.0 (Na $K\alpha$), 1253.6 (Mg $K\alpha$), 1486.6 (Al $K\alpha$), and 8047.8 (Cu $K\alpha$) eV. The tables are arranged from the left-hand side on in the following way:

Column 1	Atomic number
Column 2	Element symbol
Column 3	Designation of subshell occupied in the ground state
Column 4	Hartree–Fock–Slater binding energy of each subshell
Columns 5–20	The top row in both tables gives the photon energies, in eV.
	Table I: Atomic subshell photoionization cross sections in Mb = 10^6 barns (see Eq. (1)). The subshell occupation numbers of the ground state as given on Graph I have been taken account of in these cross sections.
	Table II: Asymmetry parameters of the subshells (see Eq. (5)). Note that the asymmetry parameter for all s orbitals equals 2 independent of energy and is therefore not listed.

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

GRAPH II. Photoionization Cross Section for the $4d$ ($39 \leq Z \leq 71$) and $5d$ ($64 \leq Z \leq 100$) Subshells near the Cooper Minimum

Abscissa	Incident photon energy in eV
Ordinate	Atomic subshell photoionization cross section in Mb = 10^6 barn (see Eq. (1))

Each partial photoionization cross section is plotted with different symbols from the threshold up to 1500 eV. The subshell designation is marked at the end of each curve. Listed below each figure are the ground-state electron configuration and the Hartree–Fock–Slater binding energies. Note that some other alternative ground-state configurations discussed in Ref. 7 are not included here.

TABLE I. Atomic Subshell Photoionization Cross Sections, $1 \leq Z \leq 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
1	H	1s	13.6		3.632	1.888	.9707	.2892	.38E-1	.82E-2	.51E-2	.21E-2	.61E-3	.71E-4	.29E-4	.13E-4	.46E-5	.20E-5	.21E-6
2	He	1s	23.4				6.440	2.777	.5955	.1691	.1190	.55E-1	.17E-1	.20E-2	.86E-3	.33E-3	.18E-3	.11E-3	.24E-6
3	Li	1s	59.8						2.552	.8093	.5707		.91E-1	.12E-1	.52E-2	.23E-2	.13E-2	.79E-3	.41E-5
	Li	2s	5.5	1.234	.6905	.4806	.3145	.1379	.31E-1	.93E-2	.69E-2	.36E-2	.13E-2	.15E-3	.81E-4	.35E-4	.17E-4	.86E-5	.26E-6
4	Be	1s	118.3							1.791	1.386	.7359	.2590	.38E-1	.16E-1	.77E-2	.44E-2	.26E-2	.13E-4
	Be	2s	8.2	2.027	1.896	1.535	1.161	.6471	.1896	.62E-1	.44E-1	.23E-1	.84E-2	.12E-2	.61E-3	.32E-3	.15E-3	.87E-4	.43E-7
5	B	1s	195.5									1.335	.5403	.88E-1	.39E-1	.18E-1	.10E-1	.66E-2	.36E-4
	B	2s	12.6		1.716	1.740	1.536	1.049	.3817	.1382	.1026	.54E-1	.20E-1	.36E-2	.17E-2	.67E-3	.49E-3	.28E-3	.14E-5
	B	2p	6.7	6.801	3.048	1.934	1.180	.4227	.62E-1	.13E-1	.83E-2	.35E-2	.94E-3	.87E-4	.31E-4	.97E-5	.57E-5	.24E-5	.18E-6
6	C	1s	290.9									.8591	.1680	.77E-1	.37E-1	.22E-1	.13E-1	.80E-4	
	C	2s	17.5			1.230	1.378	1.170	.5440	.2252	.1714	.96E-1	.38E-1	.73E-2	.33E-2	.16E-2	.10E-2	.66E-3	.59E-5
	C	2p	9.0	12.72	8.324	6.128	4.229	1.875	.3266	.78E-1	.47E-1	.19E-1	.60E-2	.75E-3	.31E-3	.12E-3	.56E-4	.10E-4	.64E-5
7	N	1s	404.6										.2763	.1329	.65E-1	.39E-1	.24E-1	.15E-3	
	N	2s	23.1				.8965	1.086	.6528	.3035	.2383	.1404	.60E-1	.12E-1	.60E-2	.30E-2	.19E-2	.11E-2	.74E-5
	N	2p	11.5		11.21	9.688	7.731	4.351	.9605	.2449	.1671	.73E-1	.20E-1	.20E-2	.79E-3	.31E-3	.18E-3	.72E-4	.77E-6
8	O	1s	536.8										.4119	.2044	.1042	.63E-1	.40E-1	.27E-3	
	O	2s	29.2					.8342	.6901	.3677	.2984	.1831	.83E-1	.18E-1	.92E-2	.47E-2	.29E-2	.19E-2	.16E-4
	O	2p	14.2		10.43	10.67	9.772	6.816	2.064	.5772	.4037	.1836	.53E-1	.61E-2	.22E-2	.89E-3	.50E-3	.24E-3	.38E-6
9	F	1s	687.6											.2923	.1525	.94E-1	.60E-1	.45E-3	
	F	2s	35.8					.5185	.6742	.4167	.3435	.2231	.1087	.25E-1	.13E-1	.69E-2	.43E-2	.28E-2	.20E-4
	F	2p	17.0			9.305	9.876	8.417	3.508	1.121	.7936	.3808	.1183	.14E-1	.53E-2	.22E-2	.11E-2	.68E-3	.76E-6
10	Ne	1s	857.0												.2093	.1328	.86E-1	.70E-3	
	Ne	2s	43.1					.6046	.4390	.3751	.2538	.1304	.33E-1	.17E-1	.97E-2	.62E-2	.40E-2	.38E-4	
	Ne	2p	20.0			6.514	8.544	8.929	4.991	1.862	1.361	.6791	.2276	.28E-1	.11E-1	.48E-2	.25E-2	.13E-2	.29E-5
11	Na	1s	1062.2													.1781	.1165	.10E-2	
	Na	2s	64.3						.6029	.4967	.4278	.3004	.1609	.44E-1	.24E-1	.13E-1	.85E-2	.58E-2	.66E-4
	Na	2p	36.3					4.292	6.801	2.741	2.051	1.074	.3747	.50E-1	.20E-1	.86E-2	.46E-2	.25E-2	.68E-5
	Na	3s	5.1	.1081	.1180	.1014	.77E-1	.46E-1	.20E-1	.98E-2	.85E-2	.56E-2	.28E-2	.63E-3	.38E-3	.23E-3	.14E-3	.97E-4	.32E-5
12	Mg	1s	1291.9														.1524	.14E-2	
	Mg	2s	89.1							.6322	.4800	.3497	.1960	.56E-1	.31E-1	.17E-1	.11E-1	.77E-2	.85E-4
	Mg	2p	56.4						6.796	3.827	2.902	1.568	.5675	.81E-1	.34E-1	.14E-1	.77E-2	.46E-2	.13E-4
	Mg	3s	6.9	.22E-1	.2454	.2730	.2550	.1907	.88E-1	.41E-1	.33E-1	.21E-1	.10E-1	.29E-2	.16E-2	.88E-3	.58E-3	.38E-3	.99E-5
13	Al	2s	118.6							.5224	.5051	.3927	.2292	.70E-1	.39E-1	.22E-1	.15E-1	.10E-1	.13E-3
	Al	2p	80.9							4.809	3.841	2.176	.8226	.1230	.51E-1	.22E-1	.12E-1	.72E-2	.17E-4
	Al	3s	10.1		.2191	.3431	.3858	.3339	.1572	.71E-1	.58E-1	.37E-1	.19E-1	.50E-2	.29E-2	.16E-2	.11E-2	.78E-3	.12E-4
	Al	3p	4.9	1.938	.1672	.88E-1	.1017	.1230	.65E-1	.27E-1	.20E-1	.11E-1	.46E-2	.64E-3	.36E-3	.10E-3	.72E-4	.59E-4	.98E-7
14	Si	2s	150.8								.5043	.4241	.2628	.84E-1	.48E-1	.28E-1	.18E-1	.13E-1	.18E-3
	Si	2p	108.2							4.892	4.553	2.857	1.132	.1776	.76E-1	.34E-1	.19E-1	.11E-1	.30E-4
	Si	3s	13.6		.94E-1	.2880	.4124	.4232	.2172	.1017	.84E-1	.53E-1	.26E-1	.76E-2	.43E-2	.24E-2	.16E-2	.10E-2	.16E-4
	Si	3p	6.5	13.09	1.157	.3269	.2383	.3286	.2160	.94E-1	.71E-1	.42E-1	.16E-1	.28E-2	.12E-2	.53E-3	.35E-3	.17E-3	.76E-6
15	P	2s	186.2									.4228	.2922	.99E-1	.57E-1	.34E-1	.23E-1	.16E-1	.23E-3
	P	2p	138.5								4.758	3.489	1.501	.2460	.1081	.49E-1	.27E-1	.16E-1	.47E-4
	P	3s	17.1			.1714	.3491	.4538	.2694	.1352	.1087	.69E-1	.35E-1	.10E-1	.56E-2	.32E-2	.22E-2	.14E-2	.33E-4
	P	3p	8.3		5.221	1.232	.4245	.5090	.4275	.2059	.1627	.95E-1	.39E-1	.72E-2	.30E-2	.15E-2	.88E-3	.50E-3	.46E-5
16	S	2s	224.6										.3134	.1141	.67E-1	.40E-1	.27E-1	.19E-1	.30E-3
	S	2p	171.8									3.799	1.920	.3315	.1475	.67E-1	.38E-1	.22E-1	.66E-4
	S	3s	20.8				.2482	.4493	.3150	.1637	.1341	.86E-1	.44E-1	.12E-1	.72E-2	.43E-2	.28E-2	.19E-2	.34E-4
	S	3p	10.3		18.22	4.333	.9827	.6028	.6814	.3610	.2896	.1716	.74E-1	.13E-1	.65E-2	.29E-2	.17E-2	.10E-2	.48E-5
17	Cl	2s	266.2										.3355	.1291	.78E-1	.47E-1	.32E-1	.22E-1	.37E-3
	Cl	2p	208.2										2.321	.4330	.1951	.91E-1	.52E-1	.31E-1	.97E-4
	Cl	3s	24.7				.4020	.3493	.1925	.1595	.1048	.54E-1	.15E-1	.91E-2	.52E-2	.36E-2	.25E-2	.55E-4	
	Cl	3p	12.3		47.39	13.84	2.774	.6470	.9231	.5489	.4528	.2795	.1233	.23E-1	.11E-1	.52E-2	.33E-2	.19E-2	.64E-5
18	Ar	2s	311.1										.1439	.88E-1	.54E-1	.37E-1	.26E-1	.47E-3	
	Ar	2p	247.7										2.752	.5526	.2533	.1193	.69E-1	.41E-1	.13E-3
	Ar	3s	28.7					.3353	.3698	.2157	.1813	.1213	.63E-1	.18E-1	.10E-1	.63E-2	.43E-2	.30E-2	.59E-4
	Ar	3p	14.5			38.01	8.091	.7340	1.136	.7629	.6309	.4058	.1900	.38E-1	.18E-1	.93E-2	.51E-2	.34E-2	.19E-4
19	K	2s	368.2											.1577	.98E-1	.61E-1	.43E-1	.30E-1	.58E-3
	K	2p	299.4										3.177	.6920	.3207	.1534	.89E-1	.53E-1	.19E-3
	K	3s	40.2						.4179	.2551	.2145	.1454	.77E-1	.23E-1	.13E-1	.79E-2	.54E-2	.38E-2	.85E-4
	K	3p	23.6				19.68	1.148	1.294	.9509	.8037	.5358	.2560	.54E-1	.26E-1	.13E-1	.78E-2	.49E-2	.24E-4
20	Ca	2s	430.3											.1704	.1095	.69E-1	.49E-1	.35E-1	.72E-3
	Ca	2p	356.2											.8482	.3999	.1933	.1132	.68E-1	.26E-3
	Ca	3s	52.7						.4513	.2921	.2494	.1717	.92E-1	.28E-1	.16E-1	.99E-2	.68E-2	.47E-2	.10E-3
	Ca	3p	33.8					1.782	1.375	1.120	.9651	.6639	.3289	.72E-1	.35E-1	.18E-1	.11E-1	.69E-2	.36E-4
	Ca	4s	5.4	.1117	.2074	.1976	.1776	.1267	.55E-1	.28E-1	.22E-1	.14E-1	.76E-2	.21E-2	.13E-2	.78E-3	.49E-3	.31E-3	.89E-6
21	Sc	2s	489.4											.1828	.1195	.76E-1	.54E-1	.39E-1	.85E-3
	Sc	2p	409.9											1.019	.4913	.2396	.1419	.86E-1	.35E-3
	Sc	3s	60.3						.4427	.3124	.2691	.1894	.1043	.32E-1	.18E-1	.11E-1	.78E-2	.55E-2	.12E-3
	Sc	3p	39.2						1.256	1.176	1.042	.7394	.3824	.90E-1	.45E-1	.23E-1	.14E-1	.89E-2	.50E-4
	Sc	4s	5.9	.68E-1	.1999	.1998	.1871	.1382	.61E-1	.30E-1	.24E-1	.16E-1	.88E-2	.24E-2	.14E-2	.84E-3	.63E-3	.46E-3	.14E-4
	Sc	3d	7.2		3.025	3.134	2.894	1.922	.5846	.1707	.1195	.53E-1	.15E-1	.16E-2	.58E-3	.22E-3	.10E-3	.53E-4	.16E-6
22	Ti	2s	551.3											.1953	.1289	.84E-1	.60E-1	.44E-1	.10E-2
	Ti	2p	466.4											1.202	.5931	.2930	.1746	.1069	.47E-3
	Ti	3s	67.8						.4308	.3282	.2845	.2046	.1146	.36E-1	.21E-1	.13E-1	.91E-2	.64E-2	.15E-3
	Ti	3p	44.6						1.090	1.190	1.083	.8011	.4332	.1074	.54E-1	.28E-1	.17E-1	.11E-1	.61E-4
	Ti	4s	6.2	.32E-1	.1816	.1951	.1851	.1427	.67E-1	.33E-1	.26E-1	.18E-1	.90E-2	.26E-2	.14E-2	.94E-3	.69E-3	.50E-3	.62E-5
	Ti	3d	8.5		4.377	5.074	5.221	4.012	1.472	.4662	.3318	.1552	.47E-1	.49E-2	.17E-2	.72E-3	.34E-3	.17E-3	.27E-6
23	V	2s	616.2												.1378	.91E-1	.66E-1	.48E-1	.11E-2
	V	2p	525.8											1.410	.7034	.3535	.2117	.1308	.59E-3
	V	3s	75.3						.4294	.3375	.2974	.2164	.1247	.40E-1	.24E-1	.14E-1	.10E-1	.73E-2	.17E-3
	V	3p	49.9						.9165	1.171	1.094	.8487	.4809	.1257	.64E-1	.33E-1	.21E-1	.13E-1	.80E-4
	V	4s	6.6	.67E-2	.1572	.1845	.1788	.1427	.69E-1	.34E-1	.28E-1	.19E-1	.98E-2	.32E-2	.19E-2	.10E-2	.76E-3	.51E-3	.11E-4
	V	3d	9.8		4.593	5.813	6.599	5.940	2.577	.9010	.6453	.3112	.97E-1	.10E-1	.40E-2	.15E-2	.85E-3	.42E-3	.50E-6

TABLE I. Atomic Subshell Photoionization Cross Sections, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
24	Cr	2s	677.9											.1465	.98E-1	.72E-1	.53E-1	.13E-2
	Cr	2p	582.0										1.645	.8235	.4205	.2540	.1577	.75E-3
	Cr	3s	77.7						.3267	.2961	.2204	.1310	.43E-1	.26E-1	.16E-1	.11E-1	.81E-2	.20E-3
	Cr	3p	50.2					.7094	1.071	1.039	.8462	.5077	.1415	.74E-1	.39E-1	.24E-1	.15E-1	.93E-4
	Cr	4s	5.9	.61E-2	.60E-1	.63E-1	.62E-1	.47E-1	.25E-1	.13E-1	.11E-1	.70E-2	.37E-2	.11E-2	.71E-3	.46E-3	.31E-3	.18E-3	.36E-5
	Cr	3d	6.5	7.399	8.829	9.230	9.453	8.540	4.047	1.566	1.161	.5837	.1900	.21E-1	.84E-2	.31E-2	.16E-2	.88E-3	.12E-5
25	Mn	2s	755.2											.1544	.1051	.77E-1	.57E-1	.15E-2
	Mn	2p	653.7											.9533	.4936	.3011	.1878	.95E-3
	Mn	3s	90.9						.3371	.3094	.2354	.1422	.48E-1	.29E-1	.18E-1	.12E-1	.91E-2	.22E-3
	Mn	3p	60.9					.6563	1.057	1.049	.8972	.5588	.1633	.87E-1	.46E-1	.29E-1	.19E-1	.12E-3
	Mn	4s	7.1	.19E-1	.1053	.1532	.1607	.1389	.73E-1	.36E-1	.31E-1	.20E-1	.11E-1	.33E-2	.19E-2	.11E-2	.92E-3	.58E-3	.14E-4
	Mn	3d	12.0		3.910	5.344	6.959	8.354	5.047	2.130	1.607	.8338	.2812	.34E-1	.13E-1	.52E-2	.26E-2	.14E-2	.20E-5
26	Fe	2s	829.3												.1115	.83E-1	.62E-1	.17E-2
	Fe	2p	722.2											1.107	.5723	.3529	.2216	.11E-2
	Fe	3s	98.9						.3289	.3082	.2425	.1495	.52E-1	.32E-1	.19E-1	.13E-1	.10E-1	.26E-3
	Fe	3p	66.6					.6409	.9655	.9979	.8951	.5869	.1829	.99E-1	.54E-1	.34E-1	.22E-1	.16E-3
	Fe	4s	7.4		.80E-1	.1349	.1495	.1350	.74E-1	.37E-1	.32E-1	.20E-1	.11E-1	.35E-2	.21E-2	.13E-2	.91E-3	.70E-3	.14E-4
	Fe	3d	13.1		3.576	4.833	6.497	8.751	6.181	2.904	2.219	1.201	.4247	.54E-1	.20E-1	.82E-2	.45E-2	.22E-2	.11E-5
27	Co	2s	906.7												.1178	.88E-1	.67E-1	.19E-2
	Co	2p	793.9											.8899	.6569	.4090	.2591	.14E-2
	Co	3s	107.2						.3196	.3035	.2471	.1560	.56E-1	.34E-1	.21E-1	.15E-1	.11E-1	.28E-3
	Co	3p	72.4					.7410	.8578	.9269	.8822	.6113	.2017	.1120	.61E-1	.39E-1	.26E-1	.18E-3
	Co	4s	7.7		.56E-1	.1158	.1378	.1309	.74E-1	.39E-1	.32E-1	.21E-1	.11E-1	.38E-2	.23E-2	.14E-2	.95E-3	.71E-3	.18E-4
	Co	3d	14.2			4.356	5.917	8.738	7.154	3.719	2.907	1.639	.6035	.80E-1	.31E-1	.12E-1	.67E-2	.37E-2	.54E-5
28	Ni	2s	987.3												.1232	.93E-1	.71E-1	.22E-2
	Ni	2p	868.8												.7513	.4691	.2998	.17E-2
	Ni	3s	115.6						.3125	.2956	.2498	.1617	.60E-1	.37E-1	.23E-1	.16E-1	.12E-1	.33E-3
	Ni	3p	78.3						.7440	.8420	.8578	.6313	.2189	.1235	.69E-1	.45E-1	.29E-1	.23E-3
	Ni	4s	7.9		.36E-1	.93E-1	.1295	.1299	.75E-1	.38E-1	.33E-1	.21E-1	.11E-1	.38E-2	.25E-2	.14E-2	.10E-2	.83E-3	.32E-4
	Ni	3d	15.2			3.984	5.398	8.357	7.877	4.487	3.638	2.106	.8065	.1142	.49E-1	.19E-1	.10E-1	.59E-2	.20E-4
29	Cu	2s	1063.3													.98E-1	.75E-1	.24E-2
	Cu	2p	939.1												.8603	.5345	.3438	.20E-2
	Cu	3s	117.5						.2955	.2812	.2424	.1627	.62E-1	.39E-1	.25E-1	.17E-1	.13E-1	.36E-3
	Cu	3p	77.7						.6064	.7167	.7960	.6257	.2319	.1338	.76E-1	.50E-1	.33E-1	.27E-3
	Cu	4s	6.9	.64E-1	.16E-1	.36E-1	.44E-1	.41E-1	.25E-1	.14E-1	.11E-1	.83E-2	.43E-2	.14E-2	.89E-3	.55E-3	.42E-3	.27E-3	.99E-5
	Cu	3d	10.1		6.449	7.553	8.190	9.934	8.712	5.139	4.441	2.595	1.040	.1513	.77E-1	.36E-1	.21E-1	.12E-1	.32E-3
30	Zn	2s	1158.1													.1036	.79E-1	.27E-2
	Zn	2p	1027.9												.7746	.6057	.3907	.24E-2
	Zn	3s	133.2							.2814	.2480	.1705	.66E-1	.42E-1	.27E-1	.19E-1	.14E-1	.39E-3
	Zn	3p	90.6						.5345	.6509	.7784	.6466	.2527	.1485	.86E-1	.56E-1	.37E-1	.31E-3
	Zn	4s	8.4		.78E-2	.57E-1	.1025	.1163	.72E-1	.40E-1	.34E-1	.23E-1	.12E-1	.43E-2	.23E-2	.16E-2	.11E-2	.78E-3	.24E-4
	Zn	3d	17.1			3.572	4.440	7.292	8.895	6.052	5.059	3.237	1.380	.2086	.87E-1	.40E-1	.21E-1	.12E-1	.47E-5
31	Ga	2s	1260.4														.83E-1	.30E-2
	Ga	2p	1124.2													.6851	.4412	.29E-2
	Ga	3s	152.9								.2546	.1792	.71E-1	.45E-1	.28E-1	.21E-1	.15E-1	.45E-3
	Ga	3p	107.4						.4834	.5886	.7559	.6645	.2751	.1636	.95E-1	.64E-1	.43E-1	.39E-3
	Ga	4s	11.4		.17E-2	.48E-1	.1183	.1704	.1085	.57E-1	.47E-1	.31E-1	.17E-1	.58E-2	.37E-2	.23E-2	.17E-2	.12E-2	.34E-4
	Ga	3d	27.8					3.626	8.393	6.685	5.719	3.797	1.686	.2744	.1150	.50E-1	.26E-1	.14E-1	.17E-4
32	Ge	2s	1367.4														.88E-1	.33E-2
	Ge	2p	1225.1													.7071	.4966	.34E-2
	Ge	3s	173.7								.2584	.1871	.76E-1	.48E-1	.31E-1	.22E-1	.16E-1	.50E-3
	Ge	3p	125.1						.4328	.5334	.7263	.6846	.2958	.1795	.1070	.71E-1	.48E-1	.44E-3
	Ge	4s	14.4			.22E-1	.1135	.1989	.1365	.71E-1	.60E-1	.40E-1	.22E-1	.77E-2	.47E-2	.29E-2	.19E-2	.15E-2	.46E-4
	Ge	3d	39.3					6.999	7.064	6.263	4.343	2.006	.3438	.1465	.64E-1	.34E-1	.19E-1	.28E-4
	Ge	4p	6.4	15.61	3.633	1.528	.6325	.1323	.39E-1	.30E-1	.27E-1	.21E-1	.14E-1	.49E-2	.28E-2	.16E-2	.11E-2	.74E-3	.69E-5
33	As	2s	1479.2														.86E-1	.35E-2
	As	2p	1330.9														.5581	.40E-2
	As	3s	195.6								.2489	.1945	.81E-1	.51E-1	.33E-1	.24E-1	.18E-1	.56E-3
	As	3p	144.0							.4709	.6914	.7022	.3186	.1960	.1179	.79E-1	.54E-1	.54E-3
	As	4s	17.4			.24E-2	.84E-1	.2085	.1598	.88E-1	.72E-1	.49E-1	.27E-1	.91E-2	.56E-2	.35E-2	.24E-2	.18E-2	.65E-4
	As	3d	52.0						4.717	7.088	6.578	4.871	2.357	.4227	.1827	.80E-1	.44E-1	.25E-1	.37E-4
	As	4p	7.9		9.345	3.856	1.509	.2949	.81E-1	.61E-1	.55E-1	.43E-1	.28E-1	.10E-1	.59E-2	.34E-2	.23E-2	.17E-2	.17E-4
34	Se	2p	1441.4														.5917	.46E-2
	Se	3s	218.7									.2010	.85E-1	.55E-1	.36E-1	.26E-1	.19E-1	.62E-3
	Se	3p	164.0								.6436	.7139	.3425	.2128	.1292	.88E-1	.60E-1	.64E-3
	Se	4s	20.3				.50E-1	.2065	.1810	.1022	.86E-1	.58E-1	.32E-1	.10E-1	.66E-2	.41E-2	.30E-2	.21E-2	.77E-4
	Se	3d	65.8						1.670	6.543	6.605	5.282	2.718	.5117	.2239	.99E-1	.55E-1	.31E-1	.49E-4
	Se	4p	9.5		20.18	8.057	3.089	.5578	.1353	.1005	.94E-1	.74E-1	.48E-1	.17E-1	.10E-1	.59E-2	.38E-2	.26E-2	.33E-4
35	Br	3s	243.0									.2096	.90E-1	.59E-1	.38E-1	.28E-1	.20E-1	.68E-3
	Br	3p	185.2								.6332	.7152	.3651	.2298	.1414	.97E-1	.67E-1	.74E-3
	Br	4s	23.4				.21E-1	.1898	.2013	.1179	.98E-1	.67E-1	.36E-1	.12E-1	.77E-2	.47E-2	.34E-2	.25E-2	.91E-4
	Br	3d	80.6							5.398	6.098	5.576	3.095	.6076	.2715	.1230	.67E-1	.39E-1	.73E-4
	Br	4p	11.2		38.63	15.57	5.697	.9650	.1968	.1520	.1392	.1103	.70E-1	.26E-1	.15E-1	.92E-2	.63E-2	.45E-2	.69E-4
36	Kr	3s	268.4									.2174	.96E-1	.63E-1	.41E-1	.30E-1	.22E-1	.74E-3
	Kr	3p	207.5									.7139	.3872	.2471	.1541	.1063	.74E-1	.86E-3
	Kr	4s	26.5					.1634	.2157	.1316	.1120	.76E-1	.42E-1	.13E-1	.88E-2	.54E-2	.39E-2	.29E-2	.10E-3
	Kr	3d	96.6							3.619	5.032	5.691	3.468	.7182	.3234	.1475	.83E-1	.47E-1	.82E-4
	Kr	4p	13.0		65.24	28.51	9.991	1.578	.2659	.2082	.1943	.1551	.99E-1	.36E-1	.22E-1	.13E-1	.95E-2	.63E-2	.91E-4
37	Rb	3s	302.1										.1017	.66E-1	.43E-1	.32E-1	.23E-1	.83E-3
	Rb	3p	237.9									.7089	.4092	.2654	.1666	.1162	.81E-1	.98E-3
	Rb	4s	35.5					.1672	.2432	.1547	.1297	.90E-1	.50E-1	.16E-1	.10E-1	.63E-2	.45E-2	.33E-2	.11E-3
	Rb	3d	120.7							.8665	3.317	5.469	3.816	.8343	.3826	.1770	.99E-1	.58E-1	.12E-3
	Rb	4p	20.1				15.91	2.300	.3413	.2633	.2441	.1955	.1280	.47E-1	.28E-1	.17E-1	.12E-1	.85E-2	.13E-3
38	Sr	3s	337.7										.1071	.70E-1	.46E-1	.34E-1	.25E-1	.91E-3
	Sr	3p	270.3									.7006	.4311	.2834	.1794	.1262	.89E-1	.11E-2
	Sr	4s	45.0						.2717	.1765	.1520	.1044	.57E-1	.19E-1	.11E-1	.74E-2	.53E-2	.39E-2	.14E-3
	Sr	3d	146.6								.4788	4.856	4.129	.9654	.4478	.2090	.1186	.69E-1	.14E-3
	Sr	4p	27.7					3.307	.4174	.3200	.2970	.2374	.1546	.56E-1	.35E-1	.21E-1	.14E-1	.10E-1	.14E-3
	Sr	5s	5.0	.20E-1	.91E-1	.1036	.96E-1	.76E-1	.37E-1	.18E-1	.15E-1	.10E-1	.55E-2	.18E-2	.97E-3	.60E-3	.43E-3	.30E-3	.23E-4
39	Y	3s	371.2										.1123	.74E-1	.49E-1	.36E-1	.27E-1	.98E-3
	Y	3p	300.5										.4525	.3011	.1929	.1363	.96E-1	.13E-2
	Y	4s	51.5						.2794	.1932	.1673	.1173	.65E-1	.21E-1	.13E-1	.84E-2	.60E-2	.45E-2	.15E-3
	Y	3d	170.5									3.522	4.382	1.108	.5186	.2447	.1400	.82E-1	.17E-3
	Y	4p	32.6					4.329	.4667	.3553	.3300	.2696	.1757	.65E-1	.41E-1	.24E-1	.17E-1	.12E-1	.17E-3
	Y	5s	5.5	.77E-2	.99E-1	.1116	.1162	.93E-1	.42E-1	.22E-1	.17E-1	.12E-1	.66E-2	.19E-2	.12E-2	.77E-3	.51E-3	.48E-3	.27E-4
	Y	4d	5.6	7.309	6.934	4.795	2.640	.5147	.18E-1	.43E-1	.43E-1	.37E-1	.21E-1	.53E-2	.26E-2	.12E-2	.72E-3	.45E-3	.99E-6

TABLE I. Atomic Subshell Photoionization Cross Sections, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
40	Zr	3s	405.4										.1174	.78E-1	.52E-1	.38E-1	.28E-1	.10E-2
	Zr	3p	331.4										.4727	.3183	.2068	.1464	.1049	.14E-2
	Zr	4s	57.6					.2794	.2072	.1804	.1294	.73E-1	.24E-1	.15E-1	.95E-2	.68E-2	.50E-2	.18E-3
	Zr	3d	194.8								.3690	4.525	1.259	.5960	.2849	.1633	.96E-1	.23E-3
	Zr	4p	37.1				5.183	.5182	.3864	.3610	.2981	.1974	.75E-1	.46E-1	.28E-1	.19E-1	.14E-1	.22E-3
	Zr	5s	5.9	.65E-3	.94E-1	.1139	.1219	.1024	.48E-1	.24E-1	.20E-1	.14E-1	.73E-2	.23E-2	.13E-2	.95E-3	.65E-3	.46E-3	.18E-4
	Zr	4d	7.0	9.527	14.21	12.18	7.616	1.739	.38E-1	.97E-1	.1027	.91E-1	.54E-1	.14E-1	.66E-2	.33E-2	.19E-2	.11E-2	.35E-5
41	Nb	3s	436.7										.1224	.82E-1	.55E-1	.41E-1	.30E-1	.11E-2
	Nb	3p	359.4										.4908	.3359	.2202	.1572	.1130	.16E-2
	Nb	4s	60.3					.2726	.2149	.1878	.1376	.79E-1	.26E-1	.16E-1	.10E-1	.74E-2	.54E-2	.20E-3
	Nb	3d	216.3									4.551	1.418	.6815	.3275	.1900	.1124	.28E-3
	Nb	4p	38.6					.5463	.3940	.3724	.3139	.2122	.82E-1	.51E-1	.31E-1	.22E-1	.15E-1	.24E-3
	Nb	5s	5.5	.71E-3	.36E-1	.40E-1	.44E-1	.38E-1	.20E-1	.10E-1	.86E-2	.62E-2	.31E-2	.11E-2	.58E-3	.42E-3	.24E-3	.18E-3	.77E-5
	Nb	4d	6.1	17.60	22.52	22.10	16.69	4.657	.79E-1	.1778	.1910	.1840	.1170	.30E-1	.15E-1	.79E-2	.46E-2	.26E-2	.10E-4
42	Mo	3s	472.3										.1269	.86E-1	.58E-1	.43E-1	.32E-1	.12E-2
	Mo	3p	391.6										.5069	.3533	.2335	.1683	.1211	.18E-2
	Mo	4s	66.0					.2727	.2249	.1982	.1469	.85E-1	.29E-1	.17E-1	.11E-1	.82E-2	.60E-2	.21E-3
	Mo	3d	242.0									4.361	1.588	.7731	.3748	.2186	.1303	.33E-3
	Mo	4p	42.5					.5983	.4100	.3913	.3346	.2306	.90E-1	.56E-1	.35E-1	.24E-1	.17E-1	.29E-3
	Mo	5s	5.7	.50E-6	.33E-1	.40E-1	.43E-1	.38E-1	.21E-1	.11E-1	.94E-2	.64E-2	.33E-2	.11E-2	.68E-3	.40E-3	.27E-3	.23E-3	.12E-4
	Mo	4d	7.2	15.26	23.49	26.27	23.96	8.492	.1530	.2234	.2544	.2574	.1722	.47E-1	.23E-1	.12E-1	.74E-2	.46E-2	.18E-4
43	Tc	3s	513.2										.1314	.90E-1	.61E-1	.45E-1	.34E-1	.13E-2
	Tc	3p	429.1										.5220	.3698	.2471	.1792	.1298	.21E-2
	Tc	4s	75.5					.2871	.2377	.2116	.1579	.93E-1	.32E-1	.19E-1	.12E-1	.89E-2	.66E-2	.25E-3
	Tc	3d	273.0									2.827	1.766	.8718	.4263	.2500	.1502	.40E-3
	Tc	4p	50.3					.6891	.4352	.4187	.3632	.2541	.1009	.62E-1	.39E-1	.27E-1	.20E-1	.35E-3
	Tc	5s	6.8	.30E-1	.64E-1	.1024	.1162	.1084	.59E-1	.30E-1	.24E-1	.17E-1	.90E-2	.29E-2	.17E-2	.10E-2	.85E-3	.58E-3	.22E-4
	Tc	4d	11.2		13.81	22.15	27.77	13.14	.2629	.2450	.2930	.3088	.2133	.60E-1	.30E-1	.15E-1	.98E-2	.60E-2	.20E-4
44	Ru	3s	546.3										.1352	.94E-1	.64E-1	.47E-1	.36E-1	.14E-2
	Ru	3p	458.8										.5346	.3859	.2602	.1899	.1387	.23E-2
	Ru	4s	77.2					.2667	.2353	.2145	.1620	.98E-1	.34E-1	.21E-1	.13E-1	.96E-2	.71E-2	.27E-3
	Ru	3d	296.1									.1898	1.948	.9758	.4827	.2836	.1717	.46E-3
	Ru	4p	50.6					.7311	.4285	.4156	.3681	.2648	.1078	.67E-1	.42E-1	.30E-1	.21E-1	.39E-3
	Ru	5s	6.0	.46E-2	.27E-1	.36E-1	.42E-1	.38E-1	.22E-1	.12E-1	.10E-1	.66E-2	.36E-2	.11E-2	.74E-3	.47E-3	.36E-3	.22E-3	.13E-4
	Ru	4d	9.3		19.25	25.63	31.28	20.59	.5878	.2847	.3560	.4064	.3059	.92E-1	.48E-1	.24E-1	.15E-1	.91E-2	.28E-4
45	Rh	3s	584.9										.1418	.97E-1	.67E-1	.50E-1	.38E-1	.15E-2
	Rh	3p	493.9										.5498	.4003	.2737	.2009	.1475	.26E-2
	Rh	4s	82.8						.2362	.2192	.1689	.1045	.36E-1	.22E-1	.14E-1	.10E-1	.76E-2	.28E-3
	Rh	3d	324.5										2.133	1.087	.5429	.3210	.1949	.55E-3
	Rh	4p	54.7					.8206	.4335	.4211	.3817	.2800	.1159	.73E-1	.46E-1	.32E-1	.23E-1	.43E-3
	Rh	5s	6.2	.98E-2	.24E-1	.34E-1	.40E-1	.37E-1	.23E-1	.12E-1	.10E-1	.68E-2	.38E-2	.12E-2	.74E-3	.51E-3	.34E-3	.23E-3	.11E-4
	Rh	4d	10.4		16.38	22.75	30.34	27.83	1.087	.2930	.3910	.4811	.3817	.1209	.63E-1	.33E-1	.20E-1	.12E-1	.63E-4
46	Pd	3s	619.8											.1010	.70E-1	.52E-1	.39E-1	.16E-2
	Pd	3p	525.4										.5612	.4144	.2869	.2118	.1564	.28E-2
	Pd	4s	84.2						.2326	.2164	.1731	.1087	.39E-1	.24E-1	.15E-1	.11E-1	.81E-2	.31E-3
	Pd	3d	349.3										2.314	1.205	.6073	.3617	.2197	.67E-3
	Pd	4p	54.6					.9215	.4227	.4139	.3845	.2887	.1228	.77E-1	.49E-1	.34E-1	.25E-1	.50E-3
	Pd	4d	8.0		22.15	26.05	30.36	32.52	2.056	.2886	.4067	.5551	.4789	.1600	.86E-1	.46E-1	.26E-1	.16E-1	.11E-3
47	Ag	3s	665.1											.1045	.72E-1	.54E-1	.41E-1	.17E-2
	Ag	3p	567.2										.5765	.4271	.2997	.2225	.1651	.31E-2
	Ag	4s	94.2						.2356	.2222	.1804	.1149	.42E-1	.26E-1	.16E-1	.12E-1	.88E-2	.34E-3
	Ag	3d	384.4										2.503	1.329	.6762	.4052	.2474	.78E-3
	Ag	4p	62.9					1.057	.4363	.4257	.3974	.3036	.1322	.84E-1	.54E-1	.38E-1	.27E-1	.56E-3
	Ag	4d	12.6		11.79	16.62	24.17	37.48	3.218	.2785	.4121	.6052	.5452	.1896	.1030	.55E-1	.33E-1	.21E-1	.91E-4
	Ag	5s	6.4	.27E-1	.17E-1	.30E-1	.37E-1	.35E-1	.22E-1	.12E-1	.10E-1	.70E-2	.40E-2	.13E-2	.80E-3	.50E-3	.35E-3	.29E-3	.13E-4
48	Cd	3s	712.8											.1080	.75E-1	.57E-1	.43E-1	.18E-2
	Cd	3p	611.4											.4396	.3120	.2335	.1740	.34E-2
	Cd	4s	105.4						.2402	.2289	.1882	.1211	.45E-1	.28E-1	.18E-1	.12E-1	.96E-2	.38E-3
	Cd	3d	421.8										2.700	1.457	.7495	.4519	.2776	.93E-3
	Cd	4p	72.3					1.183	.4517	.4400	.4116	.3213	.1432	.91E-1	.58E-1	.41E-1	.30E-1	.60E-3
	Cd	5s	7.7		.18E-1	.65E-1	.91E-1	.1003	.64E-1	.35E-1	.28E-1	.19E-1	.11E-1	.35E-2	.23E-2	.14E-2	.98E-3	.70E-3	.41E-4
	Cd	4d	18.3				13.33	36.91	4.856	.2743	.4080	.6479	.6060	.2238	.1233	.65E-1	.41E-1	.26E-1	.14E-3
49	In	3s	764.2											.1115	.78E-1	.59E-1	.45E-1	.19E-2
	In	3p	659.3											.4519	.3237	.2442	.1830	.38E-2
	In	4s	119.0						.2456	.2375	.1956	.1273	.48E-1	.30E-1	.19E-1	.14E-1	.10E-1	.39E-3
	In	3d	462.9										2.925	1.588	.8280	.5017	.3098	.10E-2
	In	4p	84.1						.4680	.4535	.4292	.3404	.1526	.98E-1	.63E-1	.45E-1	.32E-1	.70E-3
	In	5s	10.1		.88E-2	.72E-1	.1241	.1464	.88E-1	.45E-1	.39E-1	.26E-1	.15E-1	.48E-2	.31E-2	.18E-2	.13E-2	.10E-2	.53E-4
	In	4d	26.2					27.20	7.176	.2813	.4014	.6783	.6709	.2614	.1445	.77E-1	.49E-1	.31E-1	.16E-3
50	Sn	3s	817.2													.80E-1	.61E-1	.47E-1	.20E-2
	Sn	3p	708.7											.4622	.3349	.2550	.1920	.41E-2
	Sn	4s	132.8							.2423	.2034	.1344	.51E-1	.32E-1	.20E-1	.15E-1	.11E-1	.42E-3
	Sn	3d	505.5										3.238	1.723	.9108	.5551	.3442	.12E-2
	Sn	4p	96.1						.4904	.4674	.4464	.3582	.1636	.1066	.69E-1	.49E-1	.35E-1	.77E-3
	Sn	5s	12.5		.29E-3	.65E-1	.1382	.1828	.1058	.57E-1	.47E-1	.32E-1	.18E-1	.61E-2	.37E-2	.23E-2	.16E-2	.12E-2	.59E-4
	Sn	4d	34.4					8.636	10.61	.3049	.3895	.7011	.7342	.2969	.1662	.91E-1	.57E-1	.37E-1	.18E-3
	Sn	5p	5.9	12.40	2.635	1.173	.5375	.1432	.35E-1	.21E-1	.18E-1	.14E-1	.96E-2	.37E-2	.24E-2	.16E-2	.10E-2	.77E-3	.20E-4
51	Sb	3s	872.0													.83E-1	.64E-1	.49E-1	.21E-2
	Sb	3p	759.9											.4638	.3456	.2652	.2010	.45E-2
	Sb	4s	147.1							.2359	.2115	.1419	.54E-1	.34E-1	.22E-1	.16E-1	.11E-1	.47E-3
	Sb	3d	549.9										4.016	1.866	.9981	.6116	.3810	.14E-2
	Sb	4p	108.5						.5194	.4816	.4624	.3752	.1754	.1148	.74E-1	.53E-1	.39E-1	.84E-3
	Sb	5s	14.8			.43E-1	.1350	.2011	.1265	.66E-1	.56E-1	.38E-1	.21E-1	.73E-2	.45E-2	.28E-2	.19E-2	.14E-2	.53E-4
	Sb	4d	42.9					15.88	.3523	.3795	.7085	.7867	.3327	.1894	.1054	.66E-1	.43E-1	.23E-3
	Sb	5p	7.3		5.994	2.585	1.124	.2875	.70E-1	.41E-1	.36E-1	.28E-1	.19E-1	.77E-2	.46E-2	.28E-2	.21E-2	.16E-2	.41E-4
52	Te	3s	928.5													.86E-1	.66E-1	.51E-1	.23E-2
	Te	3p	812.8													.3570	.2750	.2099	.49E-2
	Te	4s	161.9									.2220	.1491	.57E-1	.36E-1	.23E-1	.17E-1	.12E-1	.50E-3
	Te	3d	595.9											.1578	2.013	1.088	.6720	.4205	.16E-2
	Te	4p	121.4						.5427	.5000	.4751	.3923	.1865	.1221	.80E-1	.57E-1	.42E-1	.92E-3
	Te	5s	17.1			.22E-1	.1163	.2123	.1439	.78E-1	.64E-1	.44E-1	.25E-1	.83E-2	.52E-2	.33E-2	.22E-2	.17E-2	.72E-4
	Te	4d	52.0					24.13	.4297	.3732	.7096	.8386	.3713	.2143	.1204	.76E-1	.49E-1	.26E-3
	Te	5p	8.6		11.54	4.758	2.028	.5043	.1158	.69E-1	.60E-1	.47E-1	.31E-1	.11E-1	.80E-2	.49E-2	.35E-2	.26E-2	.58E-4

TABLE I. Atomic Subshell Photoionization Cross Sections, $1 \leq Z \leq 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
53	I	3s	986.8												.88E-1	.68E-1	.53E-1	.24E-2
	I	3p	867.5												.3672	.2847	.2186	.52E-2
	I	4s	177.2								.2295	.1565	.61E-1	.39E-1	.25E-1	.18E-1	.13E-1	.54E-3
	I	3d	643.7											2.177	1.182	.7359	.4620	.18E-2
	I	4p	134.7							.5219	.4872	.4102	.1979	.1305	.85E-1	.62E-1	.45E-1	.10E-2
	I	5s	19.4			.90E-1	.2169	.1602	.89E-1	.75E-1	.51E-1	.28E-1	.94E-2	.58E-2	.37E-2	.25E-2	.19E-2	.82E-4
	I	4d	61.5					42.03	.5542	.3768	.6968	.8786	.4089	.2394	.1359	.87E-1	.56E-1	.32E-3
	I	5p	10.0		20.52	7.985	3.313	.7803	.1782	.1021	.92E-1	.71E-1	.46E-1	.18E-1	.11E-1	.76E-2	.54E-2	.38E-2	.93E-4
54	Xe	3s	1046.8													.70E-1	.55E-1	.25E-2
	Xe	3p	923.9												.3769	.2939	.2273	.56E-2
	Xe	4s	193.0								.2135	.1634	.65E-1	.41E-1	.26E-1	.19E-1	.14E-1	.58E-3
	Xe	3d	693.2											2.356	1.279	.8023	.5067	.20E-2
	Xe	4p	148.6								.4979	.4281	.2090	.1395	.91E-1	.66E-1	.48E-1	.11E-2
	Xe	5s	21.8				.65E-1	.2146	.1768	.99E-1	.83E-1	.56E-1	.32E-1	.10E-1	.65E-2	.42E-2	.29E-2	.22E-2	.85E-4
	Xe	4d	71.5						119.9	.7365	.3976	.6782	.9176	.4468	.2637	.1506	.98E-1	.64E-1	.37E-3
	Xe	5p	11.4		34.96	12.87	5.057	1.149	.2453	.1469	.1273	.97E-1	.64E-1	.25E-1	.16E-1	.10E-1	.76E-2	.51E-2	.12E-3
55	Cs	3s	1114.3													.73E-1	.56E-1	.27E-2
	Cs	3p	987.8												.3812	.3037	.2357	.61E-2
	Cs	4s	214.9									.1697	.68E-1	.43E-1	.28E-1	.20E-1	.15E-1	.62E-3
	Cs	3d	750.2											2.661	1.382	.8717	.5539	.23E-2
	Cs	4p	168.5								.5092	.4430	.2211	.1479	.97E-1	.71E-1	.52E-1	.12E-2
	Cs	5s	28.8					.2433	.2036	.1167	.98E-1	.67E-1	.37E-1	.12E-1	.78E-2	.48E-2	.34E-2	.25E-2	.10E-3
	Cs	4d	87.6							.9752	.4454	.6593	.9500	.4837	.2905	.1684	.1096	.72E-1	.42E-3
	Cs	5p	17.1			18.31	6.996	1.526	.3193	.1874	.1638	.1255	.79E-1	.32E-1	.20E-1	.13E-1	.93E-2	.68E-2	.17E-3
56	Ba	3s	1184.0													.75E-1	.58E-1	.29E-2
	Ba	3p	1053.8													.3128	.2440	.66E-2
	Ba	4s	237.6									.1756	.72E-1	.46E-1	.30E-1	.22E-1	.16E-1	.66E-3
	Ba	3d	809.2												1.487	.9444	.6036	.27E-2
	Ba	4p	189.3								.5228	.4572	.2340	.1560	.1038	.75E-1	.56E-1	.14E-2
	Ba	5s	35.9					.2442	.2316	.1357	.1139	.77E-1	.42E-1	.14E-1	.89E-2	.55E-2	.40E-2	.29E-2	.12E-3
	Ba	4d	104.5							1.288	.5158	.6357	.9729	.5244	.3180	.1849	.1220	.80E-1	.49E-3
	Ba	5p	22.9				9.081	2.002	.3947	.2308	.2000	.1528	.95E-1	.38E-1	.24E-1	.15E-1	.11E-1	.81E-2	.22E-3
	Ba	6s	4.5	.48E-1	.97E-1	.1072	.92E-1	.70E-1	.30E-1	.16E-1	.12E-1	.77E-2	.41E-2	.13E-2	.75E-3	.48E-3	.30E-3	.23E-3	.19E-4
57	La	3s	1252.7														.60E-1	.30E-2
	La	3p	1118.8													.3210	.2522	.71E-2
	La	4s	258.1									.1830	.76E-1	.49E-1	.31E-1	.23E-1	.17E-1	.72E-3
	La	3d	867.2												1.592	1.020	.6559	.30E-2
	La	4p	207.8									.4714	.2457	.1649	.1100	.80E-1	.59E-1	.15E-2
	La	5s	40.5						.2504	.1514	.1269	.87E-1	.48E-1	.15E-1	.98E-2	.62E-2	.45E-2	.33E-2	.13E-3
	La	4d	119.1							1.487	.6239	.6099	.9934	.5616	.3442	.2039	.1343	.89E-1	.59E-3
	La	5p	26.4					2.428	.4463	.2604	.2313	.1724	.1098	.42E-1	.27E-1	.17E-1	.12E-1	.93E-2	.21E-3
	La	6s	4.9	.38E-1	.1079	.1191	.1083	.83E-1	.36E-1	.18E-1	.14E-1	.97E-2	.50E-2	.15E-2	.10E-2	.67E-3	.44E-3	.29E-3	.15E-4
	La	5d	6.2	11.14	7.207	4.085	2.108	.5192	.28E-1	.11E-1	.12E-1	.13E-1	.10E-1	.47E-2	.27E-2	.16E-2	.11E-2	.76E-3	.59E-5
58	Ce	3s	1302.0														.62E-1	.31E-2
	Ce	3p	1164.5													.3288	.2601	.76E-2
	Ce	4s	261.2									.1831	.77E-1	.50E-1	.32E-1	.24E-1	.17E-1	.74E-3
	Ce	3d	906.2												1.714	1.100	.7116	.34E-2
	Ce	4p	209.2									.4628	.2491	.1688	.1134	.83E-1	.61E-1	.16E-2
	Ce	5s	38.4					.2145	.2343	.1425	.1195	.82E-1	.46E-1	.15E-1	.95E-2	.60E-2	.43E-2	.31E-2	.12E-3
	Ce	4d	117.3							2.035	.7752	.5133	.9336	.5704	.3562	.2138	.1416	.95E-1	.66E-3
	Ce	5p	24.3					2.368	.4087	.2366	.2068	.1585	.1005	.40E-1	.25E-1	.17E-1	.12E-1	.89E-2	.22E-3
	Ce	6s	4.6	.38E-1	.90E-1	.1013	.88E-1	.68E-1	.31E-1	.15E-1	.12E-1	.84E-2	.42E-2	.13E-2	.10E-2	.68E-3	.47E-3	.31E-3	.20E-4
	Ce	4f	10.1		.3281	.6255	1.109	2.033	2.178	1.394	1.162	.7365	.3118	.45E-1	.18E-1	.77E-2	.39E-2	.22E-2	.25E-5
59	Pr	3s	1362.1														.64E-1	.33E-2
	Pr	3p	1220.9													.3317	.2681	.82E-2
	Pr	4s	272.7									.1859	.80E-1	.52E-1	.34E-1	.25E-1	.18E-1	.78E-3
	Pr	3d	955.7												1.850	1.183	.7688	.38E-2
	Pr	4p	219.0									.4619	.2550	.1751	.1178	.87E-1	.64E-1	.17E-2
	Pr	5s	39.6					.1907	.2334	.1444	.1216	.84E-1	.47E-1	.16E-1	.98E-2	.62E-2	.45E-2	.33E-2	.12E-3
	Pr	4d	123.5							1.998	.9915	.4600	.9027	.5908	.3749	.2272	.1518	.1028	.74E-3
	Pr	5p	25.0					2.571	.4142	.2377	.2086	.1601	.1024	.41E-1	.26E-1	.17E-1	.12E-1	.93E-2	.24E-3
	Pr	6s	4.6	.33E-1	.87E-1	.98E-1	.85E-1	.66E-1	.31E-1	.15E-1	.12E-1	.87E-2	.44E-2	.14E-2	.10E-2	.65E-3	.50E-3	.38E-3	.11E-4
	Pr	4f	11.0		.3725	.6811	1.245	2.544	3.121	2.146	1.824	1.196	.5224	.81E-1	.32E-1	.13E-1	.71E-2	.40E-2	.38E-5
60	Nd	3s	1423.0														.65E-1	.34E-2
	Nd	3p	1278.2														.2757	.87E-2
	Nd	4s	284.3									.1853	.82E-1	.54E-1	.35E-1	.26E-1	.19E-1	.82E-3
	Nd	3d	1006.0												2.014	1.269	.8284	.42E-2
	Nd	4p	228.6									.4608	.2612	.1808	.1220	.90E-1	.67E-1	.18E-2
	Nd	5s	40.7						.2318	.1459	.1234	.85E-1	.48E-1	.16E-1	.10E-1	.64E-2	.46E-2	.34E-2	.13E-3
	Nd	4d	129.6								1.239	.4169	.8653	.6089	.3927	.2405	.1620	.1103	.82E-3
	Nd	5p	25.6					2.790	.4195	.2380	.2095	.1612	.1038	.42E-1	.27E-1	.18E-1	.13E-1	.97E-2	.28E-3
	Nd	6s	4.7	.28E-1	.84E-1	.95E-1	.83E-1	.65E-1	.31E-1	.15E-1	.12E-1	.90E-2	.47E-2	.16E-2	.96E-3	.53E-3	.41E-3	.34E-3	.16E-4
	Nd	4f	11.8		.4162	.6961	1.277	2.833	3.937	2.892	2.502	1.693	.7711	.1247	.51E-1	.21E-1	.11E-1	.63E-2	.46E-5
61	Pm	3s	1484.9														.68E-1	.35E-2
	Pm	3p	1336.3														.2826	.93E-2
	Pm	4s	295.8									.1892	.84E-1	.55E-1	.36E-1	.27E-1	.20E-1	.87E-3
	Pm	3d	1057.2													1.359	.8900	.47E-2
	Pm	4p	238.3									.4590	.2670	.1861	.1262	.94E-1	.70E-1	.19E-2
	Pm	5s	41.8						.2294	.1470	.1248	.87E-1	.49E-1	.16E-1	.10E-1	.66E-2	.48E-2	.35E-2	.14E-3
	Pm	4d	135.7								1.456	.3887	.8226	.6248	.4096	.2537	.1721	.1179	.90E-3
	Pm	5p	26.2					3.028	.4249	.2376	.2096	.1617	.1048	.43E-1	.27E-1	.18E-1	.13E-1	.10E-1	.29E-3
	Pm	6s	4.8	.24E-1	.80E-1	.92E-1	.81E-1	.64E-1	.31E-1	.14E-1	.12E-1	.91E-2	.48E-2	.16E-2	.86E-3	.50E-3	.36E-3	.28E-3	.15E-4
	Pm	4f	12.5		.4711	.7066	1.261	2.974	4.620	3.609	3.176	2.213	1.057	.1793	.73E-1	.31E-1	.16E-1	.93E-2	.12E-4
62	Sm	3p	1395.4														.2886	.98E-2
	Sm	4s	307.3										.86E-1	.57E-1	.38E-1	.28E-1	.21E-1	.90E-3
	Sm	3d	1109.3													1.456	.9547	.52E-2
	Sm	4p	248.0									.4560	.2723	.1910	.1304	.97E-1	.73E-1	.21E-2
	Sm	5s	42.8						.2264	.1477	.1260	.88E-1	.49E-1	.17E-1	.10E-1	.68E-2	.50E-2	.37E-2	.15E-3
	Sm	4d	141.7								1.408	.3796	.7769	.6389	.4265	.2654	.1831	.1249	.97E-3
	Sm	5p	26.7					3.285	.4307	.2367	.2092	.1619	.1057	.43E-1	.28E-1	.19E-1	.14E-1	.10E-1	.30E-3
	Sm	6s	4.8	.20E-1	.77E-1	.89E-1	.80E-1	.62E-1	.31E-1	.14E-1	.13E-1	.92E-2	.49E-2	.16E-2	.81E-3	.54E-3	.39E-3	.29E-3	.22E-4
	Sm	4f	13.1		.5436	.7216	1.229	3.012	5.167	4.288	3.828	2.753	1.369	.2433	.1018	.43E-1	.23E-1	.12E-1	.15E-4

TABLE I. Atomic Subshell Photoionization Cross Sections, $1 \leq Z \leq 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
63	Eu	3p	1455.5														.2912	.10E-1
	Eu	4s	319.0										.88E-1	.58E-1	.39E-1	.29E-1	.21E-1	.95E-3
	Eu	3d	1162.4													1.562	1.022	.58E-2
	Eu	4p	257.7									.4510	.2771	.1958	.1343	.1010	.75E-1	.22E-2
	Eu	5s	43.9					.2230	.1483	.1270	.89E-1	.50E-1	.17E-1	.11E-1	.70E-2	.51E-2	.38E-2	.15E-3
	Eu	4d	147.8							.9226	.3955	.7263	.6509	.4411	.2781	.1931	.1326	.10E-2
	Eu	5p	27.3				3.566	.4368	.2337	.2094	.1598	.1051	.44E-1	.28E-1	.19E-1	.14E-1	.10E-1	.28E-3
	Eu	6s	4.9	.16E-1	.73E-1	.85E-1	.78E-1	.61E-1	.31E-1	.14E-1	.13E-1	.91E-2	.49E-2	.15E-2	.85E-3	.64E-3	.48E-3	.35E-3	.11E-4
	Eu	4f	13.7		.6312	.7484	1.198	2.986	5.591	4.911	4.446	3.297	1.707	.3181	.1352	.59E-1	.31E-1	.17E-1	.17E-4
64	Gd	4s	339.5										.91E-1	.60E-1	.40E-1	.30E-1	.22E-1	.99E-3
	Gd	3d	1226.2													1.478	1.091	.63E-2
	Gd	4p	276.2									.4553	.2849	.2022	.1395	.1051	.79E-1	.24E-2
	Gd	5s	48.5					.2290	.1574	.1367	.96E-1	.54E-1	.18E-1	.11E-1	.76E-2	.55E-2	.41E-2	.16E-3
	Gd	4d	162.3								.4471	.6946	.6719	.4613	.2944	.2054	.1422	.12E-2
	Gd	5p	30.9				4.229	.4869	.2565	.2288	.1766	.1159	.48E-1	.31E-1	.21E-1	.15E-1	.11E-1	.34E-3
	Gd	6s	5.3	.67E-2	.78E-1	.94E-1	.92E-1	.74E-1	.36E-1	.17E-1	.15E-1	.10E-1	.55E-2	.17E-2	.11E-2	.77E-3	.57E-3	.43E-3	.26E-4
	Gd	5d	5.9	8.387	7.142	4.708	2.698	.7978	.55E-1	.77E-2	.72E-2	.80E-2	.85E-2	.46E-2	.30E-2	.19E-2	.12E-2	.94E-3	.11E-4
	Gd	4f	21.6				.6099	1.287	4.695	5.013	4.660	3.613	1.945	.3790	.1635	.71E-1	.38E-1	.21E-1	.28E-4
65	Tb	4s	342.4										.92E-1	.61E-1	.41E-1	.30E-1	.23E-1	.10E-2
	Tb	3d	1271.3														1.167	.70E-2
	Tb	4p	277.2									.4415	.2853	.2044	.1420	.1074	.81E-1	.25E-2
	Tb	5s	45.9					.2145	.1476	.1287	.90E-1	.52E-1	.18E-1	.11E-1	.73E-2	.53E-2	.40E-2	.15E-3
	Tb	4d	159.9								.5146	.6186	.6682	.4676	.3025	.2128	.1482	.13E-2
	Tb	5p	28.3				4.194	.4529	.2307	.2064	.1592	.1056	.45E-1	.29E-1	.20E-1	.15E-1	.11E-1	.35E-3
	Tb	6s	4.9	.95E-2	.67E-1	.79E-1	.74E-1	.59E-1	.30E-1	.15E-1	.13E-1	.87E-2	.46E-2	.13E-2	.10E-2	.67E-3	.49E-3	.36E-3	.99E-5
	Tb	4f	14.6			.8355	1.165	2.839	6.124	5.969	5.540	4.366	2.439	.5028	.2200	.97E-1	.52E-1	.29E-1	.44E-4
66	Dy	4s	354.2										.94E-1	.63E-1	.42E-1	.31E-1	.24E-1	.10E-2
	Dy	3d	1327.3														1.245	.76E-2
	Dy	4p	287.1									.4389	.2892	.2080	.1458	.1101	.84E-1	.26E-2
	Dy	5s	46.9					.2096	.1475	.1290	.91E-1	.52E-1	.18E-1	.11E-1	.75E-2	.55E-2	.41E-2	.16E-3
	Dy	4d	165.9								.6172	.5636	.6736	.4793	.3141	.2224	.1560	.14E-2
	Dy	5p	28.8				4.550	.4631	.2289	.2047	.1586	.1057	.46E-1	.30E-1	.20E-1	.15E-1	.11E-1	.36E-3
	Dy	6s	5.0	.68E-2	.63E-1	.75E-1	.72E-1	.58E-1	.30E-1	.15E-1	.13E-1	.86E-2	.45E-2	.13E-2	.10E-2	.62E-3	.44E-3	.31E-3	.24E-4
	Dy	4f	14.9			.8948	1.162	2.748	6.261	6.392	6.009	4.865	2.827	.6136	.2721	.1220	.66E-1	.37E-1	.57E-4
67	Ho	4s	366.1										.95E-1	.64E-1	.43E-1	.32E-1	.24E-1	.11E-2
	Ho	3d	1384.2														1.327	.84E-2
	Ho	4p	297.1									.4375	.2923	.2115	.1494	.1130	.86E-1	.28E-2
	Ho	5s	47.9					.2046	.1473	.1292	.92E-1	.53E-1	.18E-1	.11E-1	.76E-2	.56E-2	.42E-2	.18E-3
	Ho	4d	172.1								.7348	.5089	.6773	.4889	.3263	.2310	.1646	.16E-2
	Ho	5p	29.3				4.933	.4746	.2272	.2028	.1578	.1057	.46E-1	.30E-1	.20E-1	.15E-1	.11E-1	.37E-3
	Ho	6s	5.0	.45E-2	.60E-1	.72E-1	.70E-1	.56E-1	.29E-1	.15E-1	.13E-1	.83E-2	.43E-2	.14E-2	.10E-2	.55E-3	.39E-3	.27E-3	.16E-4
	Ho	4f	15.3			.9610	1.170	2.659	6.330	6.747	6.420	5.334	3.223	.7368	.3311	.1503	.82E-1	.46E-1	.66E-4
68	Er	4s	378.2										.97E-1	.66E-1	.45E-1	.33E-1	.25E-1	.11E-2
	Er	3d	1442.1														1.353	.91E-2
	Er	4p	307.1										.2948	.2150	.1527	.1160	.89E-1	.29E-2
	Er	5s	48.9					.1992	.1470	.1292	.92E-1	.54E-1	.19E-1	.12E-1	.78E-2	.58E-2	.43E-2	.19E-3
	Er	4d	178.2								.8424	.4569	.6781	.4988	.3369	.2404	.1721	.17E-2
	Er	5p	29.8				5.353	.4879	.2253	.2008	.1568	.1056	.46E-1	.30E-1	.20E-1	.15E-1	.11E-1	.36E-3
	Er	6s	5.1	.27E-2	.57E-1	.69E-1	.68E-1	.55E-1	.29E-1	.15E-1	.13E-1	.81E-2	.42E-2	.15E-2	.95E-3	.54E-3	.41E-3	.31E-3	.20E-4
	Er	4f	15.5			1.034	1.186	2.573	6.347	7.039	6.776	5.769	3.620	.8722	.3977	.1823	.1007	.56E-1	.77E-4
69	Tm	4s	390.3										.98E-1	.67E-1	.46E-1	.34E-1	.26E-1	.12E-2
	Tm	4p	317.2										.2958	.2182	.1559	.1189	.91E-1	.30E-2
	Tm	5s	49.9					.1937	.1465	.1291	.93E-1	.54E-1	.19E-1	.12E-1	.80E-2	.59E-2	.44E-2	.20E-3
	Tm	4d	184.4								.8637	.4083	.6769	.5076	.3470	.2497	.1797	.19E-2
	Tm	5p	30.3				5.803	.5030	.2234	.1987	.1557	.1054	.47E-1	.31E-1	.21E-1	.15E-1	.11E-1	.37E-3
	Tm	6s	5.1	.13E-2	.54E-1	.66E-1	.66E-1	.54E-1	.28E-1	.15E-1	.12E-1	.80E-2	.42E-2	.16E-2	.89E-3	.60E-3	.47E-3	.37E-3	.27E-4
	Tm	4f	15.8			1.112	1.210	2.493	6.321	7.272	7.077	6.166	4.014	1.019	.4722	.2185	.1217	.69E-1	.99E-4
70	Yb	4s	402.6										.99E-1	.68E-1	.47E-1	.35E-1	.26E-1	.12E-2
	Yb	4p	327.5										.2984	.2213	.1589	.1217	.93E-1	.32E-2
	Yb	5s	50.9					.1879	.1459	.1289	.93E-1	.55E-1	.19E-1	.12E-1	.81E-2	.60E-2	.45E-2	.20E-3
	Yb	4d	190.7								.7572	.3642	.6737	.5154	.3565	.2587	.1871	.20E-2
	Yb	5p	30.8				6.296	.5202	.2217	.1966	.1545	.1051	.47E-1	.31E-1	.21E-1	.15E-1	.12E-1	.39E-3
	Yb	6s	5.2	.45E-3	.50E-1	.63E-1	.65E-1	.53E-1	.28E-1	.15E-1	.12E-1	.80E-2	.42E-2	.17E-2	.86E-3	.68E-3	.53E-3	.39E-3	.13E-4
	Yb	4f	16.0			1.190	1.240	2.417	6.253	7.440	7.331	6.511	4.399	1.174	.5554	.2592	.1449	.82E-1	.13E-3
71	Lu	4s	424.6										.1016	.70E-1	.48E-1	.36E-1	.27E-1	.12E-2
	Lu	4p	347.3										.3024	.2258	.1629	.1252	.96E-1	.34E-2
	Lu	5s	56.1					.1883	.1542	.1367	.1005	.59E-1	.21E-1	.13E-1	.87E-2	.64E-2	.48E-2	.22E-3
	Lu	4d	206.3									.3365	.6778	.5279	.3689	.2699	.1960	.22E-2
	Lu	5p	34.8				7.245	.5898	.2428	.2127	.1699	.1161	.50E-1	.34E-1	.23E-1	.17E-1	.13E-1	.47E-3
	Lu	6s	5.7	.21E-2	.53E-1	.68E-1	.79E-1	.69E-1	.33E-1	.16E-1	.15E-1	.10E-1	.51E-2	.18E-2	.12E-2	.66E-3	.56E-3	.46E-3	.26E-4
	Lu	4f	24.6					1.217	4.653	7.010	7.126	6.656	4.703	1.321	.6311	.2961	.1670	.96E-1	.15E-3
	Lu	5d	5.3	7.112	6.188	4.505	2.856	1.001	.94E-1	.98E-2	.66E-2	.45E-2	.55E-2	.39E-2	.27E-2	.19E-2	.12E-2	.97E-3	.17E-4
72	Hf	4s	447.3										.1036	.72E-1	.49E-1	.37E-1	.28E-1	.13E-2
	Hf	4p	367.8										.3068	.2307	.1670	.1289	.99E-1	.36E-2
	Hf	5s	61.1					.1863	.1621	.1434	.1073	.63E-1	.22E-1	.14E-1	.93E-2	.69E-2	.52E-2	.22E-3
	Hf	4d	222.5									.3136	.6809	.5414	.3805	.2819	.2049	.24E-2
	Hf	5p	38.6					.6695	.2619	.2296	.1828	.1254	.55E-1	.37E-1	.25E-1	.18E-1	.14E-1	.52E-3
	Hf	6s	6.0	.14E-1	.47E-1	.70E-1	.84E-1	.76E-1	.38E-1	.19E-1	.16E-1	.11E-1	.59E-2	.20E-2	.13E-2	.80E-3	.65E-3	.47E-3	.22E-4
	Hf	4f	33.8					.9905	2.997	6.265	6.688	6.668	4.979	1.470	.7139	.3396	.1922	.1108	.16E-3
	Hf	5d	6.7	10.75	13.44	11.05	7.302	2.598	.2467	.25E-1	.14E-1	.10E-1	.12E-1	.93E-2	.69E-2	.45E-2	.33E-2	.24E-2	.33E-4
73	Ta	4s	470.7										.1060	.73E-1	.50E-1	.38E-1	.29E-1	.14E-2
	Ta	4p	389.0										.3111	.2356	.1712	.1326	.1026	.37E-2
	Ta	5s	66.0					.1856	.1686	.1503	.1133	.67E-1	.24E-1	.15E-1	.99E-2	.74E-2	.55E-2	.23E-3
	Ta	4d	239.3									.2996	.6849	.5533	.3936	.2930	.2145	.26E-2
	Ta	5p	42.4					.7567	.2805	.2467	.1945	.1338	.59E-1	.40E-1	.27E-1	.20E-1	.15E-1	.57E-3
	Ta	6s	6.3	.33E-1	.40E-1	.69E-1	.82E-1	.79E-1	.43E-1	.22E-1	.17E-1	.12E-1	.65E-2	.21E-2	.13E-2	.92E-3	.64E-3	.54E-3	.39E-4
	Ta	4f	43.5						1.722	5.297	6.013	6.537	5.202	1.617	.7969	.3824	.2194	.1274	.19E-3
	Ta	5d	8.0		19.03	18.44	13.38	4.898	.4606	.47E-1	.27E-1	.19E-1	.22E-1	.16E-1	.11E-1	.81E-2	.59E-2	.42E-2	.65E-4
74	W	4s	494.8										.1082	.75E-1	.52E-1	.39E-1	.30E-1	.14E-2
	W	4p	410.9										.3153	.2407	.1755	.1363	.1057	.39E-2
	W	5s	70.9					.1869	.1745	.1565	.1192	.71E-1	.25E-1	.16E-1	.10E-1	.78E-2	.59E-2	.25E-3
	W	4d	256.8									.2933	.6877	.5650	.4068	.3045	.2243	.28E-2
	W	5p	46.1					.8496	.2977	.2616	.2070	.1436	.63E-1	.43E-1	.29E-1	.22E-1	.16E-1	.60E-3
	W	6s	6.6	.64E-1	.33E-1	.65E-1	.81E-1	.81E-1	.45E-1	.23E-1	.19E-1	.13E-1	.71E-2	.24E-2	.14E-2	.95E-3	.74E-3	.54E-3	.27E-4
	W	4f	53.9						.9524	4.119	5.113	6.258	5.397	1.778	.8859	.4294	.2463	.1449	.24E-3
	W	5d	9.3		21.01	24.83	20.70	7.999	.7662	.77E-1	.45E-1	.29E-1	.34E-1	.25E-1	.18E-1	.12E-1	.88E-2	.65E-2	.91E-4

TABLE I. Atomic Subshell Photoionization Cross Sections, $1 \leq Z \leq 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
75	Re	4s	519.5										.1102	.77E-1	.53E-1	.40E-1	.31E-1	.15E-2
	Re	4p	433.3										.3196	.2460	.1796	.1401	.1090	.41E-2
	Re	5s	75.8					.1946	.1796	.1629	.1242	.75E-1	.27E-1	.17E-1	.11E-1	.83E-2	.63E-2	.26E-3
	Re	4d	274.8									.2889	.6908	.5754	.4207	.3151	.2346	.31E-2
	Re	5p	49.8					.9508	.3136	.2755	.2195	.1542	.69E-1	.46E-1	.31E-1	.23E-1	.17E-1	.63E-3
	Re	6s	6.8	.1034	.26E-1	.62E-1	.80E-1	.83E-1	.48E-1	.24E-1	.20E-1	.14E-1	.76E-2	.26E-2	.16E-2	.99E-3	.82E-3	.54E-3	.35E-4
	Re	4f	64.8					.7257	2.855	4.036	5.797	5.542	1.935	.9763	.4781	.2776	.1631	.29E-3
	Re	5d	10.6		19.63	28.08	28.28	12.10	1.166	.1189	.66E-1	.40E-1	.48E-1	.35E-1	.25E-1	.17E-1	.12E-1	.91E-2	.16E-3
76	Os	4s	544.9										.1130	.79E-1	.55E-1	.41E-1	.32E-1	.15E-2
	Os	4p	456.4										.3241	.2510	.1841	.1439	.1123	.43E-2
	Os	5s	80.7						.1832	.1679	.1296	.80E-1	.29E-1	.18E-1	.12E-1	.88E-2	.66E-2	.29E-3
	Os	4d	293.4									.3182	.6913	.5864	.4337	.3270	.2443	.33E-2
	Os	5p	53.4					1.057	.3308	.2887	.2311	.1633	.73E-1	.49E-1	.33E-1	.25E-1	.19E-1	.70E-3
	Os	6s	7.0	.1474	.19E-1	.58E-1	.76E-1	.81E-1	.49E-1	.26E-1	.22E-1	.14E-1	.80E-2	.29E-2	.18E-2	.12E-2	.77E-3	.59E-3	.40E-4
	Os	4f	76.3					.5949	1.748	2.859	5.127	5.606	2.101	1.075	.5299	.3095	.1833	.35E-3
	Os	5d	11.9		16.64	27.49	34.21	17.31	1.695	.1668	.95E-1	.54E-1	.62E-1	.46E-1	.33E-1	.22E-1	.17E-1	.12E-1	.19E-3
77	Ir	4s	570.8										.1130	.81E-1	.56E-1	.43E-1	.33E-1	.16E-2
	Ir	4p	480.1										.3283	.2559	.1887	.1477	.1155	.45E-2
	Ir	5s	85.6						.1855	.1722	.1345	.84E-1	.30E-1	.19E-1	.12E-1	.93E-2	.70E-2	.31E-3
	Ir	4d	312.6										.6900	.5974	.4463	.3389	.2542	.36E-2
	Ir	5p	57.1					1.168	.3484	.3003	.2426	.1711	.77E-1	.52E-1	.35E-1	.27E-1	.20E-1	.77E-3
	Ir	6s	7.2		.15E-1	.53E-1	.73E-1	.82E-1	.51E-1	.27E-1	.22E-1	.15E-1	.84E-2	.30E-2	.18E-2	.12E-2	.86E-3	.58E-3	.27E-4
	Ir	4f	88.4						.9804	1.784	4.281	5.594	2.267	1.174	.5852	.3438	.2043	.39E-3
	Ir	5d	13.3		13.46	24.29	36.76	23.66	2.379	.2324	.1296	.68E-1	.78E-1	.59E-1	.43E-1	.29E-1	.22E-1	.16E-1	.25E-3
78	Pt	4s	592.9										.1238	.83E-1	.58E-1	.44E-1	.34E-1	.16E-2
	Pt	4p	499.9										.3337	.2607	.1934	.1514	.1190	.48E-2
	Pt	5s	86.4						.1811	.1717	.1367	.87E-1	.32E-1	.20E-1	.13E-1	.98E-2	.74E-2	.32E-3
	Pt	4d	327.8										.6882	.6075	.4588	.3508	.2642	.38E-2
	Pt	5p	56.9					1.261	.3569	.3045	.2462	.1763	.80E-1	.54E-1	.37E-1	.28E-1	.21E-1	.82E-3
	Pt	6s	6.4	.51E-1	.80E-2	.19E-1	.27E-1	.29E-1	.20E-1	.11E-1	.94E-2	.61E-2	.36E-2	.12E-2	.73E-3	.47E-3	.34E-3	.28E-3	.12E-4
	Pt	4f	96.5						.6331	1.064	3.286	5.497	2.432	1.276	.6439	.3792	.2270	.46E-3
	Pt	5d	11.4		20.04	29.46	40.10	31.33	3.426	.3283	.1818	.88E-1	.1011	.77E-1	.56E-1	.39E-1	.29E-1	.21E-1	.40E-3
79	Au	4s	619.8											.85E-1	.59E-1	.45E-1	.35E-1	.17E-2
	Au	4p	524.4										.3370	.2655	.1980	.1554	.1223	.49E-2
	Au	5s	91.1						.1812	.1733	.1412	.91E-1	.33E-1	.21E-1	.14E-1	.10E-1	.77E-2	.34E-3
	Au	4d	347.8										.6840	.6173	.4710	.3629	.2739	.42E-2
	Au	5p	60.4					1.389	.3736	.3168	.2547	.1846	.85E-1	.58E-1	.39E-1	.30E-1	.22E-1	.87E-3
	Au	4f	109.4						.5159	.6247	2.274	5.274	2.599	1.387	.7041	.4176	.2511	.52E-3
	Au	5d	12.5		17.17	25.95	38.31	38.67	4.526	.4332	.2330	.1069	.1186	.93E-1	.68E-1	.48E-1	.35E-1	.26E-1	.50E-3
	Au	6s	6.5	.63E-1	.62E-2	.19E-1	.25E-1	.28E-1	.19E-1	.11E-1	.94E-2	.64E-2	.35E-2	.13E-2	.84E-3	.53E-3	.33E-3	.29E-3	.20E-4
80	Hg	4s	652.1											.87E-1	.61E-1	.46E-1	.36E-1	.18E-2
	Hg	4p	554.4										.3398	.2701	.2026	.1593	.1256	.52E-2
	Hg	5s	100.3						.1859	.1789	.1475	.95E-1	.36E-1	.23E-1	.15E-1	.10E-1	.83E-2	.37E-3
	Hg	4d	373.2										.6794	.6256	.4831	.3747	.2843	.44E-2
	Hg	5p	68.2					1.523	.4005	.3367	.2692	.1961	.91E-1	.62E-1	.42E-1	.31E-1	.24E-1	.93E-3
	Hg	6s	7.7		.46E-2	.39E-1	.64E-1	.79E-1	.54E-1	.29E-1	.24E-1	.17E-1	.93E-2	.32E-2	.19E-2	.12E-2	.99E-3	.70E-3	.35E-4
	Hg	4f	127.7						.3652	.4546	1.381	4.922	2.771	1.497	.7678	.4584	.2767	.58E-3
	Hg	5d	17.3			13.25	26.05	46.47	5.681	.5407	.2865	.1248	.1332	.1078	.78E-1	.55E-1	.40E-1	.30E-1	.54E-3
81	Tl	4s	687.2											.89E-1	.62E-1	.48E-1	.37E-1	.18E-2
	Tl	4p	587.1										.3325	.2745	.2073	.1633	.1288	.55E-2
	Tl	5s	111.6						.1918	.1862	.1538	.1002	.38E-1	.24E-1	.15E-1	.11E-1	.87E-2	.39E-3
	Tl	4d	401.3										.6733	.6341	.4943	.3865	.2949	.47E-2
	Tl	5p	78.0						.4297	.3596	.2840	.2088	.97E-1	.66E-1	.45E-1	.34E-1	.26E-1	.10E-2
	Tl	6s	9.9		.98E-3	.43E-1	.90E-1	.1163	.71E-1	.39E-1	.32E-1	.22E-1	.12E-1	.41E-2	.27E-2	.16E-2	.12E-2	.91E-3	.47E-4
	Tl	4f	148.7								.7155	4.421	2.937	1.612	.8352	.5008	.3040	.67E-3
	Tl	5d	24.0					53.07	7.103	.6671	.3469	.1438	.1476	.1214	.88E-1	.62E-1	.47E-1	.35E-1	.64E-3
	Tl	6p	4.6	3.286	.8412	.4181	.2113	.63E-1	.11E-1	.53E-2	.45E-2	.35E-2	.23E-2	.10E-2	.57E-3	.38E-3	.28E-3	.21E-3	.10E-4
82	Pb	4s	723.1											.90E-1	.64E-1	.49E-1	.38E-1	.19E-2
	Pb	4p	620.6											.2791	.2117	.1674	.1322	.57E-2
	Pb	5s	122.9						.1943	.1934	.1602	.1052	.40E-1	.25E-1	.16E-1	.12E-1	.92E-2	.42E-3
	Pb	4d	430.1										.6676	.6409	.5060	.3980	.3052	.51E-2
	Pb	5p	87.9						.4624	.3831	.3007	.2214	.1041	.70E-1	.48E-1	.36E-1	.27E-1	.10E-2
	Pb	6s	12.1		.10E-2	.40E-1	.99E-1	.1429	.85E-1	.47E-1	.38E-1	.26E-1	.15E-1	.52E-2	.31E-2	.20E-2	.14E-2	.11E-2	.66E-4
	Pb	4f	170.3								.3744	3.761	3.098	1.731	.9064	.5452	.3330	.76E-3
	Pb	5d	30.7					42.89	8.832	.8002	.4144	.1642	.1636	.1336	.99E-1	.70E-1	.52E-1	.39E-1	.72E-3
	Pb	6p	5.8	11.85	2.731	1.295	.6305	.1807	.34E-1	.16E-1	.13E-1	.10E-1	.67E-2	.27E-2	.19E-2	.12E-2	.95E-3	.61E-3	.35E-4
83	Bi	4s	759.8											.93E-1	.65E-1	.50E-1	.39E-1	.20E-2
	Bi	4p	654 9											.2839	.2161	.1715	.1357	.60E-2
	Bi	5s	134.3							.1971	.1663	.1106	.42E-1	.27E-1	.17E-1	.13E-1	.97E-2	.44E-3
	Bi	4d	459.7										.6606	.6467	.5172	.4093	.3157	.55E-2
	Bi	5p	97.9						.5006	.4068	.3180	.2343	.1104	.75E-1	.51E-1	.38E-1	.29E-1	.11E-2
	Bi	6s	14.2			.27E-1	.1008	.1576	.1014	.54E-1	.46E-1	.32E-1	.17E-1	.62E-2	.39E-2	.25E-2	.17E-2	.13E-2	.69E-4
	Bi	4f	192.8								.3397	2.918	3.256	1.852	.9791	.5929	.3632	.85E-3
	Bi	5d	37.6					8.801	11.07	.9636	.4903	.1874	.1786	.1480	.1102	.77E-1	.58E-1	.43E-1	.80E-3
	Bi	6p	7.0	28.09	5.875	2.692	1.263	.3493	.66E-1	.31E-1	.26E-1	.20E-1	.12E-1	.49E-2	.33E-2	.22E-2	.16E-2	.14E-2	.76E-4
84	Po	4s	797.4											.85E-1	.67E-1	.52E-1	.40E-1	.20E-2
	Po	4p	690.1											.2887	.2206	.1756	.1392	.62E-2
	Po	5s	146.1							.1889	.1723	.1161	.45E-1	.28E-1	.18E-1	.13E-1	.10E-1	.47E-3
	Po	4d	490.2										.6548	.6515	.5283	.4201	.3262	.60E-2
	Po	5p	108.2						.5461	.4319	.3356	.2465	.1177	.80E-1	.54E-1	.41E-1	.31E-1	.12E-2
	Po	6s	16.2			.14E-1	.88E-1	.1668	.1135	.63E-1	.52E-1	.37E-1	.20E-1	.71E-2	.42E-2	.26E-2	.21E-2	.14E-2	.65E-4
	Po	4f	216.2									1.933	3.407	1.977	1.054	.6431	.3952	.97E-3
	Po	5d	44.8						13.92	1.147	.5824	.2100	.1931	.1604	.1197	.84E-1	.63E-1	.48E-1	.88E-3
	Po	6p	8.2		10.61	4.721	2.159	.5898	.1116	.50E-1	.44E-1	.32E-1	.20E-1	.81E-2	.58E-2	.37E-2	.29E-2	.22E-2	.94E-4
85	At	4s	835.9												.69E-1	.53E-1	.41E-1	.21E-2
	At	4p	726.2											.2915	.2248	.1798	.1426	.65E-2
	At	5s	158.1								.1801	.1216	.47E-1	.30E-1	.19E-1	.14E-1	.10E-1	.50E-3
	At	4d	521.6										.6580	.6562	.5390	.4311	.3364	.63E-2
	At	5p	118.7						.5906	.4617	.3520	.2588	.1247	.84E-1	.57E-1	.43E-1	.33E-1	.13E-2
	At	6s	18.3				.73E-1	.1738	.1269	.71E-1	.59E-1	.41E-1	.23E-1	.79E-2	.48E-2	.30E-2	.23E-2	.16E-2	.78E-4
	At	4f	240.5									.9412	3.549	2.102	1.133	.6948	.4292	.10E-2
	At	5d	52.2						17.32	1.348	.6838	.2357	.2083	.1741	.1304	.92E-1	.69E-1	.52E-1	.97E-3
	At	6p	9.4		17.68	7.513	3.386	.9012	.1654	.77E-1	.64E-1	.47E-1	.30E-1	.12E-1	.81E-2	.55E-2	.41E-2	.31E-2	.12E-3

TABLE I. Atomic Subshell Photoionization Cross Sections, $1 \leq Z \leq 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
86	Rn	4s	875.4												.70E-1	.54E-1	.42E-1	.22E-2
	Rn	4p	763.2											.2926	.2290	.1838	.1462	.67E-2
	Rn	5s	170.3								.1884	.1273	.50E-1	.32E-1	.20E-1	.15E-1	.11E-1	.52E-3
	Rn	4d	553.8										.6795	.6598	.5489	.4422	.3466	.67E-2
	Rn	5p	129.5							.4979	.3674	.2719	.1316	.89E-1	.61E-1	.46E-1	.35E-1	.14E-2
	Rn	6s	20.3			.55E-1	.1774	.1399	.79E-1	.66E-1	.45E-1	.26E-1	.89E-2	.53E-2	.35E-2	.24E-2	.19E-2	.93E-4
	Rn	4f	265.6									.3292	3.684	2.226	1.217	.7477	.4651	.12E-2
	Rn	5d	59.9					21.06	1.579	.7937	.2649	.2208	.1876	.1415	.1009	.75E-1	.56E-1	.10E-2
	Rn	6p	10.7		28.18	11.37	4.975	1.279	.2353	.1069	.92E-1	.67E-1	.42E-1	.17E-1	.11E-1	.76E-2	.55E-2	.41E-2	.19E-3
87	Fr	4s	920.7												.72E-1	.55E-1	.43E-1	.23E-2
	Fr	4p	806.1												.2334	.1877	.1497	.70E-2
	Fr	5s	187.8								.1961	.1325	.52E-1	.33E-1	.22E-1	.16E-1	.12E-1	.55E-3
	Fr	4d	592.0										.7160	.6622	.5588	.4530	.3564	.72E-2
	Fr	5p	145.4							.5478	.3840	.2855	.1383	.94E-1	.65E-1	.48E-1	.37E-1	.15E-2
	Fr	6s	26.6					.2007	.1624	.93E-1	.78E-1	.53E-1	.30E-1	.10E-1	.63E-2	.40E-2	.30E-2	.22E-2	.10E-3
	Fr	4f	296.6									.2213	3.798	2.353	1.301	.8048	.5021	.13E-2
	Fr	5d	72.8					20.86	1.857	.9218	.2936	.2359	.2006	.1506	.1076	.82E-1	.61E-1	.12E-2
	Fr	6p	15.7			15.27	6.600	1.649	.2996	.1401	.1176	.86E-1	.51E-1	.21E-1	.13E-1	.93E-2	.73E-2	.52E-2	.24E-3
88	Ra	4s	967.1												.73E-1	.57E-1	.44E-1	.24E-2
	Ra	4p	850.1												.2377	.1916	.1533	.75E-2
	Ra	5s	205.7									.1375	.55E-1	.35E-1	.23E-1	.16E-1	.12E-1	.59E-3
	Ra	4d	631.1											.6646	.5678	.4635	.3665	.78E-2
	Ra	5p	161.8								.4000	.2985	.1459	.1000	.68E-1	.51E-1	.39E-1	.16E-2
	Ra	6s	32.7					.2011	.1836	.1069	.90E-1	.61E-1	.34E-1	.11E-1	.71E-2	.46E-2	.34E-2	.24E-2	.11E-3
	Ra	4f	328.6										3.895	2.481	1.388	.8640	.5410	.15E-2
	Ra	5d	86.0							2.136	1.068	.3267	.2496	.2141	.1619	.1161	.88E-1	.66E-1	.13E-2
	Ra	6p	20.8				8.497	2.097	.3671	.1689	.1428	.1015	.63E-1	.25E-1	.16E-1	.11E-1	.83E-2	.63E-2	.25E-3
	Ra	7s	4.2	.33E-1	.75E-1	.84E-1	.76E-1	.59E-1	.23E-1	.13E-1	.11E-1	.68E-2	.41E-2	.13E-2	.91E-3	.58E-3	.35E-3	.18E-3	.20E-4
89	Ac	4s	1012.1												.75E-1	.58E-1	.45E-1	.24E-2
	Ac	4p	892.6												.2417	.1954	.1570	.78E-2
	Ac	5s	221.5									.1431	.58E-1	.37E-1	.24E-1	.17E-1	.13E-1	.62E-3
	Ac	4d	668.9											.6667	.5763	.4739	.3766	.82E-2
	Ac	5p	176.1								.4206	.3119	.1538	.1053	.71E-1	.54E-1	.41E-1	.17E-2
	Ac	6s	36.7					.2010	.1990	.1192	.99E-1	.68E-1	.38E-1	.12E-1	.81E-2	.51E-2	.37E-2	.27E-2	.12E-3
	Ac	4f	359.2										3.972	2.609	1.477	.9260	.5814	.17E-2
	Ac	5d	97.2							2.464	1.225	.3634	.2633	.2277	.1735	.1248	.94E-1	.71E-1	.15E-2
	Ac	6p	23.8				9.792	2.498	.4237	.1959	.1635	.1182	.71E-1	.29E-1	.19E-1	.12E-1	.94E-2	.72E-2	.28E-3
	Ac	7s	4.6	.25E-1	.85E-1	.97E-1	.91E-1	.70E-1	.29E-1	.16E-1	.13E-1	.81E-2	.46E-2	.15E-2	.97E-3	.63E-3	.46E-3	.28E-3	.10E-4
	Ac	6d	5.8	12.33	6.139	3.528	1.958	.5998	.61E-1	.94E-2	.64E-2	.40E-2	.35E-2	.23E-2	.17E-2	.12E-2	.86E-3	.72E-3	.12E-4
90	Th	4s	1057.8													.59E-1	.46E-1	.25E-2
	Th	4p	935.8												.2455	.1993	.1605	.80E-2
	Th	5s	237.3									.1481	.60E-1	.39E-1	.25E-1	.18E-1	.14E-1	.65E-3
	Th	4d	707.2											.6692	.5842	.4843	.3864	.87E-2
	Th	5p	190.4								.4329	.3243	.1614	.1105	.75E-1	.57E-1	.43E-1	.18E-2
	Th	6s	40.5					.2136	.1309	.1101	.75E-1	.42E-1	.14E-1	.88E-2	.55E-2	.40E-2	.29E-2	.13E-3
	Th	4f	390.4										4.036	2.734	1.568	.9895	.6243	.19E-2
	Th	5d	108.4							2.758	1.399	.4056	.2760	.2422	.1843	.1322	.1012	.76E-1	.16E-2
	Th	6p	26.7					2.911	.4769	.2200	.1862	.1328	.82E-1	.32E-1	.21E-1	.14E-1	.10E-1	.81E-2	.33E-3
	Th	7s	5.0	.16E-1	.91E-1	.1008	.1012	.76E-1	.33E-1	.18E-1	.14E-1	.91E-2	.50E-2	.18E-2	.95E-3	.78E-3	.55E-3	.37E-3	.18E-4
	Th	6d	7.0	23.96	15.71	8.896	4.810	1.454	.1495	.24E-1	.15E-1	.10E-1	.87E-2	.57E-2	.41E-2	.28E-2	.22E-2	.16E-2	.39E-4
91	Pa	4s	1091.4													.61E-1	.47E-1	.26E-2
	Pa	4p	966.8												.2488	.2031	.1639	.83E-2
	Pa	5s	241.7									.1495	.62E-1	.40E-1	.26E-1	.19E-1	.14E-1	.68E-3
	Pa	4d	733.5											.6768	.5911	.4938	.3961	.92E-2
	Pa	5p	193.5								.4331	.3272	.1661	.1141	.78E-1	.59E-1	.45E-1	.19E-2
	Pa	6s	39.2					.2033	.1258	.1060	.73E-1	.41E-1	.13E-1	.87E-2	.56E-2	.40E-2	.30E-2	.14E-3
	Pa	4f	409.3										4.076	2.856	1.659	1.054	.6681	.21E-2
	Pa	5d	109.1							3.060	1.560	.4324	.2748	.2474	.1897	.1369	.1051	.79E-1	.17E-2
	Pa	6p	25.4					2.853	.4557	.2093	.1757	.1271	.78E-1	.31E-1	.20E-1	.14E-1	.10E-1	.78E-2	.36E-3
	Pa	7s	4.8	.20E-1	.81E-1	.94E-1	.88E-1	.69E-1	.29E-1	.16E-1	.13E-1	.82E-2	.45E-2	.16E-2	.91E-3	.57E-3	.46E-3	.36E-3	.20E-4
	Pa	6d	6.1	12.05	6.702	3.872	2.138	.6557	.68E-1	.10E-1	.72E-2	.43E-2	.37E-2	.25E-2	.19E-2	.13E-2	.93E-3	.75E-3	.23E-4
	Pa	5f	14.5			.6278	1.674	5.012	3.407	.4038	.1540	.13E-1	.52E-1	.49E-1	.31E-1	.18E-1	.12E-1	.80E-2	.40E-4
92	U	4s	1131.4													.62E-1	.48E-1	.27E-2
	U	4p	1004.3												.2516	.2069	.1673	.86E-2
	U	5s	251.6									.1528	.64E-1	.42E-1	.27E-1	.20E-1	.15E-1	.72E-3
	U	4d	766.1											.6822	.5980	.5029	.4058	.98E-2
	U	5p	202.0									.3332	.1720	.1181	.82E-1	.61E-1	.47E-1	.20E-2
	U	6s	40.3					.2051	.1289	.1090	.75E-1	.42E-1	.14E-1	.91E-2	.57E-2	.41E-2	.30E-2	.15E-3
	U	4f	434.7										4.077	2.974	1.754	1.121	.7138	.23E-2
	U	5d	114.8							3.267	1.755	.4711	.2793	.2557	.1973	.1431	.1101	.83E-1	.19E-2
	U	6p	26.1					3.032	.4699	.2141	.1817	.1301	.81E-1	.32E-1	.22E-1	.14E-1	.10E-1	.82E-2	.39E-3
	U	7s	4.8	.18E-1	.79E-1	.92E-1	.87E-1	.68E-1	.30E-1	.16E-1	.13E-1	.83E-2	.45E-2	.16E-2	.88E-3	.55E-3	.43E-3	.35E-3	.14E-4
	U	6d	6.1	11.76	6.895	4.010	2.213	.6794	.71E-1	.10E-1	.75E-2	.44E-2	.37E-2	.26E-2	.19E-2	.13E-2	.99E-3	.74E-3	.19E-4
	U	5f	16.1			.6423	1.568	6.047	5.774	.7824	.3122	.23E-1	.77E-1	.79E-1	.51E-1	.30E-1	.20E-1	.13E-1	.67E-4
93	Np	4s	1171.7													.63E-1	.50E-1	.28E-2
	Np	4p	1042.1													.2106	.1707	.89E-2
	Np	5s	261.3									.1565	.66E-1	.43E-1	.28E-1	.21E-1	.15E-1	.74E-3
	Np	4d	799.0												.6042	.5116	.4151	.10E-1
	Np	5p	210.3									.3391	.1773	.1224	.85E-1	.63E-1	.49E-1	.21E-2
	Np	6s	41.4					.2050	.1307	.1111	.77E-1	.43E-1	.15E-1	.95E-2	.60E-2	.43E-2	.32E-2	.16E-3
	Np	4f	460.4										3.980	3.089	1.850	1.188	.7617	.25E-2
	Np	5d	120.4							3.313	1.948	.5143	.2825	.2630	.2040	.1498	.1147	.87E-1	.20E-2
	Np	6p	26.7					3.210	.4820	.2182	.1854	.1329	.83E-1	.33E-1	.22E-1	.14E-1	.11E-1	.84E-2	.41E-3
	Np	7s	4.9	.16E-1	.77E-1	.90E-1	.85E-1	.67E-1	.30E-1	.16E-1	.12E-1	.84E-2	.44E-2	.15E-2	.88E-3	.55E-3	.40E-3	.32E-3	.26E-4
	Np	6d	6.2	11.45	7.056	4.135	2.284	.7021	.73E-1	.11E-1	.78E-2	.45E-2	.37E-2	.26E-2	.19E-2	.13E-2	.10E-2	.74E-3	.19E-4
	Np	5f	17.6			.7113	1.370	6.266	8.435	1.328	.5475	.41E-1	.1011	.1133	.73E-1	.44E-1	.29E-1	.19E-1	.97E-4
94	Pu	4s	1205.8													.65E-1	.51E-1	.29E-2
	Pu	4p	1073.7													.2140	.1739	.91E-2
	Pu	5s	264.9									.1581	.68E-1	.44E-1	.29E-1	.21E-1	.16E-1	.78E-3
	Pu	4d	825.7												.6100	.5196	.4247	.11E-1
	Pu	5p	212.5									.3402	.1812	.1259	.87E-1	.66E-1	.50E-1	.22E-2
	Pu	6s	39.5					.1948	.1251	.1063	.74E-1	.42E-1	.14E-1	.93E-2	.59E-2	.43E-2	.32E-2	.16E-3
	Pu	4f	479.8										3.633	3.205	1.946	1.259	.8102	.28E-2
	Pu	5d	120.2							3.525	2.154	.5531	.2797	.2669	.2088	.1541	.1185	.90E-1	.22E-2
	Pu	6p	24.9					.3.103	.4546	.2047	.1721	.1255	.78E-1	.32E-1	.21E-1	.14E-1	.10E-1	.80E-2	.40E-3
	Pu	7s	4.6	.20E-1	.67E-1	.78E-1	.70E-1	.56E-1	.25E-1	.13E-1	.10E-1	.70E-2	.37E-2	.12E-2	.74E-3	.48E-3	.32E-3	.24E-3	.21E-4
	Pu	5f	14.6			1.473	3.003	9.450	12.17	2.360	1.035	.84E-1	.1341	.1691	.1122	.68E-1	.45E-1	.30E-1	.15E-3

TABLE I. Atomic Subshell Photoionization Cross Sections, $1 \leq Z \leq 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
95	Am	4s	1246.6													.65E-1	.52E-1	.29E-2
	Am	4p	1112.0													.2174	.1772	.95E-2
	Am	5s	274.2									.1602	.70E-1	.46E-1	.30E-1	.22E-1	.16E-1	.81E-3
	Am	4d	859.1												.6160	.5275	.4334	.11E-1
	Am	5p	220.5									.3446	.1861	.1300	.90E-1	.68E-1	.52E-1	.23E-2
	Am	6s	40.4					.1939	.1262	.1076	.75E-1	.43E-1	.15E-1	.96E-2	.60E-2	.44E-2	.33E-2	.16E-3
	Am	4f	505.9										2.763	3.318	2.044	1.331	.8606	.31E-2
	Am	5d	125.5						2.620	2.336	.6034	.2822	.2735	.2157	.1599	.1232	.94E-1	.23E-2
	Am	6p	25.4				3.271	.4642	.2072	.1744	.1273	.79E-1	.33E-1	.21E-1	.15E-1	.11E-1	.82E-2	.40E-3
	Am	7s	4.6	.19E-1	.66E-1	.76E-1	.69E-1	.55E-1	.25E-1	.13E-1	.10E-1	.70E-2	.37E-2	.12E-2	.78E-3	.52E-3	.33E-3	.23E-3	.10E-4
	Am	5f	15.9			1.448	2.551	8.824	14.74	3.379	1.535	.1365	.1478	.2069	.1413	.86E-1	.58E-1	.39E-1	.20E-3
96	Cm	4s	1294.7														.53E-1	.30E-2
	Cm	4p	1157.5													.2208	.1805	.98E-2
	Cm	5s	289.9									.1605	.72E-1	.47E-1	.31E-1	.23E-1	.17E-1	.83E-3
	Cm	4d	899.6												.6215	.5362	.4420	.12E-1
	Cm	5p	234.7									.3524	.1915	.1353	.93E-1	.71E-1	.54E-1	.24E-2
	Cm	6s	44.2					.2016	.1345	.1155	.81E-1	.46E-1	.16E-1	.10E-1	.66E-2	.48E-2	.35E-2	.17E-3
	Cm	4f	539.2										1.251	3.428	2.143	1.405	.9125	.33E-2
	Cm	5d	136.7							2.293	.6633	.2904	.2823	.2255	.1666	.1292	.99E-1	.25E-2
	Cm	6p	28.4				3.761	.5138	.2268	.1930	.1391	.67E-1	.35E-1	.24E-1	.16E-1	.11E-1	.91E-2	.42E-3
	Cm	7s	5.0	.10E-1	.72E-1	.85E-1	.82E-1	.65E-1	.30E-1	.15E-1	.12E-1	.86E-2	.45E-2	.15E-2	.99E-3	.66E-3	.45E-3	.31E-3	.25E-4
	Cm	6d	6.2	10.49	7.336	4.427	2.462	.7636	.80E-1	.12E-1	.85E-2	.46E-2	.37E-2	.26E-2	.19E-2	.13E-2	.11E-2	.80E-3	.25E-4
	Cm	5f	22.0				1.269	4.826	16.17	4.295	1.996	.1912	.1501	.2295	.1588	.97E-1	.65E-1	.44E-1	.22E-3
97	Bk	4s	1336.5														.54E-1	.31E-2
	Bk	4p	1196.7													.2241	.1837	.10E-1
	Bk	5s	299.3									.1749	.74E-1	.49E-1	.32E-1	.24E-1	.18E-1	.88E-3
	Bk	4d	933.9												.6251	.5425	.4502	.12E-1
	Bk	5p	242.7									.3559	.1962	.1391	.96E-1	.73E-1	.56E-1	.25E-2
	Bk	6s	45.1					.1997	.1353	.1165	.82E-1	.47E-1	.16E-1	.10E-1	.67E-2	.49E-2	.36E-2	.18E-3
	Bk	4f	566.2										.2186	3.545	2.242	1.481	.9663	.37E-2
	Bk	5d	142.1							2.040	.7226	.2921	.2881	.2315	.1720	.1338	.1034	.26E-2
	Bk	6p	28.9				3.958	.5239	.2288	.1947	.1405	.89E-1	.36E-1	.24E-1	.16E-1	.12E-1	.93E-2	.42E-3
	Bk	7s	5.0	.91E-2	.70E-1	.84E-1	.80E-1	.64E-1	.30E-1	.15E-1	.12E-1	.86E-2	.45E-2	.15E-2	.10E-2	.69E-3	.49E-3	.34E-3	.27E-4
	Bk	6d	6.2	10.19	7.372	4.498	2.512	.7824	.83E-1	.12E-1	.87E-2	.47E-2	.36E-2	.26E-2	.19E-2	.13E-2	.11E-2	.83E-3	.22E-4
	Bk	5f	23.4				1.418	3.936	17.99	5.857	2.822	.2987	.1585	.2724	.1913	.1195	.80E-1	.54E-1	.29E-3
98	Cf	4s	1378.6														.55E-1	.32E-2
	Cf	4p	1236.3													.2285	.1869	.10E-1
	Cf	5s	308.8										.76E-1	.50E-1	.33E-1	.24E-1	.18E-1	.90E-3
	Cf	4d	968.6												.6272	.5495	.4583	.13E-1
	Cf	5p	250.8									.3590	.2006	.1427	.99E-1	.76E-1	.58E-1	.27E-2
	Cf	6s	46.0					.1976	.1358	.1174	.83E-1	.48E-1	.17E-1	.10E-1	.69E-2	.50E-2	.37E-2	.18E-3
	Cf	4f	593.5										.92E-1	3.665	2.342	1.558	1.021	.40E-2
	Cf	5d	147.4							1.298	.7878	.2936	.2933	.2372	.1772	.1384	.1071	.26E-2
	Cf	6p	29.4				4.165	.5341	.2305	.1960	.1417	.90E-1	.37E-1	.25E-1	.17E-1	.12E-1	.95E-2	.44E-3
	Cf	7s	5.1	.75E-2	.68E-1	.82E-1	.79E-1	.64E-1	.30E-1	.15E-1	.12E-1	.87E-2	.46E-2	.15E-2	.10E-2	.69E-3	.50E-3	.36E-3	.19E-4
	Cf	6d	6.1	9.914	7.380	4.555	2.555	.7999	.85E-1	.13E-1	.88E-2	.47E-2	.36E-2	.25E-2	.18E-2	.13E-2	.10E-2	.86E-3	.26E-4
	Cf	5f	24.7					3.350	19.19	7.747	3.878	.4515	.1627	.3169	.2280	.1432	.97E-1	.66E-1	.39E-3
99	Es	4s	1421.2														.56E-1	.33E-2
	Es	4p	1276.4														.1899	.10E-1
	Es	5s	318.1										.78E-1	.51E-1	.34E-1	.25E-1	.19E-1	.94E-3
	Es	4d	1003.6												.6124	.5556	.4658	.13E-1
	Es	5p	258.7									.3616	.2048	.1463	.1023	.78E-1	.60E-1	.28E-2
	Es	6s	46.8					.1949	.1354	.1183	.83E-1	.48E-1	.17E-1	.10E-1	.69E-2	.50E-2	.38E-2	.18E-3
	Es	4f	621.2											3.786	2.443	1.637	1.078	.43E-2
	Es	5d	152.7								.8595	.2950	.2979	.2427	.1824	.1429	.1108	.30E-2
	Es	6p	29.8				4.369	.5426	.2306	.1965	.1422	.89E-1	.38E-1	.25E-1	.17E-1	.12E-1	.98E-2	.43E-3
	Es	7s	5.1	.60E-2	.66E-1	.81E-1	.78E-1	.63E-1	.30E-1	.15E-1	.12E-1	.88E-2	.46E-2	.15E-2	.10E-2	.67E-3	.51E-3	.38E-3	.22E-4
	Es	6d	6.1	9.658	7.377	4.606	2.597	.8170	.87E-1	.13E-1	.90E-2	.47E-2	.35E-2	.25E-2	.18E-2	.13E-2	.10E-2	.88E-3	.32E-4
	Es	5f	26.1					2.906	19.74	9.971	5.184	.6646	.1631	.3638	.2617	.1678	.1151	.78E-1	.47E-3
100	Fm	4s	1464.3														.57E-1	.33E-2
	Fm	4p	1316.8														.1929	.11E-1
	Fm	5s	327.5										.79E-1	.53E-1	.35E-1	.26E-1	.20E-1	.97E-3
	Fm	4d	1039.1													.5623	.4733	.14E-1
	Fm	5p	266.7									.3643	.2087	.1498	.1051	.80E-1	.62E-1	.29E-2
	Fm	6s	47.6					.1921	.1356	.1187	.84E-1	.49E-1	.17E-1	.11E-1	.71E-2	.52E-2	.39E-2	.17E-3
	Fm	4f	649.2											3.833	2.546	1.716	1.136	.47E-2
	Fm	5d	157.9								.9339	.2970	.3029	.2472	.1872	.1474	.1145	.32E-2
	Fm	6p	30.3				4.584	.5527	.2318	.1973	.1430	.90E-1	.38E-1	.26E-1	.17E-1	.13E-1	.99E-2	.45E-3
	Fm	7s	5.1	.51E-2	.69E-1	.74E-1	.81E-1	.64E-1	.28E-1	.14E-1	.12E-1	.95E-2	.48E-2	.17E-2	.84E-3	.79E-3	.51E-3	.28E-3	.12E-4
	Fm	6d	6.1	9.416	7.346	4.644	2.633	.8333	.89E-1	.13E-1	.92E-2	.47E-2	.35E-2	.24E-2	.18E-2	.14E-2	.10E-2	.88E-3	.30E-4
	Fm	5f	27.4					2.601	19.66	12.49	6.794	.9497	.1598	.4105	.3007	.1948	.1345	.92E-1	.59E-3
101	Md	4p	1357.7														.1958	.11E-1
	Md	5s	336.9										.81E-1	.54E-1	.36E-1	.27E-1	.20E-1	.10E-2
	Md	4d	1074.9													.5678	.4806	.15E-1
	Md	5p	274.7									.3672	.2125	.1531	.1079	.82E-1	.63E-1	.30E-2
	Md	6s	48.4					.1891	.1357	.1191	.85E-1	.49E-1	.17E-1	.11E-1	.73E-2	.53E-2	.40E-2	.18E-3
	Md	4f	677.7											3.547	2.655	1.797	1.196	.50E-2
	Md	5d	163.2								1.012	.2986	.3063	.2521	.1921	.1516	.1162	.33E-2
	Md	6p	30.7				4.813	.5633	.2328	.1978	.1438	.91E-1	.39E-1	.26E-1	.17E-1	.13E-1	.10E-1	.49E-3
	Md	7s	5.2	.39E-2	.67E-1	.72E-1	.80E-1	.64E-1	.28E-1	.14E-1	.12E-1	.94E-2	.47E-2	.18E-2	.87E-3	.78E-3	.46E-3	.27E-3	.30E-4
	Md	6d	6.0	9.198	7.317	4.668	2.675	.8637	.93E-1	.14E-1	.89E-2	.47E-2	.35E-2	.24E-2	.18E-2	.13E-2	.11E-2	.81E-3	.25E-4
	Md	5f	28.7					2.427	19.06	15.26	8.720	1.326	.1540	.4573	.3410	.2236	.1554	.1069	.71E-3
102	No	4p	1399.0														.1984	.11E-1
	No	5s	345.3										.82E-1	.55E-1	.37E-1	.27E-1	.21E-1	.10E-2
	No	4d	1111.2													.5732	.4875	.15E-1
	No	5p	282.6									.3693	.2160	.1563	.1106	.85E-1	.65E-1	.31E-2
	No	6s	49.2					.1861	.1358	.1194	.85E-1	.50E-1	.18E-1	.11E-1	.74E-2	.54E-2	.41E-2	.18E-3
	No	4f	706.5											2.274	2.772	1.879	1.257	.55E-2
	No	5d	168.4								1.082	.3006	.3092	.2567	.1967	.1558	.1218	.35E-2
	No	6p	31.1				5.044	.5739	.2336	.1982	.1443	.91E-1	.39E-1	.26E-1	.17E-1	.13E-1	.10E-1	.51E-3
	No	7s	5.2	.28E-2	.65E-1	.71E-1	.79E-1	.63E-1	.28E-1	.14E-1	.12E-1	.93E-2	.45E-2	.18E-2	.92E-3	.75E-3	.41E-3	.28E-3	.37E-4
	No	6d	6.0	8.993	7.258	4.684	2.702	.8682	.95E-1	.14E-1	.91E-2	.46E-2	.34E-2	.24E-2	.18E-2	.13E-2	.11E-2	.82E-3	.29E-4
	No	5f	30.0					2.357	18.10	18.16	10.98	1.816	.1466	.5021	.3823	.2552	.1782	.1229	.82E-3
103	Lr	4p	1440.7														.2013	.12E-1
	Lr	5s	355.6										.84E-1	.56E-1	.38E-1	.28E-1	.21E-1	.10E-2
	Lr	4d	1147.9													.5744	.4944	.16E-1
	Lr	5p	290.6									.3678	.2197	.1590	.1135	.86E-1	.67E-1	.32E-2
	Lr	6s	50.0					.1828	.1357	.1195	.86E-1	.50E-1	.18E-1	.11E-1	.75E-2	.55E-2	.42E-2	.19E-3
	Lr	4f	735.7											.6392	2.900	1.963	1.320	.60E-2
	Lr	5d	173.6								1.133	.3033	.3116	.2609	.2013	.1598	.1254	.37E-2
	Lr	6p	31.5				5.289	.5850	.2343	.1984	.1447	.92E-1	.39E-1	.27E-1	.18E-1	.13E-1	.10E-1	.52E-3
	Lr	7s	5.2	.18E-2	.63E-1	.69E-1	.78E-1	.63E-1	.28E-1	.14E-1	.12E-1	.92E-2	.44E-2	.17E-2	.10E-2	.67E-3	.38E-3	.33E-3	.14E-4
	Lr	6d	5.9	8.811	7.209	4.705	2.732	.8836	.97E-1	.15E-1	.92E-2	.46E-2	.34E-2	.24E-2	.18E-2	.13E-2	.11E-2	.83E-3	.32E-4
	Lr	5f	31.3					2.382	16.88	21.04	13.52	2.440	.1396	.5488	.4252	.2868	.2016	.1399	.99E-3

TABLE II. Atomic Subshell Asymmetry Parameters, $5 \leq Z \leq 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
5	B 2p	6.7	1.118	1.404	1.474	1.518	1.532	1.398	1.169	1.098	.9579	.7766	.4347	.2973	-.63E-2	.5124	-.2882	1.874
6	C 2p	9.0	.5304	1.163	1.308	1.406	1.505	1.481	1.347	1.277	1.148	.9309	.6921	.6637	.3869	1.070	-.5547	1.911
7	N 2p	11.5		.8030	1.072	1.243	1.428	1.513	1.434	1.400	1.292	1.106	.7360	.5835	.4369	.6521	.1659	1.226
8	O 2p	14.2		.2501	.7365	1.022	1.310	1.497	1.483	1.460	1.383	1.232	.9080	.7722	.6550	.5819	.5193	-.8280
9	F 2p	17.0			.2535	.7244	1.160	1.452	1.498	1.488	1.443	1.319	1.023	.8790	.7497	.6751	.6257	-.7957
10	Ne 2p	20.0			-.3960	.3209	.9739	1.386	1.486	1.491	1.471	1.385	1.123	.9878	.8626	.7645	.6958	.2460
11	Na 2p	36.3					-.2907	1.243	1.463	1.481	1.489	1.435	1.210	1.082	.9586	.8701	.7882	.5215
12	Mg 2p	56.4						.8607	1.388	1.436	1.486	1.466	1.283	1.162	1.044	.9517	.8688	.8070
13	Al 2p	80.9							1.215	1.332	1.452	1.486	1.340	1.232	1.120	1.033	.9535	.1941
	Al 3p	4.9	1.850	1.085	-.2642	.1020	.9917	1.506	1.599	1.588	1.574	1.543	1.300	1.200	1.088	.9633	.8909	1.633
14	Si 2p	108.2							.8022	1.092	1.371	1.483	1.390	1.293	1.187	1.105	1.026	.3748
	Si 3p	6.5	1.606	1.790	.6237	-.2535	.7739	1.469	1.595	1.598	1.605	1.545	1.375	1.267	1.151	1.068	.9902	-.4768
15	P 2p	138.5								.5311	1.202	1.455	1.427	1.346	1.246	1.169	1.092	.4674
	P 3p	8.3		1.865	1.582	.71E-1	.4825	1.415	1.583	1.606	1.616	1.583	1.410	1.313	1.213	1.131	1.047	.7023
16	S 2p	171.8									.8133	1.392	1.455	1.386	1.299	1.225	1.153	.4355
	S 3p	10.3		1.697	1.852	1.111	.1231	1.342	1.570	1.595	1.617	1.599	1.442	1.358	1.261	1.186	1.108	.1217
17	Cl 2p	208.2										1.269	1.470	1.421	1.344	1.277	1.207	.4619
	Cl 3p	12.3		1.390	1.776	1.726	-.1939	1.250	1.545	1.579	1.619	1.611	1.477	1.394	1.299	1.236	1.153	-.1495
18	Ar 2p	247.7										1.010	1.473	1.446	1.381	1.321	1.256	.4881
	Ar 3p	14.5			1.542	1.829	-.69E-1	1.135	1.510	1.554	1.607	1.624	1.513	1.438	1.347	1.272	1.205	.3296
19	K 2p	299.4										.8489	1.464	1.461	1.413	1.358	1.299	.5377
	K 3p	23.6				1.777	.5166	.9887	1.462	1.521	1.598	1.627	1.539	1.460	1.382	1.311	1.244	.5499
20	Ca 2p	356.2											1.435	1.468	1.436	1.391	1.337	.5751
	Ca 3p	33.8					1.400	.7593	1.404	1.481	1.580	1.631	1.558	1.487	1.414	1.350	1.286	.4285
21	Sc 2p	409.9											1.379	1.464	1.451	1.417	1.370	.6229
	Sc 3p	39.2						.5064	1.335	1.429	1.555	1.626	1.579	1.518	1.446	1.386	1.324	.5385
	Sc 3d	7.2		.1443	.2578	.3960	.6458	1.030	1.216	1.251	1.275	1.241	1.043	.9147	.8166	.7405	.6818	.7362
22	Ti 2p	466.4											1.276	1.446	1.460	1.436	1.397	.6699
	Ti 3p	44.6						.2029	1.252	1.369	1.522	1.617	1.592	1.537	1.470	1.412	1.353	.6385
	Ti 3d	8.6		.27E-1	.1380	.2770	.5486	.9569	1.173	1.215	1.261	1.259	1.082	.9632	.8540	.7907	.7152	-.5709
23	V 2p	525.8											1.073	1.410	1.461	1.449	1.419	.7062
	V 3p	49.9						-.1380	1.152	1.298	1.483	1.604	1.604	1.555	1.492	1.441	1.386	.6851
	V 3d	9.8		-.53E-1	.25E-1	.1679	.4548	.8845	1.128	1.170	1.232	1.255	1.114	1.009	.9013	.8252	.7706	-.4839
24	Cr 2p	582.0											.6303	1.348	1.452	1.456	1.435	.7494
	Cr 3p	50.2						-.3790	1.049	1.223	1.444	1.588	1.612	1.571	1.514	1.464	1.410	.6585
	Cr 3d	6.5	.85E-1	.12E-1	.88E-1	.2051	.4404	.8307	1.073	1.124	1.198	1.238	1.138	1.028	.9322	.8586	.8007	1.130
25	Mn 2p	653.7												1.235	1.431	1.457	1.447	.7901
	Mn 3p	60.9						-.5163	.8839	1.112	1.388	1.569	1.616	1.581	1.529	1.484	1.437	.7472
	Mn 3d	12.0		.19E-1	-.1373	-.31E-1	.2690	.7410	1.025	1.085	1.178	1.237	1.159	1.063	.9653	.8998	.8312	.3507
26	Fe 2p	722.2												1.018	1.392	1.449	1.453	.8232
	Fe 3p	66.6						-.34E-1	.7090	.9920	1.329	1.545	1.621	1.594	1.548	1.501	1.458	.7884
	Fe 3d	13.1		.2113	-.1604	-.1177	.1808	.6701	.9736	1.036	1.142	1.226	1.179	1.087	.9963	.9315	.8663	-.3962
27	Co 2p	793.9												.4720	1.328	1.430	1.453	.8625
	Co 3p	72.4						.7453	.5000	.8478	1.261	1.519	1.622	1.602	1.560	1.519	1.479	.8120
	Co 3d	14.2			-.1328	-.1847	.97E-1	.6017	.9209	.9893	1.107	1.207	1.187	1.112	1.033	.9569	.9001	.5353
28	Ni 2p	868.8													1.218	1.396	1.446	.9016
	Ni 3p	78.3							.2531	.6748	1.182	1.489	1.619	1.605	1.572	1.536	1.493	.8390
	Ni 3d	15.2			-.27E-1	-.2058	-.11E-2	.5290	.8664	.9455	1.059	1.170	1.168	1.145	1.104	1.035	.9599	.5459
29	Cu 2p	939.1													1.028	1.343	1.429	.9336
	Cu 3p	77.7							.57E-1	.5327	1.105	1.458	1.616	1.610	1.582	1.548	1.510	.8842
	Cu 3d	10.1		-.1337	-.1746	-.1803	.43E-1	.4959	.8258	.9087	.9999	1.105	1.084	1.128	1.204	1.116	1.019	1.000
30	Zn 2p	1027.9													.5175	1.254	1.400	.9667
	Zn 3p	90.6							-.3130	.2414	.9838	1.415	1.612	1.614	1.590	1.559	1.526	.9023
	Zn 3d	17.1			.2692	-.2073	-.1441	.4037	.7620	.8444	.9874	1.137	1.183	1.139	1.105	1.036	.9684	1.054
31	Ga 2p	1124.2														1.089	1.352	1.000
	Ga 3p	107.4							-.7051	-.1560	.8196	1.364	1.607	1.615	1.595	1.572	1.537	.9334
	Ga 3d	27.8					-.93E-1	.2425	.6781	.7735	.9430	1.118	1.207	1.173	1.116	1.060	1.002	.1787
32	Ge 2p	1225.1														.6629	1.274	1.030
	Ge 3p	125.1							-.7435	-.6372	.5952	1.299	1.598	1.616	1.603	1.578	1.552	.9557
	Ge 3d	39.3						.41E-1	.5707	.6859	.8860	1.089	1.209	1.185	1.132	1.083	1.031	.3376
	Ge 4p	6.4	1.441	1.827	1.888	1.797	.9120	.1466	1.002	1.160	1.384	1.566	1.657	1.634	1.602	1.604	1.522	.9972
33	As 2p	1330.9															1.131	1.061
	As 3p	144.0								-.9398	.2799	1.218	1.588	1.615	1.607	1.587	1.562	.9872
	As 3d	52.0						-.1018	.4366	.5769	.8153	1.056	1.209	1.194	1.148	1.105	1.055	.3906
	As 4p	7.9		1.767	1.878	1.838	1.045	.96E-1	.9615	1.125	1.363	1.560	1.668	1.650	1.609	1.589	1.575	.9780
34	Se 2p	1441.4															.7728	1.088
	Se 3p	164.0									-.1687	1.114	1.576	1.612	1.610	1.595	1.571	1.015
	Se 3d	65.8						.4350	.2672	.4422	.7299	1.015	1.209	1.200	1.161	1.124	1.069	.4047
	Se 4p	9.5		1.670	1.844	1.867	1.215	.32E-1	.9203	1.085	1.341	1.552	1.671	1.652	1.618	1.580	1.566	1.022
35	Br 3p	185.2									-.7011	.9840	1.561	1.608	1.613	1.600	1.580	1.041
	Br 3d	80.6							.83E-1	.2742	.6266	.9664	1.202	1.210	1.177	1.134	1.094	.5717
	Br 4p	11.2		1.521	1.783	1.874	1.377	-.31E-1	.8741	1.047	1.316	1.538	1.668	1.667	1.635	1.616	1.595	1.035
36	Kr 3p	207.5										.8146	1.542	1.602	1.615	1.605	1.588	1.065
	Kr 3d	96.6							.12E-1	.98E-1	.4990	.9055	1.197	1.210	1.185	1.153	1.106	.4994
	Kr 4p	13.0		1.294	1.686	1.856	1.520	-.83E-1	.8205	1.007	1.290	1.526	1.661	1.665	1.644	1.634	1.586	1.051

TABLE II. Atomic Subshell Asymmetry Parameters, $5 \leq Z \leq 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
37	Rb 3p	237.9										.5397	1.517	1.594	1.614	1.610	1.593	1.089
	Rb 3d	120.7							1.275	.1476	.3361	.8290	1.182	1.213	1.196	1.164	1.124	.5831
	Rb 4p	20.1				1.879	1.683	-.1258	.7643	.9631	1.261	1.513	1.667	1.670	1.652	1.633	1.614	1.078
38	Sr 3p	270.3										.77E-1	1.487	1.584	1.612	1.612	1.600	1.111
	Sr 3d	146.6								1.589	.1832	.7346	1.167	1.211	1.202	1.177	1.138	.5838
	Sr 4p	27.7					1.847	-.1701	.6987	.9138	1.231	1.500	1.664	1.677	1.658	1.637	1.614	1.097
39	Y 3p	300.5											1.450	1.570	1.609	1.613	1.605	1.132
	Y 3d	170.5									.3301	.6214	1.148	1.205	1.208	1.185	1.155	.5788
	Y 4p	32.6					1.974	-.1760	.6321	.8576	1.200	1.484	1.666	1.680	1.664	1.645	1.621	1.115
	Y 4d	5.6	.2339	.4447	.6218	.8395	1.405	-.7619	.3401	.5594	.8611	1.118	1.294	1.293	1.259	1.178	1.187	.5732
40	Zr 3p	331.4											1.406	1.552	1.605	1.613	1.608	1.153
	Zr 3d	194.8									1.692	.4891	1.123	1.198	1.212	1.194	1.166	.6207
	Zr 4p	37.1					1.955	-.1454	.5577	.7999	1.164	1.470	1.667	1.681	1.668	1.653	1.635	1.128
	Zr 4d	7.0	.1519	.3019	.4928	.7227	1.269	-.2890	.2494	.4833	.8238	1.104	1.297	1.263	1.260	1.217	1.155	.7581
41	Nb 3p	359.4											1.352	1.532	1.598	1.612	1.611	1.174
	Nb 3d	216.3										.3534	1.092	1.188	1.212	1.203	1.175	.6235
	Nb 4p	38.5							-.52E-1	.4884	.7439	1.128	1.664	1.683	1.675	1.661	1.644	1.153
	Nb 4d	6.1	.41E-1	.2298	.4174	.6363	1.141	.6916	.1328	.4003	.7788	1.087	1.277	1.306	1.276	1.249	1.165	.3714
42	Mo 3p	391.6											1.284	1.508	1.589	1.611	1.612	1.193
	Mo 3d	242.0										.2737	1.056	1.174	1.211	1.208	1.185	.6390
	Mo 4p	42.5							.74E-1	.4043	.6769	1.088	1.661	1.684	1.680	1.667	1.649	1.176
	Mo 4d	7.2	-.31E-2	.95E-1	.2878	.5219	1.026	1.534	.13E-1	.3105	.7321	1.070	1.296	1.290	1.281	1.254	1.220	.7566
43	Tc 3p	429.1											1.192	1.477	1.577	1.606	1.613	1.209
	Tc 3d	273.0										.7559	1.011	1.156	1.207	1.210	1.195	.6488
	Tc 4p	50.3							.2449	.3080	.5935	1.042	1.657	1.683	1.682	1.672	1.656	1.191
	Tc 4d	11.2		-.81E-1	.59E-1	.3302	.8908	1.876	-.1379	.2162	.6819	1.050	1.283	1.293	1.266	1.257	1.202	.5612
44	Ru 3p	458.8											1.081	1.442	1.563	1.601	1.613	1.229
	Ru 3d	296.1										1.005	.9598	1.133	1.202	1.210	1.201	.6658
	Ru 4p	50.6							.4818	.2243	.5243	1.001	1.654	1.684	1.686	1.677	1.661	1.203
	Ru 4d	9.3		-.1848	.16E-1	.2713	.8005	1.998	-.2919	.1087	.6246	1.022	1.296	1.315	1.288	1.271	1.200	.6244
45	Rh 3p	493.9											.9208	1.398	1.547	1.593	1.611	1.246
	Rh 3d	324.5											.8983	1.107	1.192	1.210	1.205	.6841
	Rh 4p	54.7							.7396	.1349	.4405	.9522	1.370	1.650	1.683	1.688	1.677	1.664	1.230
	Rh 4d	10.4		-.2847	-.1245	.1401	.6881	1.930	-.4568	-.15E-1	.5630	.9961	1.290	1.315	1.301	1.265	1.220	.6290
46	Pd 3p	525.4											.7126	1.345	1.527	1.584	1.607	1.263
	Pd 3d	349.3											.8279	1.075	1.180	1.208	1.207	.7077
	Pd 4p	54.6							.9688	.73E-1	.3716	.9021	1.348	1.645	1.682	1.690	1.681	1.670	1.246
	Pd 4d	8.0		-.2660	-.88E-1	.1222	.6127	1.784	-.6096	-.1492	.5028	.9662	1.296	1.331	1.330	1.255	1.222	.7946
47	Ag 3p	567.2											.3042	1.274	1.503	1.571	1.602	1.280
	Ag 3d	384.4											.7398	1.036	1.164	1.203	1.209	.7212
	Ag 4p	62.9							1.243	-.36E-1	.2662	.8405	1.319	1.637	1.680	1.692	1.688	1.673	1.250
	Ag 4d	12.6		-.2532	-.3695	-.1321	.4564	1.672	-.7032	-.3073	.4222	.9342	1.272	1.312	1.313	1.275	1.264	.6999
48	Cd 3p	611.4												1.183	1.474	1.557	1.595	1.295
	Cd 3d	421.8											.6383	.9906	1.144	1.195	1.210	.7341
	Cd 4p	72.3							1.402	-.1497	.1525	.7688	1.289	1.632	1.679	1.692	1.688	1.681	1.275
	Cd 4d	18.3				-.2936	.2531	1.556	-.6856	-.4550	.3380	.8989	1.266	1.316	1.306	1.287	1.270	.6970
49	In 3p	659.3												1.054	1.437	1.540	1.587	1.307
	In 3d	462.9											.5224	.9349	1.121	1.184	1.208	.7510
	In 4p	84.1							-.2707	.19E-1	.6802	1.252	1.623	1.674	1.693	1.693	1.680	1.291
	In 4d	26.2					.23E-1	1.429	-.4866	-.6025	.2437	.8599	1.265	1.312	1.312	1.295	1.270	.7267
50	Sn 3p	708.7												.8541	1.390	1.519	1.576	1.321
	Sn 3d	505.5											.4183	.8675	1.092	1.170	1.203	.7666
	Sn 4p	96.1							-.3839	-.1340	.5795	1.212	1.614	1.671	1.693	1.694	1.685	1.303
	Sn 4d	34.4					.3839	1.276	-.95E-1	-.7147	.1369	.8171	1.253	1.309	1.319	1.304	1.279	.7309
	Sn 5p	5.9	1.678	1.893	1.831	1.617	.7886	-.29E-1	.6448	.8116	1.135	1.433	1.674	1.715	1.716	1.708	1.685	1.218
51	Sb 3p	759.9												.4686	1.331	1.492	1.564	1.335
	Sb 3d	549.9											.4762	.7870	1.058	1.152	1.195	.7796
	Sb 4p	108.5							-.4756	-.3110	.4659	1.168	1.605	1.668	1.692	1.695	1.690	1.309
	Sb 4d	42.9						1.086	.4514	-.7581	.19E-1	.7699	1.242	1.307	1.323	1.310	1.288	.7579
	Sb 5p	7.3		1.888	1.852	1.654	.8199	-.34E-1	.6195	.8142	1.115	1.426	1.672	1.709	1.702	1.718	1.717	1.233
52	Te 3p	812.8													1.253	1.460	1.548	1.348
	Te 3d	595.9											.5601	.6905	1.016	1.131	1.185	.7963
	Te 4p	121.4							-.5646	-.5047	.3337	1.118	1.595	1.662	1.692	1.697	1.691	1.330
	Te 4d	52.0						.8449	1.001	-.6851	-.1106	.7169	1.233	1.306	1.327	1.317	1.295	.7716
	Te 5p	8.6		1.869	1.870	1.699	.8943	-.43E-1	.6207	.7919	1.107	1.419	1.667	1.707	1.719	1.718	1.709	1.248
53	I 3p	867.5													1.147	1.421	1.530	1.361
	I 3d	643.7											.5794	.9669	1.106	1.172	.8114	
	I 4p	134.7								-.7084	.1756	1.062	1.583	1.657	1.690	1.697	1.694	1.340
	I 4d	61.5						.5714	1.450	-.4674	-.2568	.6583	1.218	1.301	1.329	1.322	1.301	.7787
	I 5p	10.0		1.832	1.882	1.747	.9759	-.52E-1	.5973	.7858	1.100	1.412	1.661	1.701	1.727	1.722	1.703	1.277
54	Xe 3p	923.9													.9806	1.370	1.507	1.373
	Xe 3d	693.2											.4622	.9069	1.075	1.157	.8252	
	Xe 4p	148.6									-.35E-1	.9940	1.570	1.652	1.688	1.697	1.696	1.356
	Xe 4d	71.5						.6303	1.729	-.80E-1	-.4050	.5944	1.206	1.294	1.324	1.327	1.313	.7964
	Xe 5p	11.4		1.765	1.882	1.789	1.057	-.63E-1	.5785	.7723	1.090	1.404	1.667	1.710	1.722	1.727	1.695	1.284
55	Cs 3p	987.8													.6684	1.302	1.478	1.386
	Cs 3d	750.2											.4295	.8333	1.037	1.138	.8393	
	Cs 4p	168.5									-.3402	.9095	1.555	1.645	1.686	1.697	1.698	1.365
	Cs 4d	87.6							1.793	.4029	-.5686	.5175	1.188	1.287	1.328	1.328	1.315	.8110
	Cs 5p	17.1			1.948	1.901	1.158	-.82E-1	.5631	.7496	1.076	1.395	1.661	1.708	1.724	1.718	1.713	1.374
56	Ba 3p	1053.8														1.208	1.442	1.396
	Ba 3d	809.2											.7427	.9915	1.115	.8548		
	Ba 4p	189.3									-.8201	.8064	1.539	1.637	1.683	1.697	1.699	1.371
	Ba 4d	104.5							1.507	.8446	-.7373	.4317	1.171	1.281	1.323	1.332	1.321	.8222
	Ba 5p	22.9				2.000	1.270	-.97E-1	.5435	.7322	1.062	1.387	1.659	1.704	1.723	1.716	1.714	1.376

TABLE II. Atomic Subshell Asymmetry Parameters, $5 \leq Z \leq 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
57	La	3p	1118.8													1.066	1.397	1.407
	La	3d	867.2												.6333	.9365	1.087	.8685
	La	4p	207.8									.6821	1.521	1.629	1.679	1.695	1.700	1.385
	La	4d	119.1						.3562	1.068	-.8828	.3388	1.151	1.269	1.323	1.331	1.326	.8379
	La	5p	26.4				1.427	-.1077	.5102	.7091	1.043	1.378	1.655	1.707	1.721	1.720	1.716	1.367
	La	5d	6.2	.1165	.5635	.8132	1.071	1.569	1.670	-.5437	-.3242	.2727	.8383	1.279	1.327	1.339	1.368	1.368	.8288
58	Ce	3p	1164.5													.8867	1.347	1.421
	Ce	3d	906.2												.5330	.8786	1.056	.8817
	Ce	4p	209.2									.6238	1.508	1.621	1.675	1.694	1.700	1.394
	Ce	4d	117.3						.5000	1.434	-.9308	.2714	1.131	1.258	1.319	1.330	1.329	.8495
	Ce	5p	24.3				1.460	-.1083	.4735	.6714	1.016	1.360	1.650	1.698	1.724	1.723	1.718	1.366
	Ce	4f	10.1		1.907	1.457	1.041	.6092	.4041	.4859	.5285	.6426	.8248	1.043	1.079	1.078	1.027	1.021	.3344
59	Pr	3p	1220.9													.4840	1.281	1.430
	Pr	3d	955.7												.4336	.8073	1.018	.8949
	Pr	4p	219.0									.5175	1.491	1.612	1.672	1.692	1.699	1.408
	Pr	4d	123.5						-.4392	1.321	-.9210	.1824	1.109	1.247	1.314	1.329	1.331	.8619
	Pr	5p	25.0				1.544	-.1047	.4369	.6392	.9911	1.346	1.645	1.695	1.724	1.726	1.721	1.404
	Pr	4f	11.0		1.976	1.656	1.178	.6480	.3900	.4611	.5073	.6177	.8007	1.039	1.065	1.073	1.033	1.027	.6536
60	Nd	3p	1278.2													1.192	1.439	
	Nd	3d	1006.0												.5074	.7243	.9739	.9083
	Nd	4p	228.6									.4016	1.473	1.603	1.667	1.690	1.698	1.421
	Nd	4d	129.6							.9522	-.7847	.88E-1	1.085	1.235	1.308	1.327	1.332	.8739
	Nd	5p	25.6				1.621	-.94E-1	.3997	.6060	.9655	1.330	1.640	1.692	1.723	1.729	1.724	1.416
	Nd	4f	11.8		1.872	1.804	1.318	.6929	.3821	.4403	.4847	.5932	.7775	1.025	1.063	1.075	1.041	1.026	.4302
61	Pm	3p	1336.3														1.064	1.448
	Pm	3d	1057.2													.6284	.9222	.9235
	Pm	4p	238.3									.2666	1.454	1.593	1.661	1.687	1.697	1.431
	Pm	4d	135.7							.3242	-.4865	-.13E-1	1.060	1.221	1.301	1.324	1.332	.8857
	Pm	5p	26.2				1.690	-.76E-1	.3615	.5708	.9388	1.314	1.634	1.689	1.721	1.729	1.726	1.421
	Pm	4f	12.5		1.650	1.888	1.453	.7436	.3777	.4211	.4615	.5686	.7549	1.016	1.056	1.070	1.042	1.028	.5067
62	Sm	3p	1395.4														.8628	1.457
	Sm	3d	1109.3													.5246	.8627	.9361
	Sm	4p	248.0									.1110	1.434	1.582	1.656	1.684	1.697	1.438
	Sm	4d	141.7							-.5532	-.40E-1	-.1196	1.034	1.208	1.292	1.324	1.329	.8979
	Sm	5p	26.7				1.751	-.50E-1	.3232	.5355	.9114	1.298	1.628	1.686	1.719	1.730	1.729	1.409
	Sm	4f	13.1		1.387	1.900	1.570	.7980	.3753	.4041	.4417	.5464	.7323	1.002	1.048	1.071	1.048	1.028	.6145
63	Eu	3p	1455.5														.4382	1.465
	Eu	3d	1162.4													.4351	.7929	.9489
	Eu	4p	257.7									-.76E-1	1.412	1.571	1.649	1.681	1.695	1.447
	Eu	4d	147.8							-.8787	.4690	-.2343	1.007	1.192	1.283	1.320	1.328	.9116
	Eu	5p	27.3				1.804	-.13E-1	.2827	.4965	.8825	1.280	1.619	1.682	1.720	1.731	1.731	1.434
	Eu	4f	13.7		1.138	1.853	1.665	.8554	.3751	.3886	.4233	.5251	.7100	.9878	1.041	1.069	1.054	1.030	.5564
64	Gd	3d	1226.2													.6229	.7064	.9610
	Gd	4p	276.2									-.4160	1.384	1.558	1.643	1.677	1.694	1.455
	Gd	4d	162.3								.7414	-.3764	.9756	1.175	1.275	1.315	1.328	.9239
	Gd	5p	30.9				1.907	.28E-1	.2463	.4622	.8589	1.266	1.615	1.680	1.717	1.729	1.731	1.442
	Gd	5d	5.9	.1359	.4295	.6297	.8450	1.286	1.992	.65E-3	-.5151	-.1810	.5741	1.181	1.294	1.347	1.348	1.388	.9328
	Gd	4f	21.6				1.136	1.475	.3906	.3514	.3855	.4908	.6828	.9744	1.037	1.060	1.056	1.039	.6061
65	Tb	3d	1271.3														.6212	.9731
	Tb	4p	277.2									-.5166	1.365	1.546	1.636	1.673	1.691	1.463
	Tb	4d	159.9								1.131	-.4761	.9485	1.158	1.265	1.309	1.325	.9381
	Tb	5p	28.3				1.886	.79E-1	.2074	.4215	.8249	1.244	1.606	1.674	1.715	1.729	1.733	1.463
	Tb	4f	14.6			1.655	1.775	.9749	.3822	.3633	.3917	.4867	.6671	.9562	1.026	1.060	1.053	1.034	.5800
66	Dy	3d	1327.3														.5232	.9841
	Dy	4p	287.1									-.7754	1.340	1.533	1.629	1.668	1.690	1.476
	Dy	4d	165.9								1.108	-.6005	.9175	1.140	1.255	1.303	1.323	.9480
	Dy	5p	28.8				1.916	.1368	.1704	.3832	.7949	1.226	1.600	1.669	1.712	1.728	1.733	1.458
	Dy	4f	14.9			1.535	1.793	1.036	.3881	.3516	.3773	.4679	.6462	.9416	1.016	1.056	1.054	1.038	.6149
67	Ho	3d	1384.2														.4407	.9949
	Ho	4p	297.1									-.8018	1.313	1.520	1.621	1.663	1.687	1.483
	Ho	4d	172.1								.8469	-.7232	.8850	1.120	1.246	1.294	1.322	.9619
	Ho	5p	29.3				1.939	.2016	.1343	.3449	.7639	1.207	1.592	1.665	1.709	1.726	1.732	1.456
	Ho	4f	15.3			1.420	1.787	1.092	.3951	.3413	.3645	.4501	.6261	.9272	1.005	1.051	1.055	1.042	.6478
68	Er	3d	1442.1														.5227	1.007
	Er	4p	307.1										1.284	1.505	1.613	1.658	1.684	1.488
	Er	4d	178.2								.3766	-.8338	.8506	1.101	1.234	1.287	1.318	.9721
	Er	5p	29.8				1.955	.2730	.99E-1	.3067	.7331	1.188	1.585	1.661	1.705	1.723	1.730	1.450
	Er	4f	15.5			1.311	1.766	1.148	.4042	.3323	.3526	.4332	.6063	.9122	.9942	1.045	1.055	1.045	.6361
69	Tm	4p	317.2										1.253	1.490	1.605	1.653	1.681	1.497
	Tm	4d	184.4								-.2788	-.9215	.8150	1.080	1.222	1.280	1.314	.9813
	Tm	5p	30.3				1.966	.3499	.66E-1	.2685	.7009	1.168	1.577	1.656	1.702	1.721	1.729	1.473
	Tm	4f	15.8			1.214	1.733	1.198	.4141	.3244	.3420	.4172	.5872	.8972	.9833	1.038	1.053	1.049	.6171
70	Yb	4p	327.5										1.220	1.473	1.596	1.647	1.677	1.504
	Yb	4d	190.7								-.8957	-.9703	.7767	1.058	1.209	1.271	1.308	.9890
	Yb	5p	30.8				1.970	.4316	.34E-1	.2307	.6680	1.147	1.569	1.651	1.698	1.718	1.727	1.489
	Yb	4f	16.0			1.123	1.697	1.248	.4249	.3154	.3331	.3996	.5668	.8791	.9755	1.030	1.046	1.045	.6268
71	Lu	4p	347.3										1.174	1.453	1.585	1.640	1.673	1.507
	Lu	4d	206.3									-.9667	.7306	1.033	1.194	1.263	1.303	.9998
	Lu	5p	34.8				1.974	.5225	.50E-2	.1951	.6381	1.130	1.562	1.648	1.698	1.719	1.727	1.512
	Lu	4f	24.6				1.706	.5264	.3016	.3074	.3720	.5408	.8649	.9621	1.019	1.039	1.043	.6755
	Lu	5d	5.3	.2363	.3924	.5317	.6946	1.056	1.808	1.517	.6066	-.5179	.2474	1.075	1.234	1.328	1.316	1.376	.9919
72	Hf	4p	367.8										1.123	1.430	1.574	1.633	1.668	1.519
	Hf	4d	222.5									-.8576	.6810	1.007	1.178	1.255	1.295	1.008
	Hf	5p	38.6						.6282	-.24E-1	.1568	.6058	1.112	1.556	1.644	1.695	1.716	1.726	1.509
	Hf	4f	33.8					.8059	.7556	.2941	.2847	.3421	.5124	.8497	.9550	1.019	1.039	1.040	.6561
	Hf	5d	6.7	.1480	.2843	.4461	.6324	1.015	1.790	1.579	.7144	-.5255	.1957	1.054	1.220	1.314	1.359	1.371	1.032

TABLE II. Atomic Subshell Asymmetry Parameters, $5 \leqslant Z \leqslant 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
73	Ta	4p	389.0										1.063	1.405	1.561	1.625	1.663	1.528
	Ta	4d	239.3									-.6037	.6267	.9781	1.162	1.244	1.290	1.016
	Ta	5p	42.4					.7396	-.51E-1	.1206	.5708	1.093	1.550	1.642	1.694	1.716	1.727	1.500
	Ta	4f	43.5					1.207	.3173	.2779	.3083	.4800	.8312	.9401	1.008	1.039	1.043	.6774
	Ta	5d	8.0		.1675	.3480	.5570	.9700	1.767	1.630	.8689	-.5014	.1588	1.043	1.209	1.301	1.340	1.358	.9417
74	W	4p	410.9										.9939	1.378	1.548	1.617	1.658	1.533
	W	4d	256.8									-.1882	.5673	.9470	1.145	1.233	1.283	1.028
	W	5p	46.1					.8612	-.74E-1	.84E-1	.5372	1.073	1.543	1.637	1.691	1.714	1.726	1.503
	W	4f	53.9					1.657	.3910	.2947	.2800	.4484	.8141	.9304	1.003	1.029	1.045	.6823
	W	5d	9.3		.43E-1	.2389	.4697	.9160	1.743	1.697	.9788	-.4891	.1249	1.034	1.198	1.293	1.325	1.349	1.014
75	Re	4p	433.3										.9134	1.347	1.533	1.608	1.652	1.537
	Re	4d	274.8									.2581	.5038	.9138	1.127	1.220	1.278	1.034
	Re	5p	49.8					.9938	-.95E-1	.47E-1	.5039	1.054	1.536	1.633	1.688	1.714	1.727	1.512
	Re	4f	64.8					1.039	.5648	.3593	.2614	.4143	.7952	.9162	.9930	1.029	1.041	.6939
	Re	5d	10.6		-.61E-1	.1178	.3734	.8558	1.713	1.754	1.084	-.4673	.93E-1	1.023	1.200	1.300	1.333	1.342	1.025
76	Os	4p	456.4										.8149	1.314	1.517	1.599	1.646	1.541
	Os	4d	293.4									.2111	.4336	.8784	1.108	1.208	1.270	1.046
	Os	5p	53.4					1.134	-.1116	.13E-1	.4666	1.033	1.530	1.629	1.686	1.712	1.725	1.526
	Os	4f	76.3					.3586	.9129	.5185	.2588	.3769	.7746	.9041	.9849	1.023	1.040	.7031
	Os	5d	11.9		-.96E-1	-.86E-2	.2660	.7887	1.679	1.806	1.219	-.4071	.63E-1	1.009	1.184	1.280	1.343	1.339	.9715
77	Ir	4p	480.1										.6981	1.276	1.500	1.588	1.640	1.549
	Ir	4d	312.6										.3568	.8399	1.087	1.194	1.261	1.055
	Ir	5p	57.1					1.282	-.1229	-.18E-1	.4268	1.010	1.522	1.624	1.682	1.711	1.727	1.541
	Ir	4f	88.4						1.431	.8276	.2853	.3421	.7534	.8895	.9765	1.018	1.037	.7122
	Ir	5d	13.3		.12E-1	-.1215	.1476	.7150	1.643	1.855	1.324	-.3607	.23E-1	.9957	1.178	1.281	1.336	1.345	1.037
78	Pt	4p	499.9										.5604	1.235	1.481	1.577	1.633	1.555
	Pt	4d	327.8										.2771	.7991	1.065	1.180	1.251	1.067
	Pt	5p	56.9					1.400	-.1159	-.44E-1	.3976	.9915	1.516	1.620	1.680	1.710	1.726	1.544
	Pt	4f	96.5						1.545	1.204	.3457	.3097	.7313	.8738	.9684	1.012	1.035	.7202
	Pt	5d	11.4		-.3123	-.1833	.1139	.6780	1.594	1.907	1.470	-.2650	-.12E-1	.9818	1.166	1.274	1.336	1.342	1.090
79	Au	4p	524.4										.3734	1.188	1.461	1.565	1.626	1.562
	Au	4d	347.8										.1873	.7550	1.041	1.165	1.241	1.077
	Au	5p	60.4					1.524	-.1093	-.72E-1	.3588	.9684	1.508	1.615	1.678	1.708	1.725	1.548
	Au	4f	109.4						.9716	1.566	.5068	.2808	.7075	.8587	.9588	1.006	1.032	.7281
	Au	5d	12.5		-.2847	-.3011	-.88E-2	.5978	1.551	1.938	1.561	-.1903	-.51E-1	.9682	1.161	1.273	1.330	1.348	1.074
80	Hg	4p	554.4										.81E-1	1.130	1.438	1.551	1.618	1.567
	Hg	4d	373.2										.87E-1	.7051	1.015	1.149	1.231	1.087
	Hg	5p	68.2					1.675	-.1055	-.1043	.3119	.9437	1.501	1.611	1.676	1.706	1.723	1.551
	Hg	4f	127.7						.3376	1.035	.9056	.2608	.6807	.8409	.9466	.9997	1.028	.7354
	Hg	5d	17.3			-.28E-1	-.2138	.4499	1.508	1.958	1.621	-.1247	-.90E-1	.9552	1.155	1.272	1.318	1.357	1.063
81	Tl	4p	587.1										-.4766	1.059	1.411	1.536	1.608	1.572
	Tl	4d	401.3										-.25E-1	.6486	.9853	1.131	1.219	1.094
	Tl	5p	78.0							-.94E-1	-.1378	.2575	.9145	1.492	1.606	1.673	1.703	1.724	1.563
	Tl	4f	148.7									1.577	.2666	.6517	.8214	.9353	.9916	1.024	.7437
	Tl	5d	24.0					.2467	1.452	1.975	1.676	-.57E-1	-.1296	.9402	1.147	1.272	1.326	1.356	1.079
	Tl	6p	4.6	1.772	1.892	1.835	1.680	1.121	-.35E-1	.1667	.3493	.7111	1.139	1.550	1.642	1.679	1.698	1.707	1.428
82	Pb	4p	620.6											.9720	1.381	1.519	1.598	1.577
	Pb	4d	430.1										-.1450	.5868	.9533	1.111	1.206	1.103
	Pb	5p	87.9							-.72E-1	-.1716	.2026	.8838	1.483	1.601	1.670	1.702	1.722	1.567
	Pb	4f	170.3									1.563	.3213	.6206	.8004	.9237	.9820	1.020	.7506
	Pb	5d	30.7					.1195	1.379	1.988	1.734	.52E-2	-.1622	.9253	1.141	1.263	1.319	1.352	1.074
	Pb	6p	5.8	1.722	1.897	1.841	1.678	1.088	-.37E-1	.1951	.3353	.7080	1.123	1.548	1.643	1.684	1.734	1.718	1.638
83	Bi	4p	654.9											.8650	1.348	1.501	1.587	1.583
	Bi	4d	459.7										-.2674	.5192	.9194	1.089	1.193	1.111
	Bi	5p	97.9							-.35E-1	-.2053	.1398	.8487	1.473	1.595	1.667	1.701	1.720	1.575
	Bi	4f	192.8									.3254	.4717	.5884	.7787	.9097	.9738	1.014	.7607
	Bi	5d	37.6					1.153	1.285	1.997	1.785	.1018	-.2037	.9099	1.131	1.257	1.315	1.351	1.065
	Bi	6p	7.0	1.635	1.898	1.855	1.696	1.094	-.40E-1	.1948	.3371	.7008	1.129	1.545	1.633	1.685	1.722	1.747	1.639
84	Po	4p	690.1											.7126	1.308	1.481	1.575	1.588
	Po	4d	490.2										-.3789	.4425	.8811	1.065	1.178	1.118
	Po	5p	108.2							.19E-1	-.2363	.73E-1	.8121	1.464	1.590	1.664	1.698	1.721	1.575
	Po	4f	216.2										.8222	.5537	.7547	.8935	.9650	1.008	.7681
	Po	5d	44.8						1.158	2.000	1.834	.1925	-.2420	.8935	1.121	1.253	1.312	1.348	1.080
	Po	6p	8.2			1.892	1.869	1.718	1.116	-.32E-1	.1866	.3563	.6997	1.119	1.542	1.638	1.698	1.727	1.737	1.542
85	At	4p	726.2											.5026	1.262	1.458	1.561	1.590
	At	4d	521.6										-.4232	.3597	.8401	1.040	1.162	1.126
	At	5p	118.7							.1034	-.2618	.88E-3	.7731	1.453	1.584	1.660	1.697	1.718	1.578
	At	4f	240.5										1.523	.5175	.7292	.8777	.9539	1.001	.7755
	At	5d	52.2						.9861	1.996	1.879	.2904	-.2847	.8762	1.112	1.249	1.310	1.346	1.097
	At	6p	9.4			1.875	1.881	1.746	1.156	-.34E-1	.1922	.3496	.6860	1.114	1.540	1.637	1.689	1.716	1.730	1.576
86	Rn	4p	763.2											.1191	1.210	1.433	1.547	1.596
	Rn	4d	553.8										-.2295	.2665	.7951	1.013	1.145	1.132
	Rn	5p	129.5								-.2721	-.77E-1	.7304	1.441	1.577	1.656	1.695	1.717	1.587
	Rn	4f	265.6										1.870	.4801	.7019	.8610	.9410	.9952	.7826
	Rn	5d	59.9						.7539	1.981	1.916	.4114	-.3274	.8585	1.101	1.243	1.310	1.344	1.116
	Rn	6p	10.7			1.844	1.889	1.774	1.195	-.28E-1	.1882	.3489	.6909	1.112	1.539	1.632	1.696	1.721	1.732	1.617
87	Fr	4p	806.1												1.142	1.403	1.531	1.601
	Fr	4d	592.0										1.421	.1602	.7437	.9816	1.125	1.142
	Fr	5p	145.4								-.2911	-.1954	.6768	1.429	1.570	1.653	1.691	1.717	1.592
	Fr	4f	296.6										.2284	.4409	.6719	.8418	.9283	.9864	.7903
	Fr	5d	72.8						.1500	1.941	1.943	.5195	-.3729	.8374	1.089	1.234	1.304	1.348	1.113
	Fr	6p	15.7				1.968	1.868	1.248	-.25E-1	.1851	.3529	.6966	1.108	1.537	1.634	1.687	1.728	1.729	1.642
88	Ra	4p	850.1												1.056	1.368	1.512	1.605
	Ra	4d	631.1											.42E-1	.6864	.9479	1.104	1.149
	Ra	5p	161.8									-.3433	.6152	1.416	1.562	1.649	1.688	1.715	1.599
	Ra	4f	328.6											.4029	.6397	.8210	.9145	.9769	.7991
	Ra	5d	86.0							1.855	1.951	.6334	-.4217	.8164	1.077	1.228	1.301	1.344	1.134
	Ra	6p	20.8				1.966	1.309	-.29E-1	.1868	.3424	.6864	1.104	1.535	1.631	1.692	1.717	1.741	1.680

TABLE II. Atomic Subshell Asymmetry Parameters, $5 \leq Z \leq 103$

See page 6 for Explanation of Tables

			10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
89	Ac	4p 892.6													.9459	1.329	1.492	1.610
	Ac	4d 668.9												-.81E-1	.6232	.9112	1.081	1.157
	Ac	5p 176.1									-.5189	.5476	1.402	1.555	1.644	1.687	1.712	1.602
	Ac	4f 359.2											.3697	.6058	.7988	.8997	.9664	.8052
	Ac	5d 97.2							1.693	1.927	.7503	-.4679	.7950	1.064	1.223	1.295	1.341	1.141
	Ac	6p 23.8				1.995	1.401	-.17E-1	.1801	.3394	.6862	1.103	1.533	1.632	1.689	1.721	1.741	1.600
	Ac	6d 5.8	.1495	.6046	.8359	1.065	1.482	1.991	1.181	.5538	-.3510	-.10E-1	.9445	1.149	1.268	1.334	1.388	1.122
90	Th	4p 935.8													.7916	1.282	1.469	1.614
	Th	4d 707.2												-.1938	.5523	.8708	1.056	1.162
	Th	5p 190.4									-.7822	.4737	1.387	1.547	1.639	1.683	1.711	1.610
	Th	4f 390.4											.3474	.5699	.7748	.8835	.9557	.8123
	Th	5d 108.4							1.345	1.846	.8739	-.5131	.7721	1.052	1.215	1.291	1.340	1.149
	Th	6p 26.7					1.509	.56E-3	.1658	.3326	.6741	1.099	1.531	1.630	1.691	1.723	1.741	1.618
	Th	6d 7.0	.13E-1	.5310	.7955	1.047	1.486	1.994	1.150	.5407	-.3311	.86E-3	.9410	1.156	1.283	1.347	1.361	1.230
91	Pa	4p 966.8													.6083	1.235	1.447	1.619
	Pa	4d 733.5												-.2326	.4845	.8313	1.031	1.168
	Pa	5p 193.5									-.8291	.4309	1.376	1.540	1.635	1.681	1.709	1.618
	Pa	4f 409.3											.3425	.5371	.7518	.8675	.9451	.8212
	Pa	5d 109.1							1.258	1.826	1.039	-.5362	.7526	1.040	1.208	1.287	1.338	1.161
	Pa	6p 25.4					1.517	.15E-1	.1543	.3144	.6628	1.088	1.526	1.627	1.688	1.718	1.739	1.643
	Pa	6d 6.1	.1151	.5705	.8072	1.041	1.465	1.989	1.234	.6393	-.3241	-.39E-1	.9269	1.144	1.275	1.317	1.390	1.265
	Pa	5f 14.5			1.911	1.231	.6170	.4601	1.020	1.367	.5509	-.1714	.7166	.8943	.9966	1.052	1.087	.8033
92	U	4p 1004.3													.2643	1.175	1.420	1.623
	U	4d 766.1												-.17E-1	.4046	.7855	1.003	1.174
	U	5p 202.0										.3625	1.362	1.532	1.631	1.677	1.708	1.621
	U	4f 434.7											.3657	.5013	.7259	.8493	.9329	.8278
	U	5d 114.8							.8699	1.718	1.178	-.5664	.7294	1.026	1.200	1.282	1.335	1.169
	U	6p 26.1					1.572	.36E-1	.1379	.3027	.6453	1.079	1.522	1.624	1.686	1.720	1.741	1.660
	U	6d 6.1	.1043	.5543	.7918	1.027	1.454	1.986	1.266	.6901	-.3098	-.54E-1	.9168	1.140	1.279	1.316	1.374	1.111
	U	5f 16.1			1.894	1.534	.6693	.4298	.9544	1.278	1.171	-.2469	.7013	.8853	.9965	1.054	1.082	.8038
93	Np	4p 1042.1														1.102	1.390	1.625
	Np	4d 799.0													.3174	.7362	.9738	1.183
	Np	5p 210.3										.2909	1.348	1.524	1.626	1.674	1.706	1.623
	Np	4f 460.4											.4388	.4658	.6989	.8299	.9205	.8317
	Np	5d 120.4							.2529	1.555	1.308	-.5909	.7060	1.012	1.192	1.277	1.330	1.178
	Np	6p 26.7					1.623	.57E-1	.1242	.2878	.6324	1.069	1.518	1.622	1.684	1.718	1.740	1.658
	Np	6d 6.2	.96E-1	.5381	.7756	1.012	1.440	1.984	1.302	.7407	-.2906	-.70E-1	.9060	1.134	1.275	1.320	1.362	1.210
	Np	5f 17.6			1.433	1.797	.6466	.4005	.8943	1.192	1.611	-.3087	.6848	.8735	.9960	1.050	1.077	.8084
94	Pu	4p 1073.7														1.022	1.359	1.629
	Pu	4d 825.7													.2317	.6856	.9434	1.191
	Pu	5p 212.5										.2439	1.338	1.517	1.622	1.672	1.705	1.629
	Pu	4f 479.8											.5786	.4346	.6721	.8105	.9069	.8380
	Pu	5d 120.2							.2105	1.514	1.442	-.5967	.6852	.9993	1.184	1.272	1.327	1.183
	Pu	6p 24.9					1.620	.74E-1	.1131	.2698	.6202	1.059	1.513	1.618	1.683	1.714	1.736	1.648
	Pu	5f 14.6			1.877	1.424	.5657	.3899	.8404	1.109	1.854	-.3994	.6678	.8645	.9845	1.040	1.084	.8469
95	Am	4p 1112.0														.9081	1.320	1.632
	Am	4d 859.1													.1306	.6268	.9084	1.196
	Am	5p 220.5										.1649	1.321	1.508	1.617	1.668	1.702	1.635
	Am	4f 505.9											.8751	.4043	.6421	.7887	.8917	.8452
	Am	5d 125.5							-.6700	1.273	1.542	-.6083	.6602	.9841	1.175	1.266	1.323	1.191
	Am	6p 25.4					1.662	.98E-1	.99E-1	.2550	.6060	1.049	1.508	1.615	1.682	1.713	1.735	1.642
	Am	5f 15.9			1.696	1.629	.6285	.3659	.7888	1.040	1.879	-.4863	.6511	.8555	.9787	1.044	1.082	.8447
96	Cm	4p 1157.5														.7301	1.272	1.636
	Cm	4d 899.6													.15E-1	.5582	.8688	1.203
	Cm	5p 234.7										.44E-1	1.302	1.498	1.611	1.665	1.699	1.636
	Cm	4f 539.2											1.421	.3795	.6092	.7647	.8749	.8579
	Cm	5d 136.7								.4128	1.595	-.6254	.6327	.9678	1.166	1.258	1.322	1.203
	Cm	6p 28.4					1.755	.1325	.83E-1	.2417	.5912	1.040	1.505	1.613	1.679	1.714	1.736	1.636
	Cm	6d 6.2	.85E-1	.4945	.7273	.9614	1.393	1.970	1.421	.9047	-.2160	-.1194	.8701	1.110	1.253	1.332	1.346	1.146
	Cm	5f 22.0				1.323	1.064	.3284	.7329	.9754	1.834	-.5629	.6316	.8442	.9713	1.032	1.070	.8451
97	Bk	4p 1196.7														.4745	1.220	1.639
	Bk	4d 933.9													-.82E-1	.4869	.8273	1.207
	Bk	5p 242.7										-.55E-1	1.285	1.489	1.606	1.661	1.697	1.643
	Bk	4f 566.2											1.123	.3684	.5766	.7402	.8574	.8625
	Bk	5d 142.1								-.4414	1.645	-.6198	.6058	.9515	1.156	1.252	1.317	1.207
	Bk	6p 28.9					1.792	.1617	.69E-1	.2260	.5766	1.030	1.500	1.610	1.678	1.712	1.735	1.639
	Bk	6d 6.2	.86E-1	.4819	.7118	.9443	1.375	1.964	1.461	.9619	-.1846	-.1359	.8573	1.100	1.243	1.332	1.351	1.148
	Bk	5f 23.4				.9292	1.254	.3121	.6848	.9121	1.752	-.6552	.6129	.8327	.9658	1.030	1.070	.8610
98	Cf	4p 1236.3														-.20E-1	1.157	1.642
	Cf	4d 968.6													-.1321	.4094	.7829	1.214
	Cf	5p 250.8										-.1693	1.268	1.480	1.600	1.657	1.694	1.645
	Cf	4f 593.5											.1415	.3773	.5439	.7147	.8393	.8698
	Cf	5d 147.4								-.9267	1.666	-.6026	.5796	.9356	1.146	1.246	1.313	1.214
	Cf	6p 29.4					1.827	.1931	.56E-1	.2100	.5617	1.019	1.495	1.607	1.676	1.711	1.734	1.647
	Cf	6d 6.1	.88E-1	.4705	.6971	.9275	1.357	1.958	1.501	1.019	-.1500	-.1524	.8444	1.090	1.234	1.328	1.360	1.270
	Cf	5f 24.7					1.443	.2997	.6393	.8529	1.654	-.7489	.5936	.8207	.9595	1.027	1.069	.8748
99	Es	4p 1276.4															1.080	1.645
	Es	4d 1003.6													.59E-1	.3242	.7337	1.218
	Es	5p 258.7										-.2986	1.250	1.470	1.594	1.653	1.691	1.649
	Es	4f 621.2												.4206	.5102	.6875	.8195	.8720
	Es	5d 152.7									1.651	-.5747	.5513	.9182	1.135	1.239	1.308	1.218
	Es	6p 29.8					1.858	.2273	.43E-1	.1909	.5495	1.009	1.490	1.602	1.674	1.711	1.735	1.641
	Es	6d 6.1	.92E-1	.4598	.6827	.9106	1.339	1.950	1.541	1.076	-.1121	-.1689	.8314	1.079	1.225	1.320	1.369	1.293
	Es	5f 26.1					1.597	.2925	.5964	.7971	1.551	-.8426	.5749	.8071	.9533	1.023	1.066	.8804
100	Fm	4p 1316.8															.9818	1.648
	Fm	4d 1039.1														.2326	.6811	1.222
	Fm	5p 266.7										-.4354	1.232	1.460	1.588	1.649	1.689	1.654
	Fm	4f 649.2												.5199	.4778	.6594	.7990	.8780
	Fm	5d 157.9									1.594	-.6313	.5237	.9012	1.124	1.233	1.301	1.224
	Fm	6p 30.3					1.885	.2619	.31E-1	.1753	.5341	.9981	1.486	1.599	1.672	1.709	1.734	1.651
	Fm	6d 6.1	.97E-1	.4501	.6689	.8942	1.321	1.941	1.580	1.134	-.70E-1	-.1855	.8184	1.069	1.218	1.309	1.375	1.184
	Fm	5f 27.4					1.676	.2886	.5557	.7452	1.452	-.9236	.5539	.7943	.9449	1.018	1.064	.8886

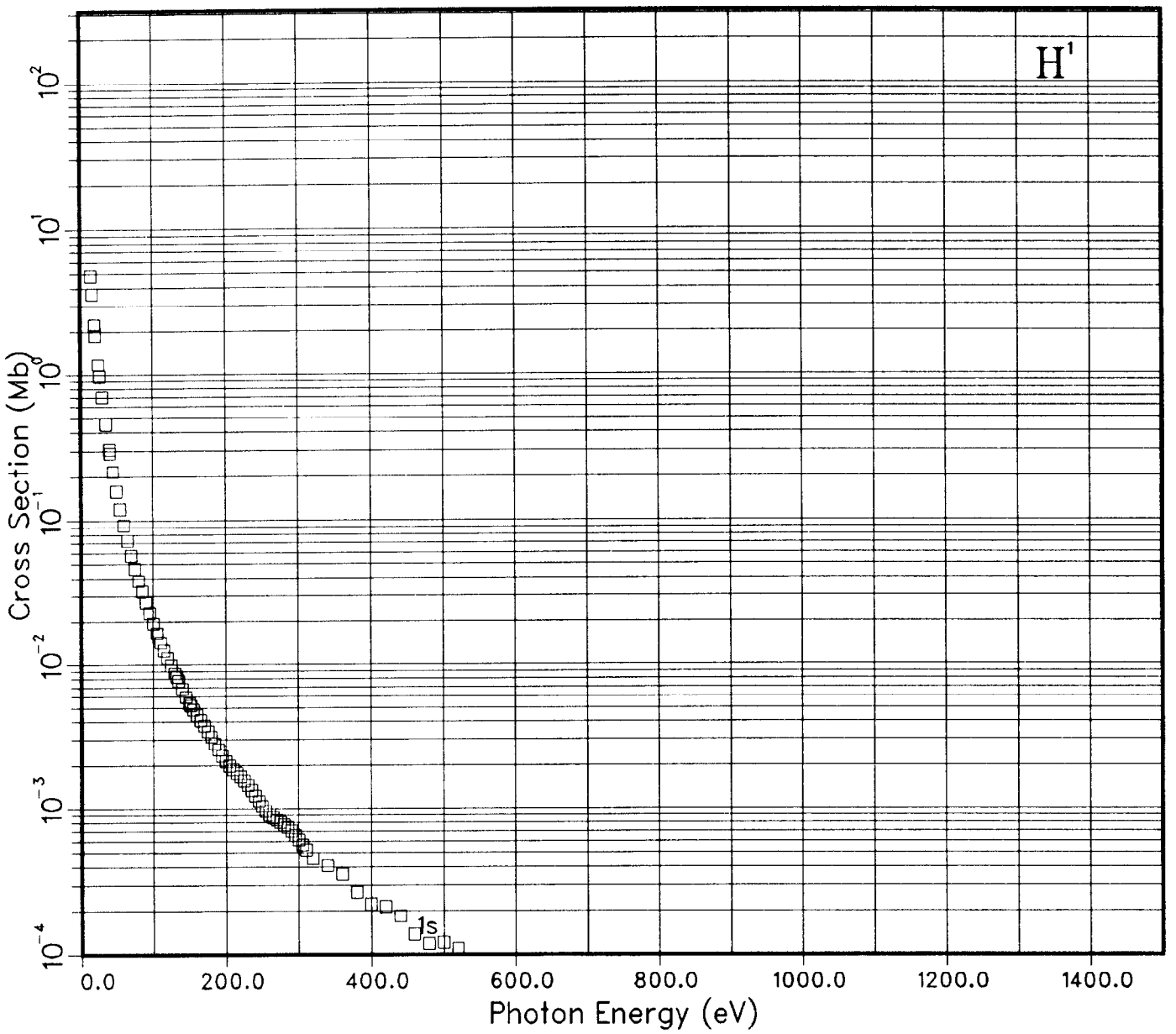
TABLE II. Atomic Subshell Asymmetry Parameters, $5 \leq Z \leq 103$

See page 6 for Explanation of Tables

				10.2	16.7	21.2	26.8	40.8	80.0	132.3	151.4	200.0	300.0	600.0	800.0	1041.0	1253.6	1486.6	8047.8
101	Md	4p	1357.7															.8534	1.651
	Md	4d	1074.9														.1341	.6236	1.229
	Md	5p	274.7										-.5825	1.213	1.450	1.582	1.645	1.686	1.656
	Md	4f	677.7												.7155	.4473	.6301	.7775	.8860
	Md	5d	163.2									1.481	-.4759	.4951	.8838	1.113	1.225	1.297	1.231
	Md	6p	30.7					1.909	.2986	.19E-1	.1595	.5187	.9873	1.480	1.595	1.669	1.707	1.732	1.666
	Md	6d	6.0	.1038	.4419	.6554	.8778	1.303	1.933	1.631	1.159	.13E-1	-.2045	.8053	1.063	1.225	1.304	1.346	1.174
	Md	5f	28.7					1.660	.2901	.5165	.6956	1.357	-.9794	.5320	.7809	.9366	1.013	1.061	.8907
102	No	4p	1399.0															.6622	1.654
	No	4d	1111.2														.33E-1	.5598	1.235
	No	5p	282.6										-.7570	1.193	1.438	1.575	1.641	1.683	1.659
	No	4f	706.5												1.063	.4202	.5994	.7544	.8927
	No	5d	168.4									1.290	-.4070	.4644	.8650	1.102	1.217	1.291	1.235
	No	6p	31.1					1.930	.3365	.77E-2	.1441	.5029	.9760	1.475	1.592	1.667	1.705	1.731	1.670
	No	6d	6.0	.1111	.4344	.6431	.8621	1.285	1.923	1.667	1.214	.58E-1	-.2223	.7919	1.053	1.216	1.304	1.339	1.259
	No	5f	30.0					1.548	.2971	.4793	.6494	1.269	-.9864	.5085	.7674	.9302	1.010	1.060	.9006
103	Lr	4p	1440.7															.3462	1.656
	Lr	4d	1147.9														-.54E-1	.4911	1.239
	Lr	5p	290.6										-.9505	1.173	1.428	1.569	1.636	1.681	1.665
	Lr	4f	735.7												1.502	.3999	.5682	.7304	.9010
	Lr	5d	173.6									1.011	-.3227	.4342	.8467	1.090	1.209	1.286	1.234
	Lr	6p	31.5					1.948	.3763	-.31E-2	.1286	.4869	.9646	1.469	1.588	1.664	1.702	1.729	1.673
	Lr	6d	5.9	.1185	.4269	.6308	.8462	1.266	1.913	1.701	1.268	.1071	-.2394	.7784	1.042	1.206	1.303	1.335	1.272
	Lr	5f	31.3					1.364	.3090	.4446	.6057	1.187	-.9108	.4862	.7530	.9206	1.003	1.055	.9039

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

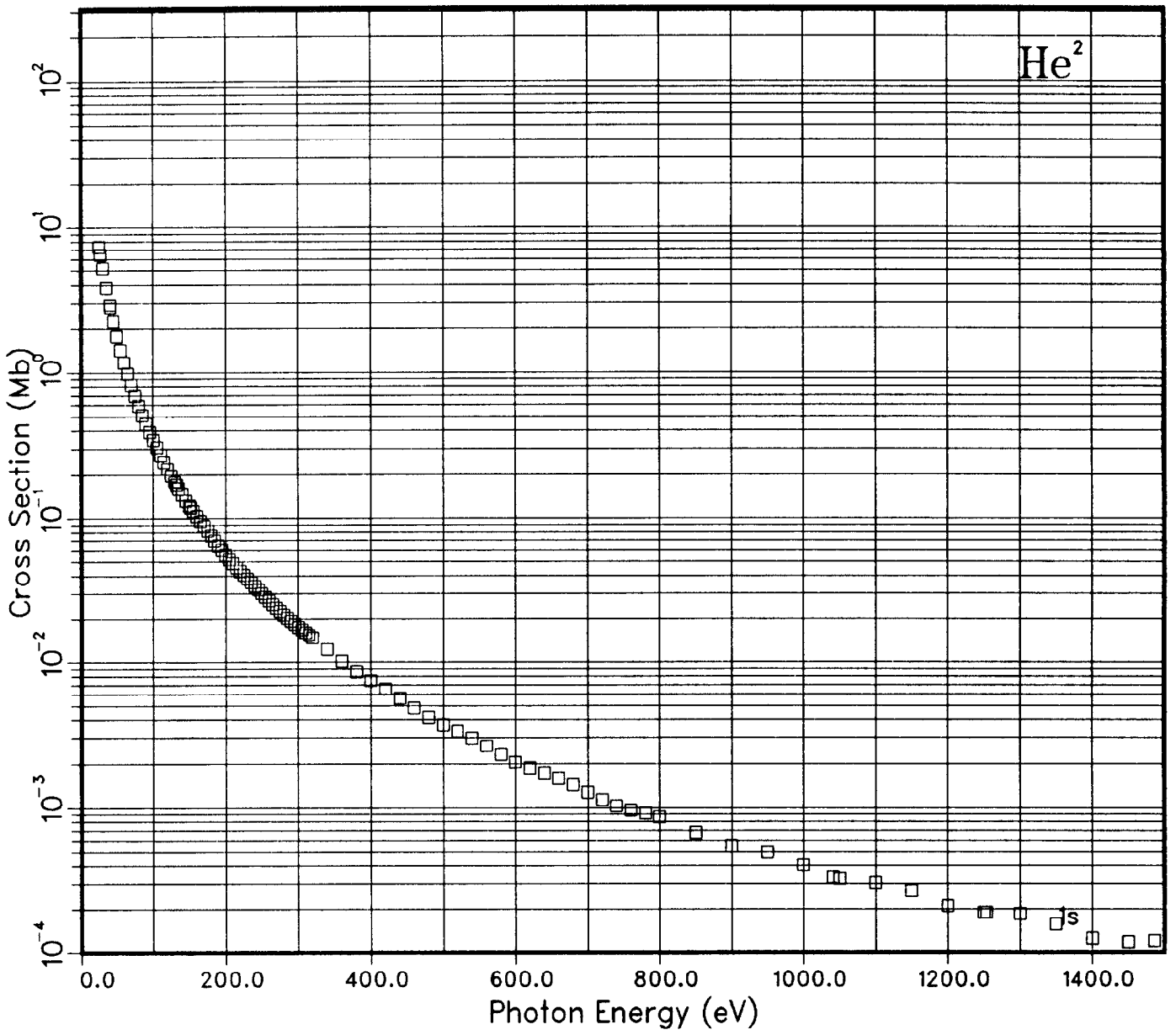


H binding energies(eV) are:

1s(1) 13.6050

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

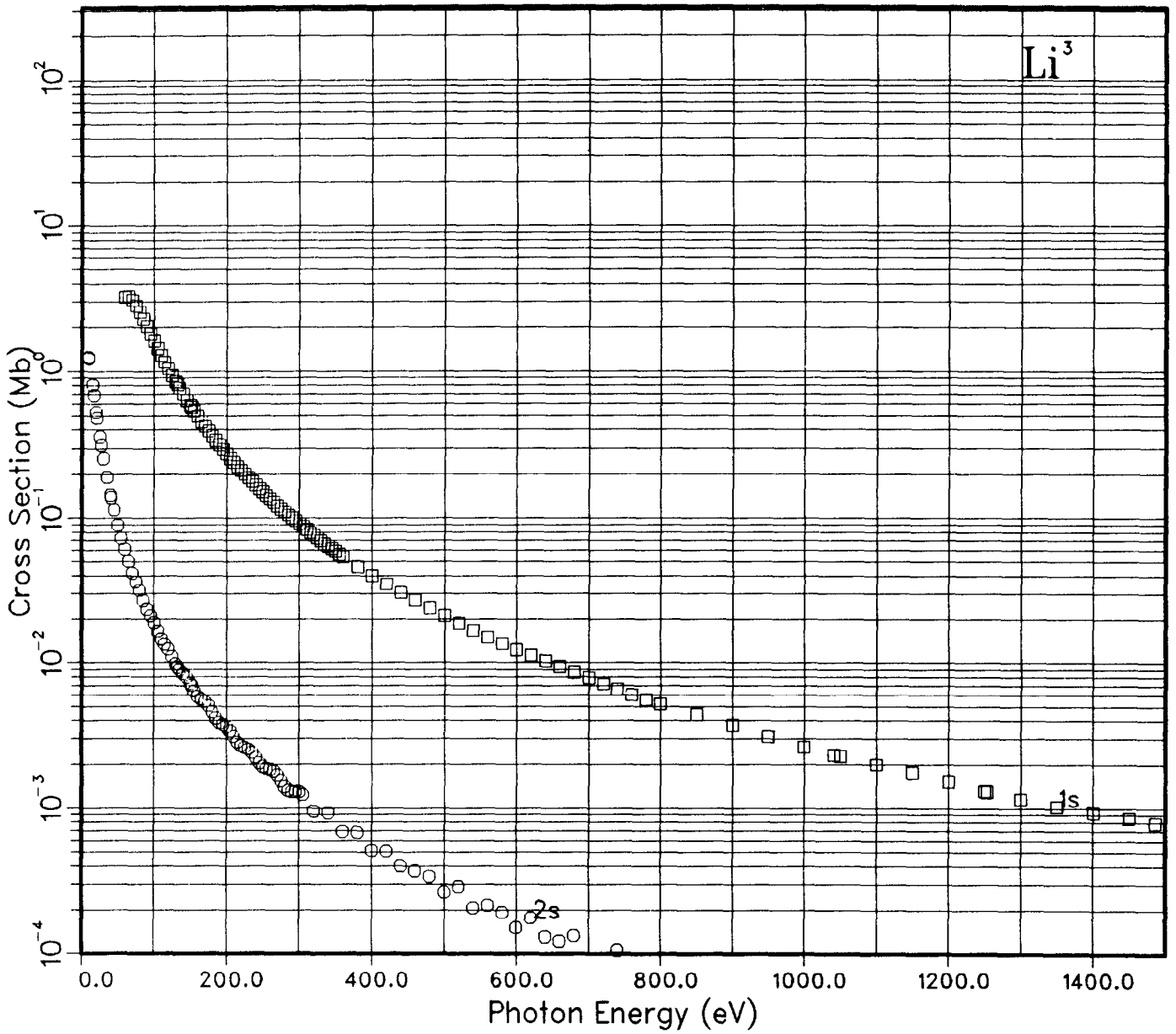


He binding energies(eV) are:

1s(2) 23.4169

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

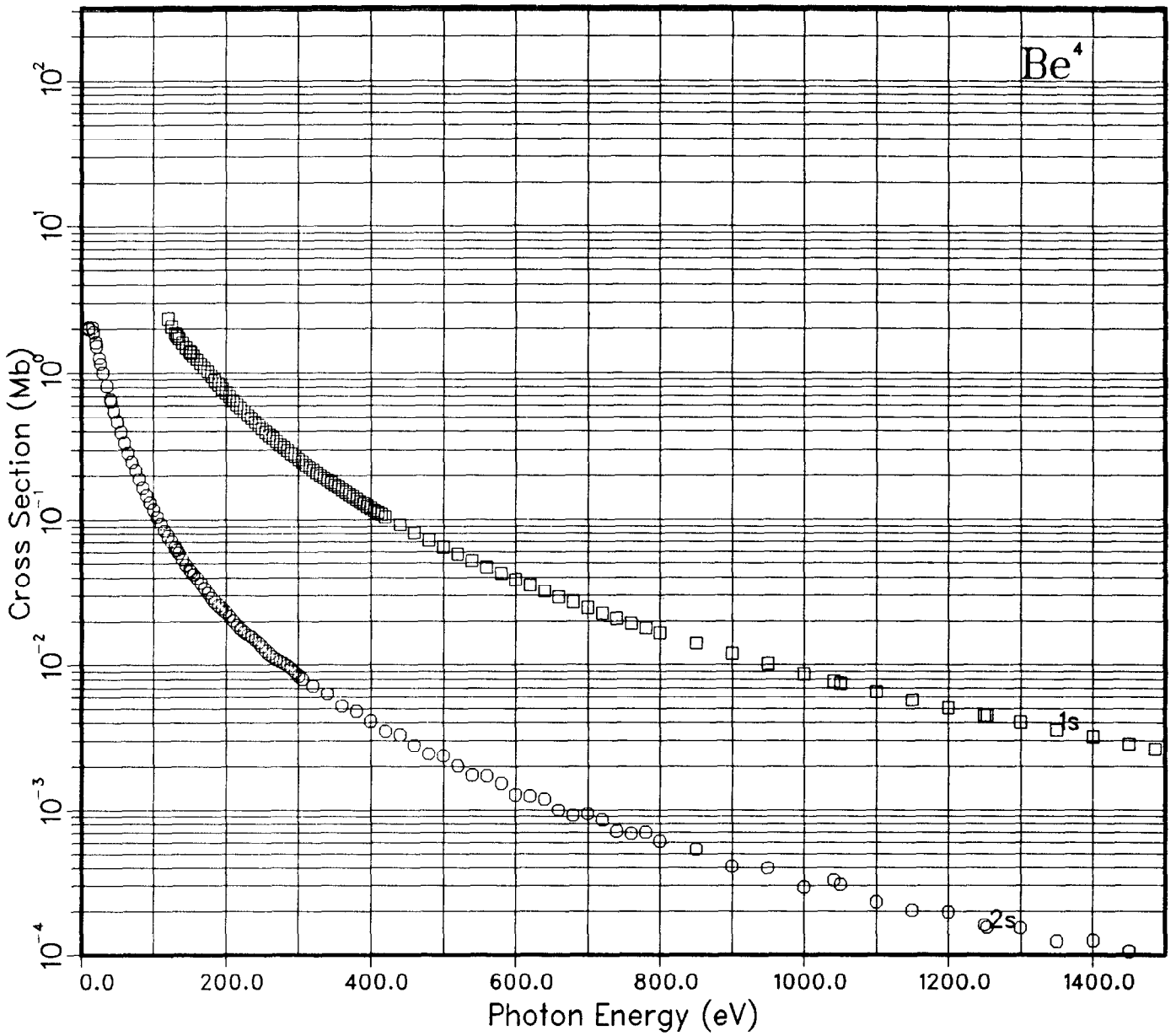


Li binding energies(eV) are:

1s(2) 59.8348 2s(1) 5.49506

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

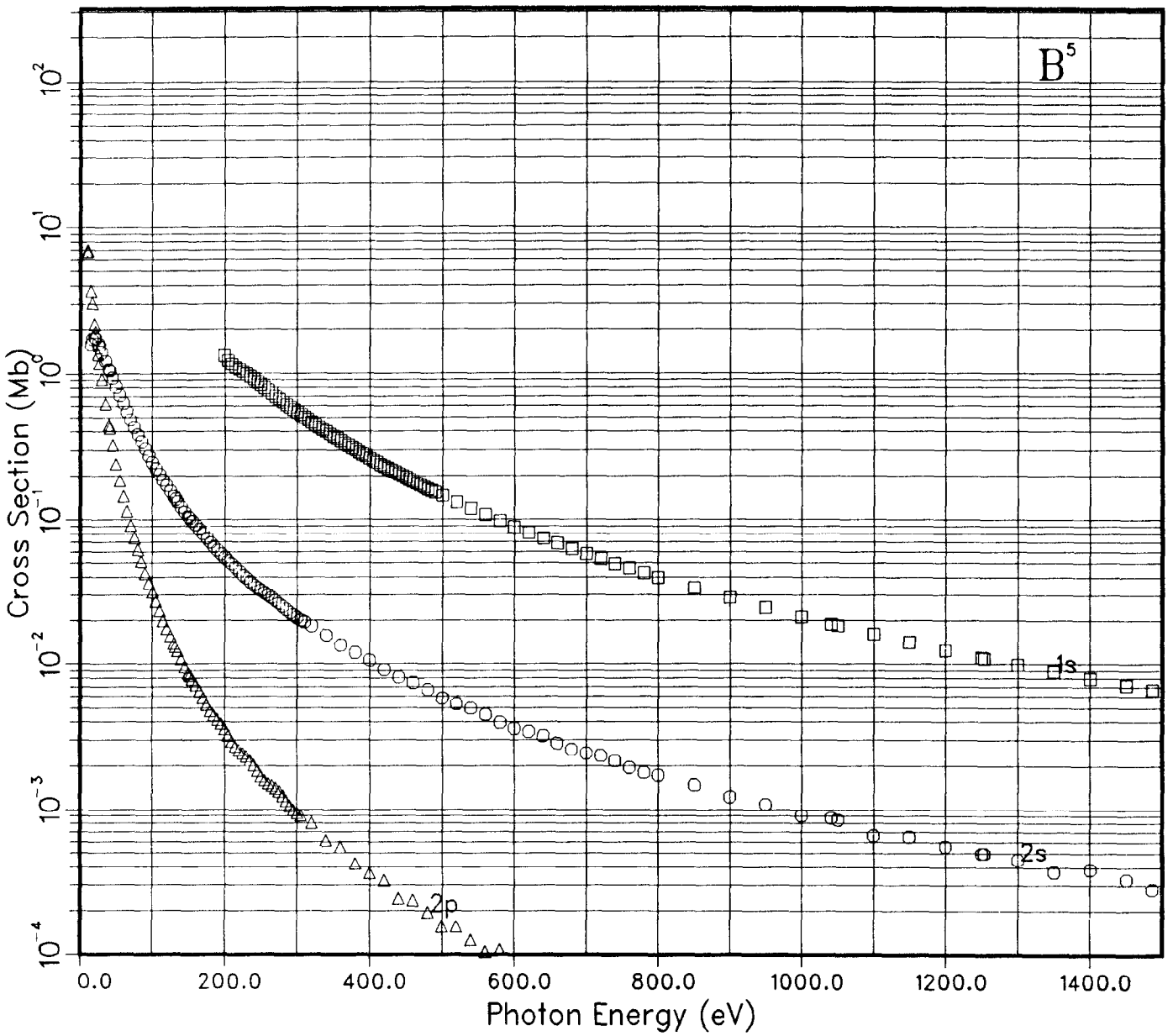


Be binding energies(eV) are:

1s(2) 118.342 2s(2) 8.17797

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

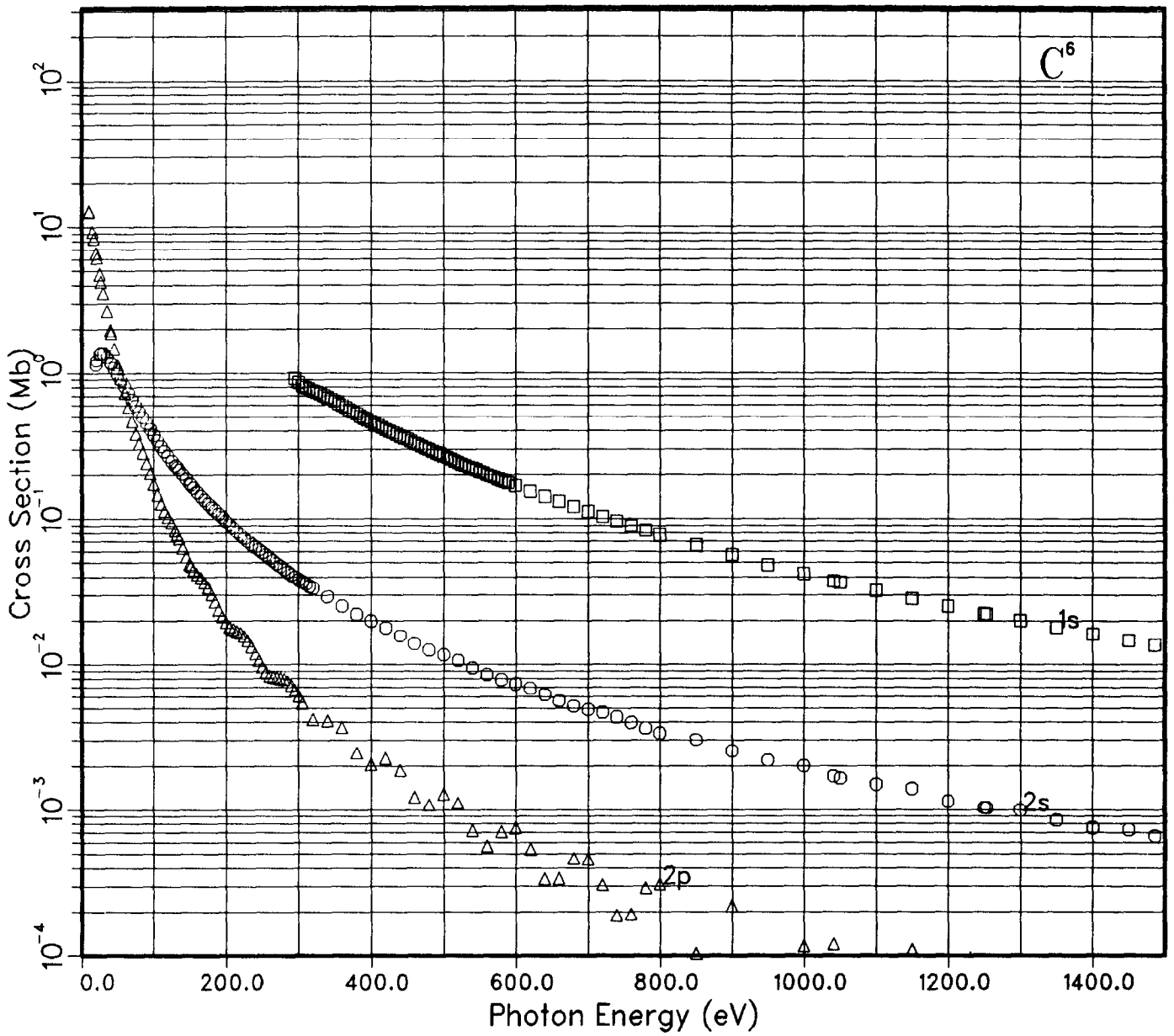


B binding energies(eV) are:

1s(2) 195.538 2s(2) 12.5683 2p(1) 6.66101

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

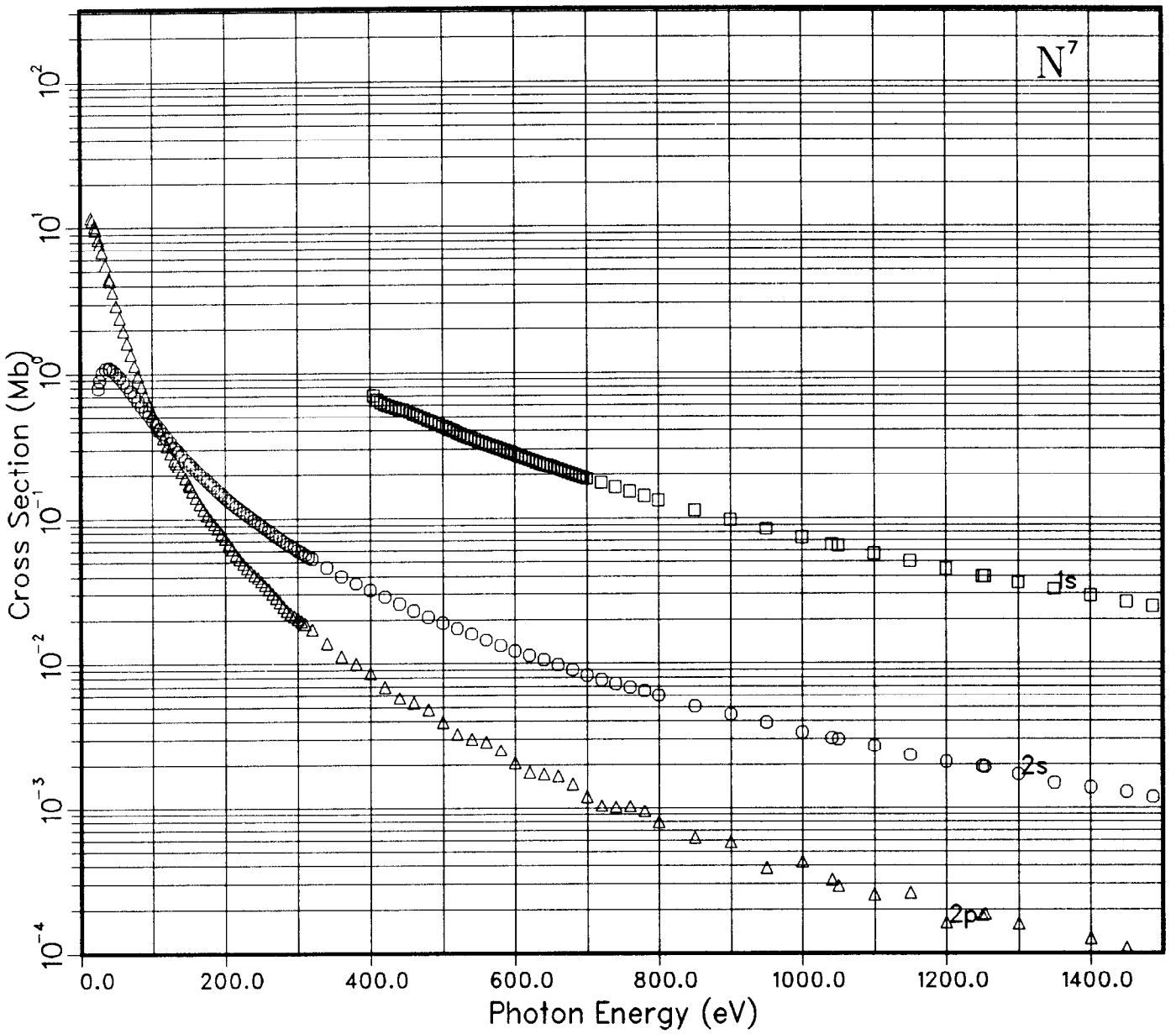


C binding energies(eV) are:

1s(2) 290.860 2s(2) 17.5409 2p(2) 8.98202

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

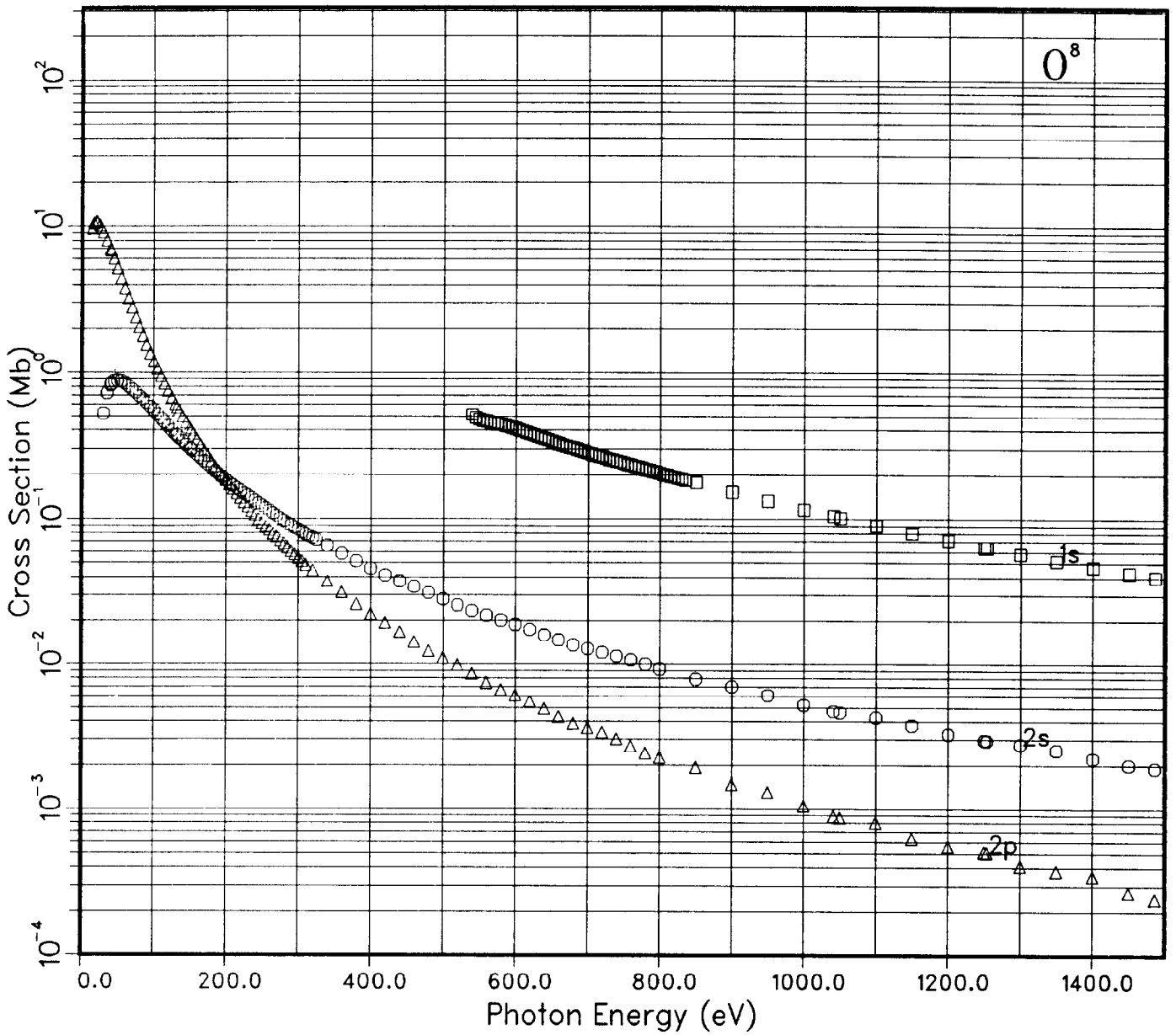


N binding energies(eV) are:

1s(2) 404.569 2s(2) 23.0700 2p(3) 11.4867

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

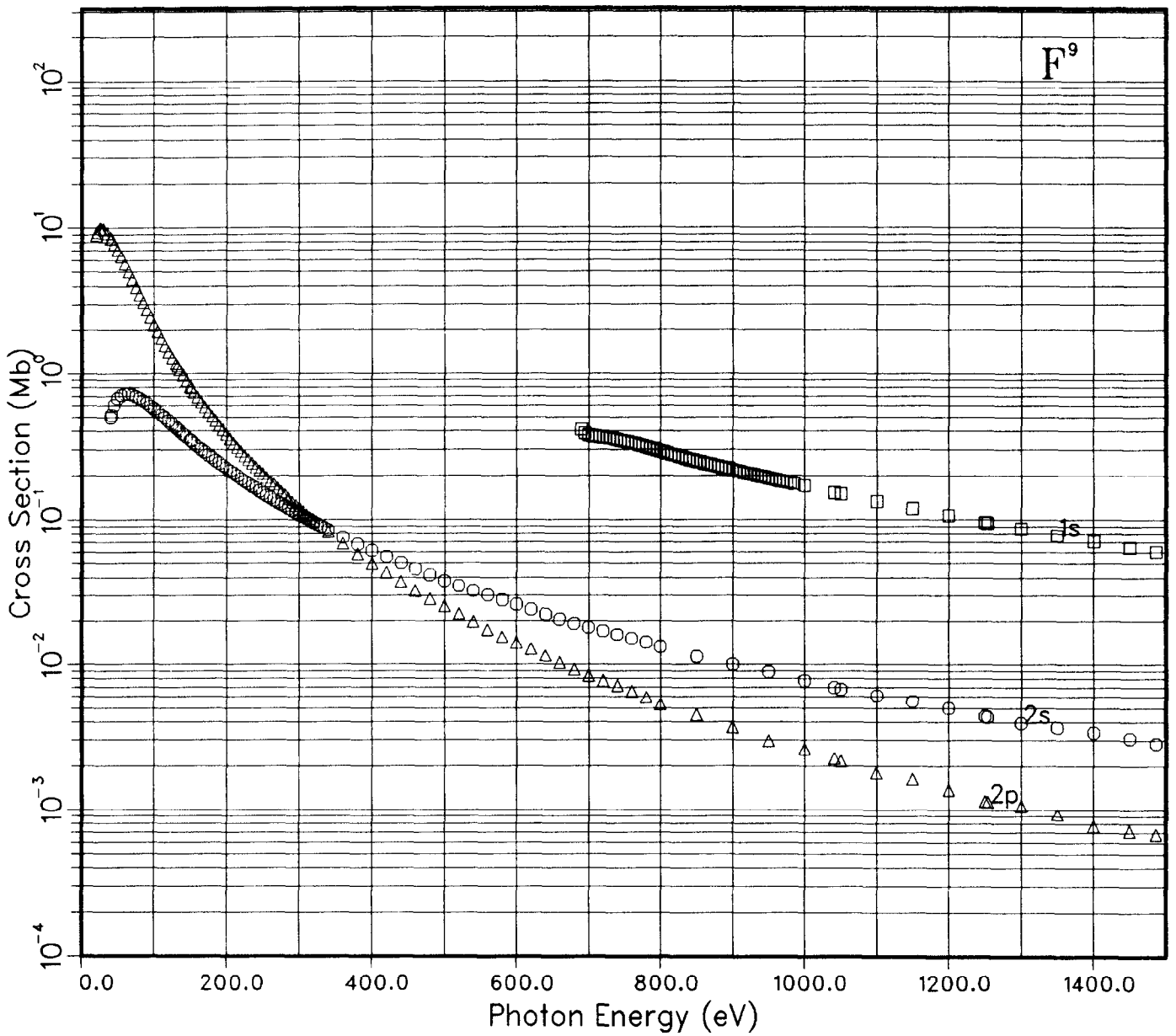


O binding energies(eV) are:

1s(2) 536.784 2s(2) 29.1678 2p(4) 14.1587

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

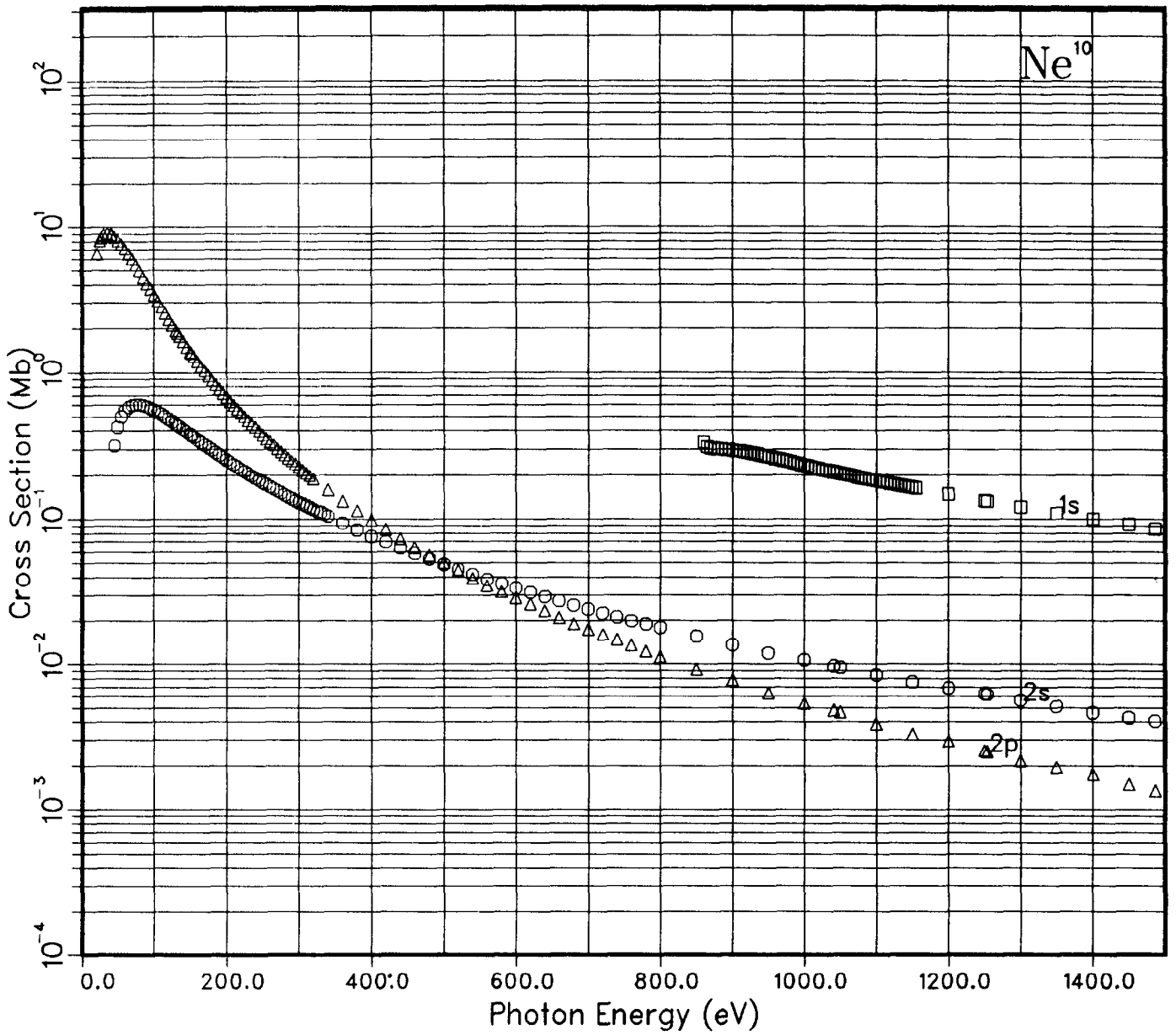


F binding energies(eV) are:

1s(2) 687.572 2s(2) 35.8383 2p(5) 16.9981

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

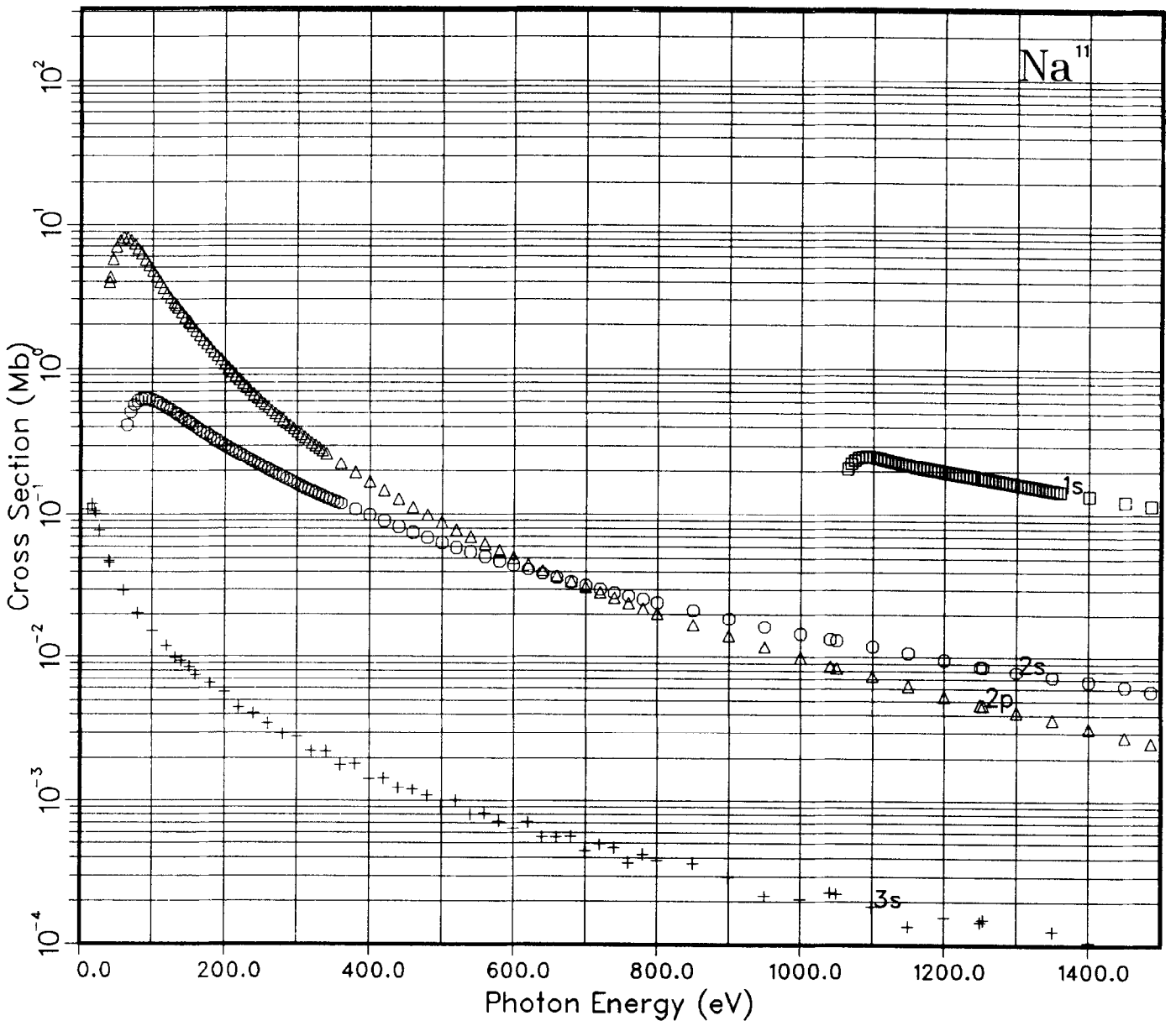


Ne binding energies(eV) are:

1s(2) 856.963 2s(2) 43.0843 2p(6) 20.0007

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs



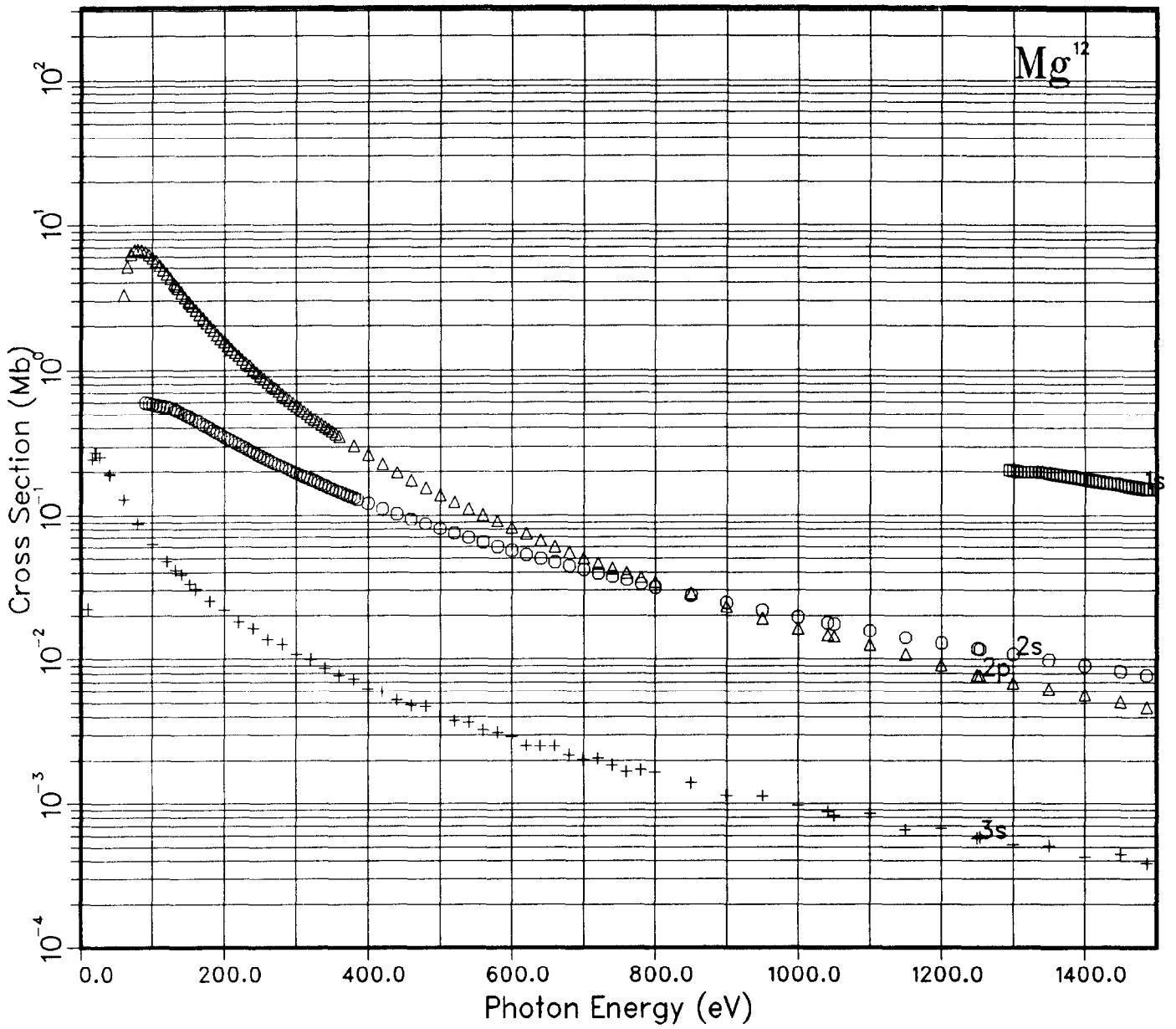
Na binding energies(eV) are:

1s(2) 1062.19 2s(2) 64.2619 2p(6) 36.2995

3s(1) 5.13997

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs



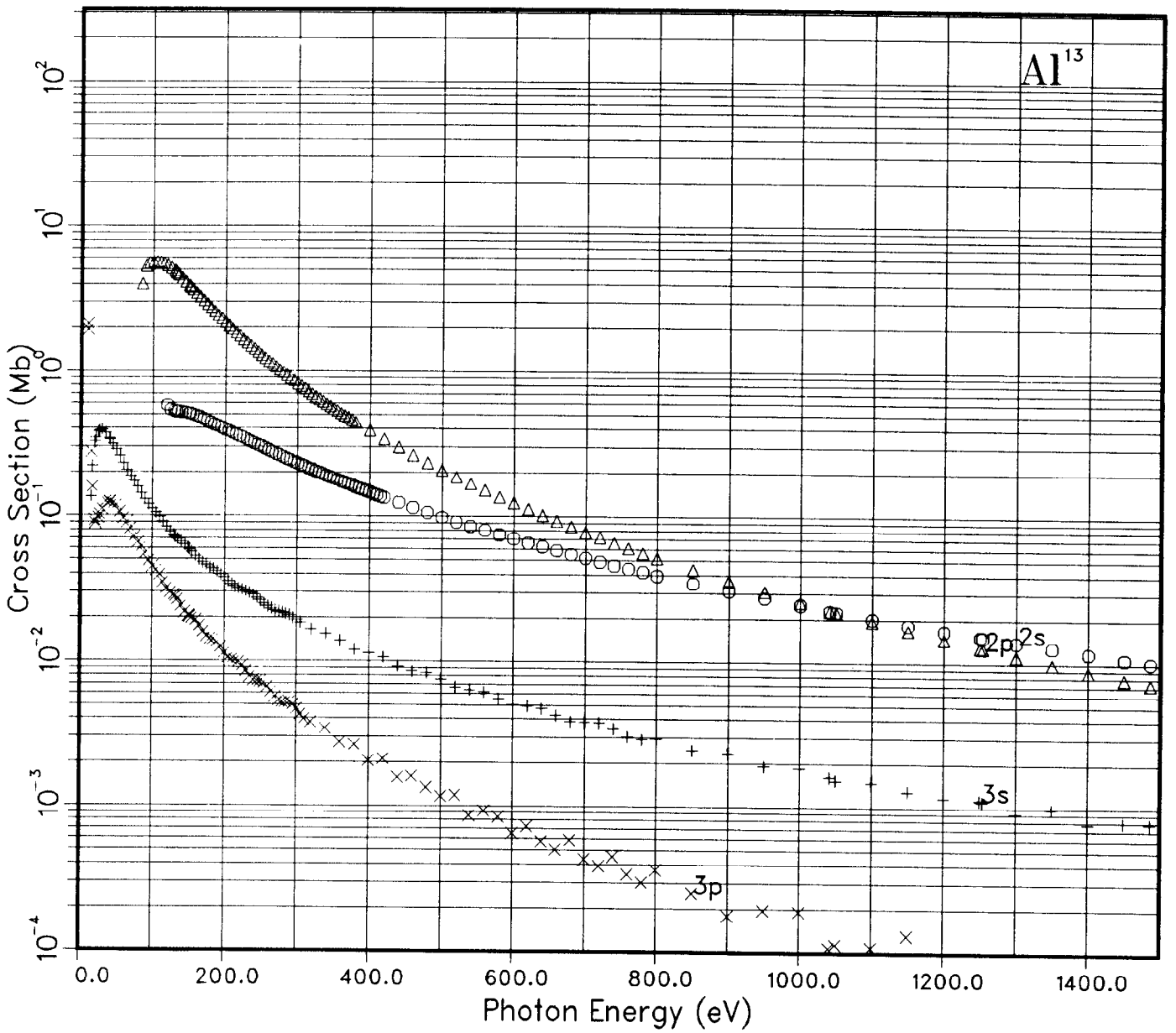
Mg binding energies(eV) are:

1s(2) 1291.94 2s(2) 89.1372 2p(6) 56.3682

3s(2) 6.87189

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

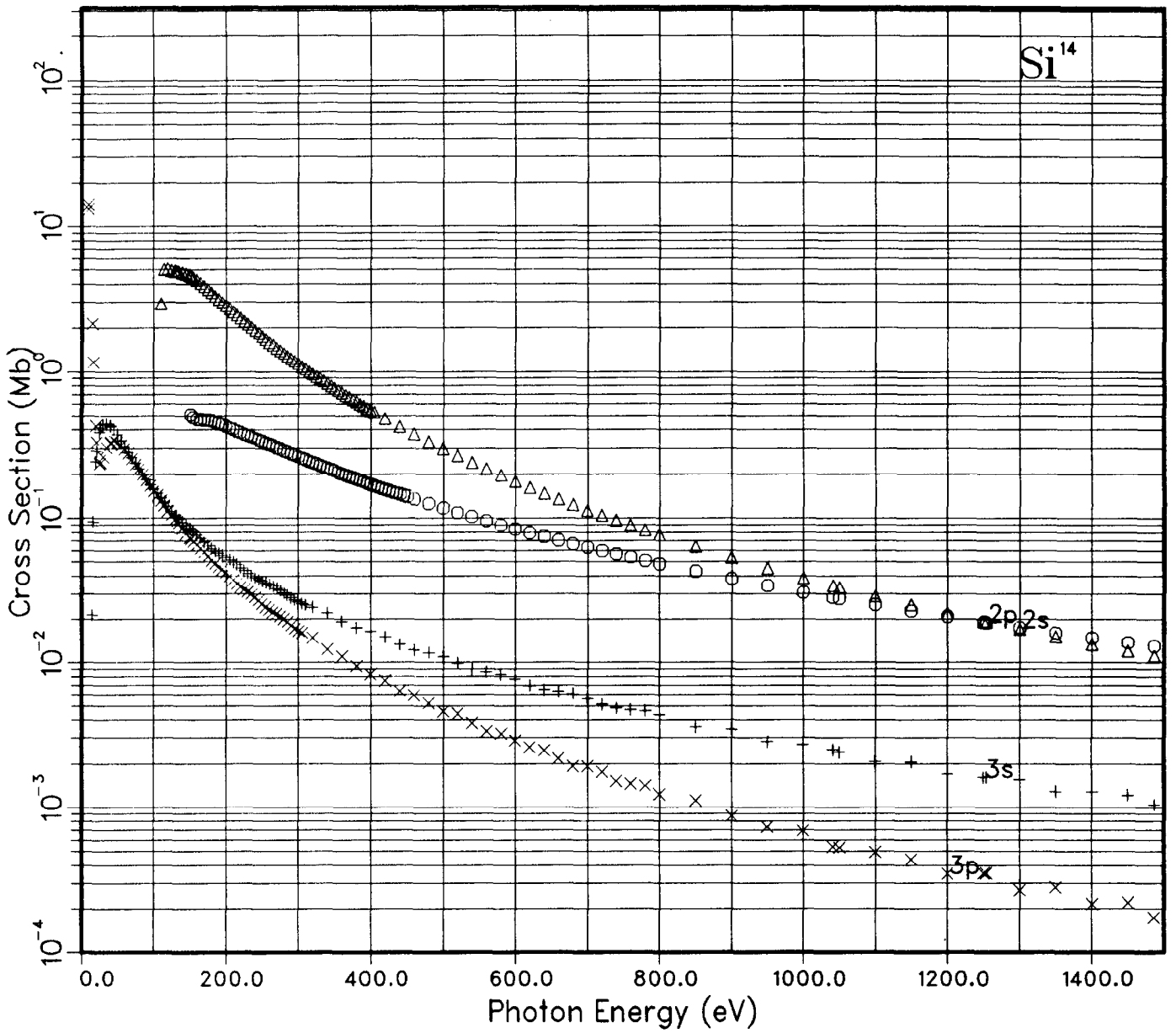


Al binding energies(eV) are:

1s(2) 1546.36	2s(2) 118.563	2p(6) 80.9076
3s(2) 10.1289	3p(1) 4.87331	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

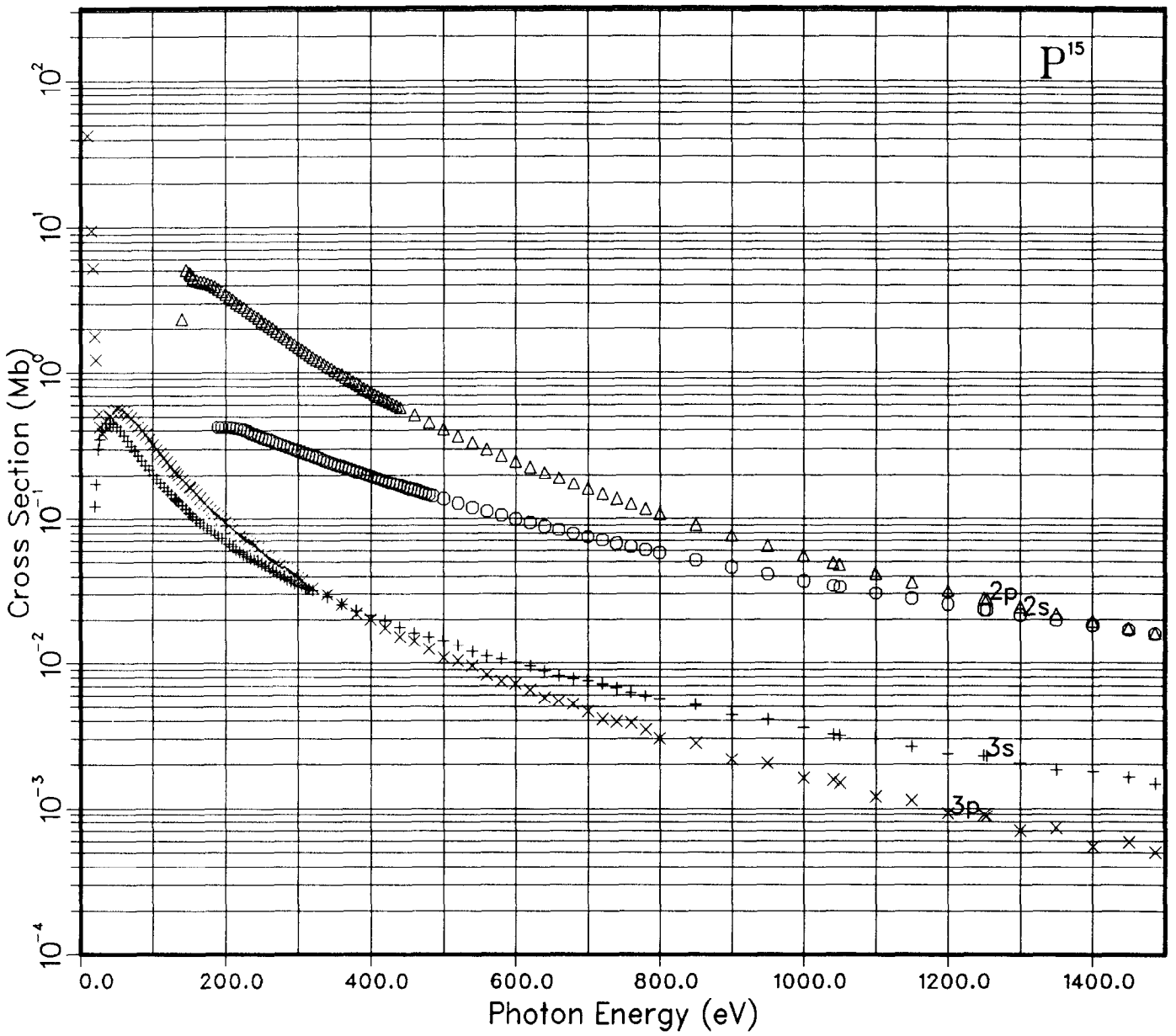


Si binding energies(eV) are:

1s(2) 1823.65	2s(2) 150.847	2p(6) 108.221
3s(2) 13.5696	3p(2) 6.53176	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

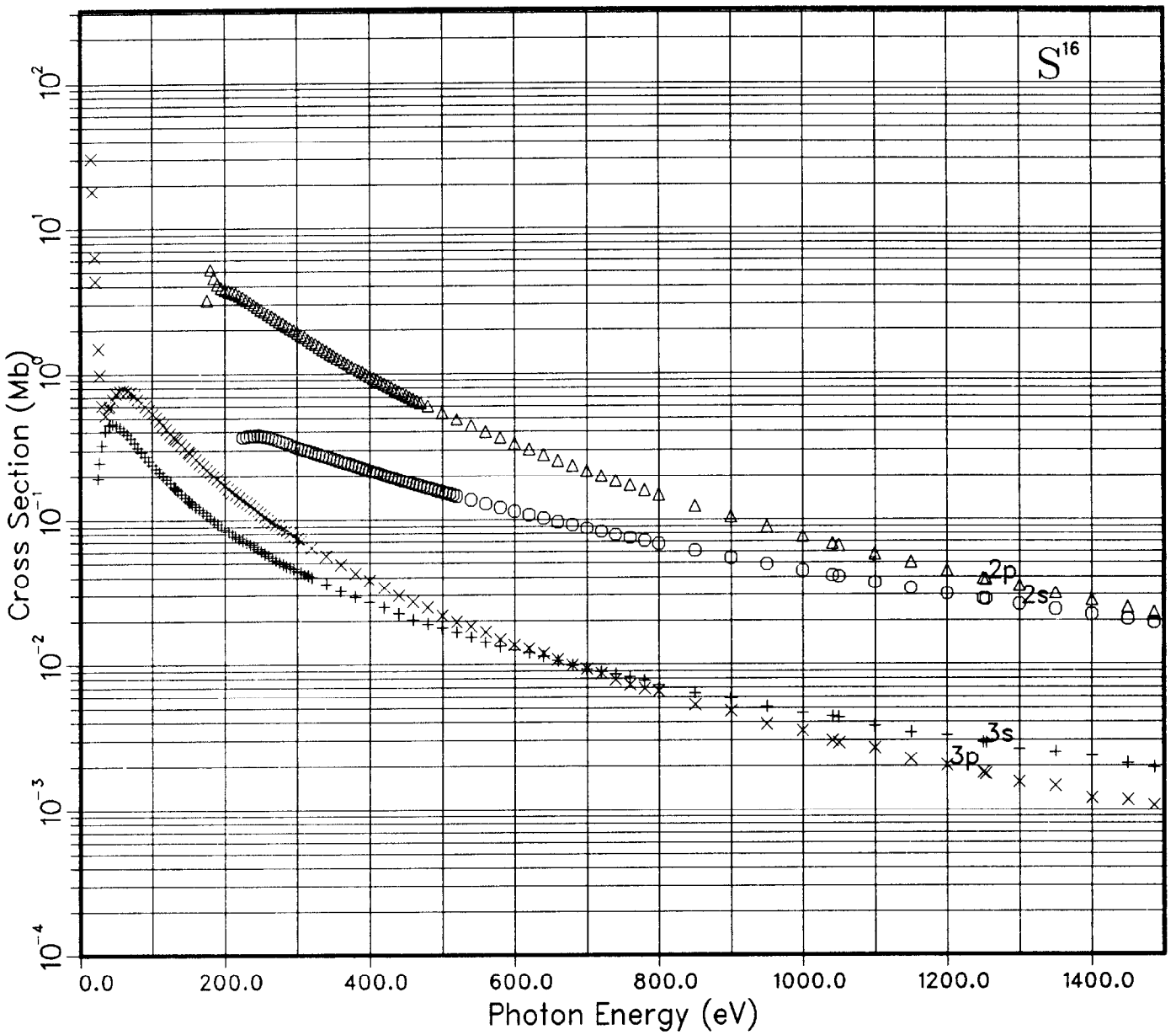


P binding energies(eV) are:

1s(2) 2123.96	2s(2) 186.164	2p(6) 138.485
3s(2) 17.1233	3p(3) 8.34803	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

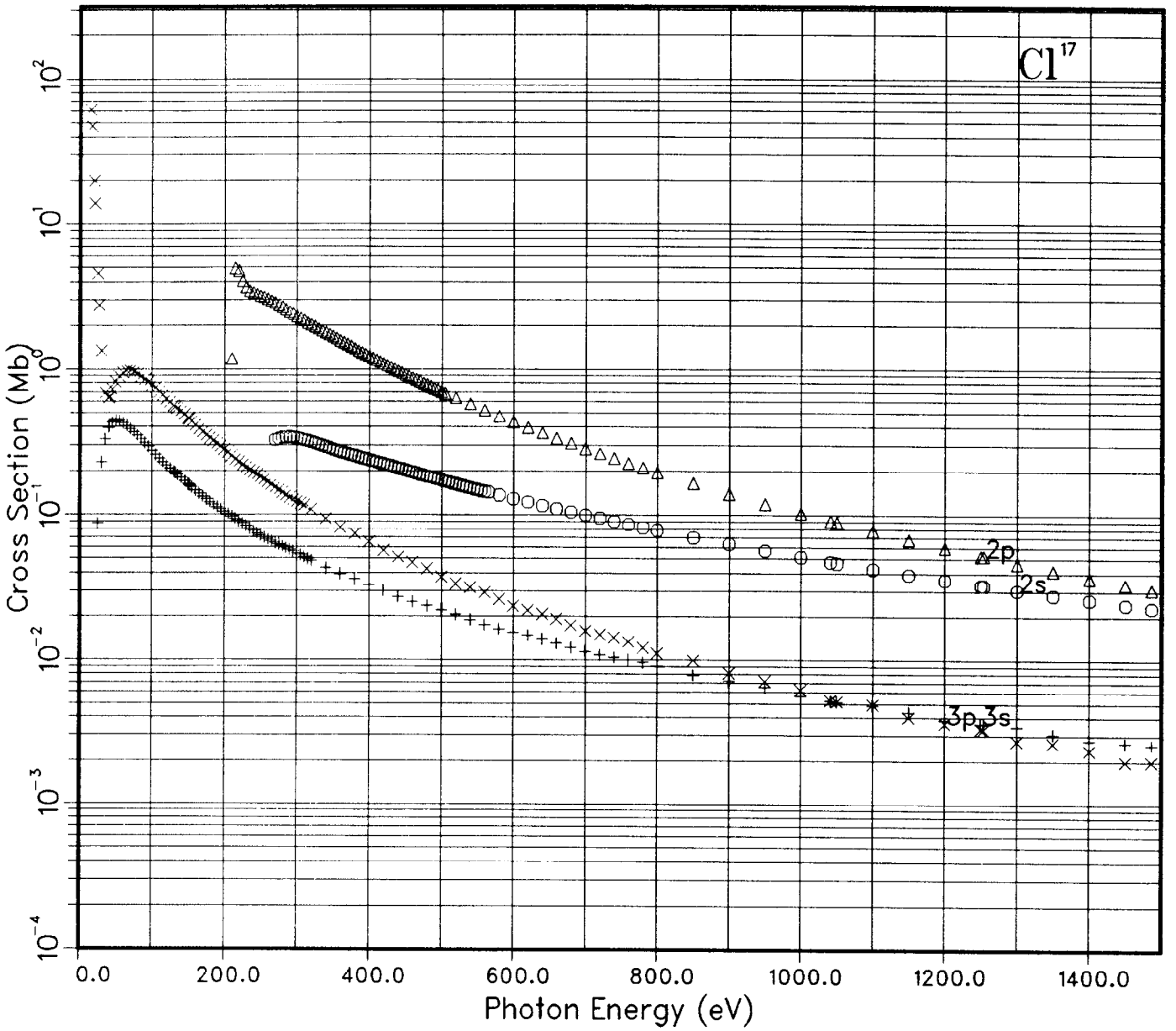


S binding energies(eV) are:

1s(2) 2447.37	2s(2) 224.614	2p(6) 171.796
3s(2) 20.8143	3p(4) 10.2854	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

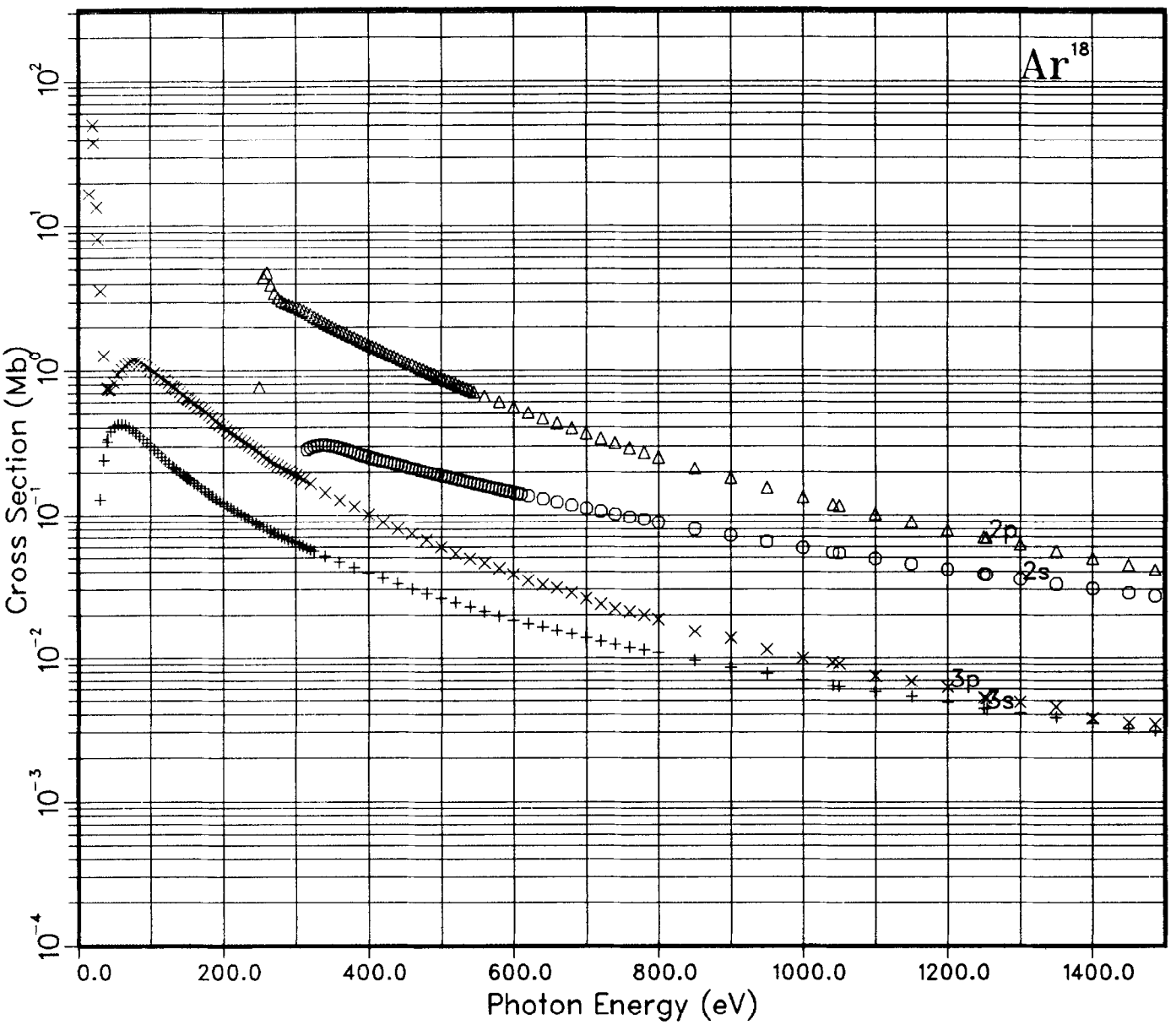


Cl binding energies(eV) are:

1s(2) 2793.94	2s(2) 266.247	2p(6) 208.201
3s(2) 24.6591	3p(5) 12.3370	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

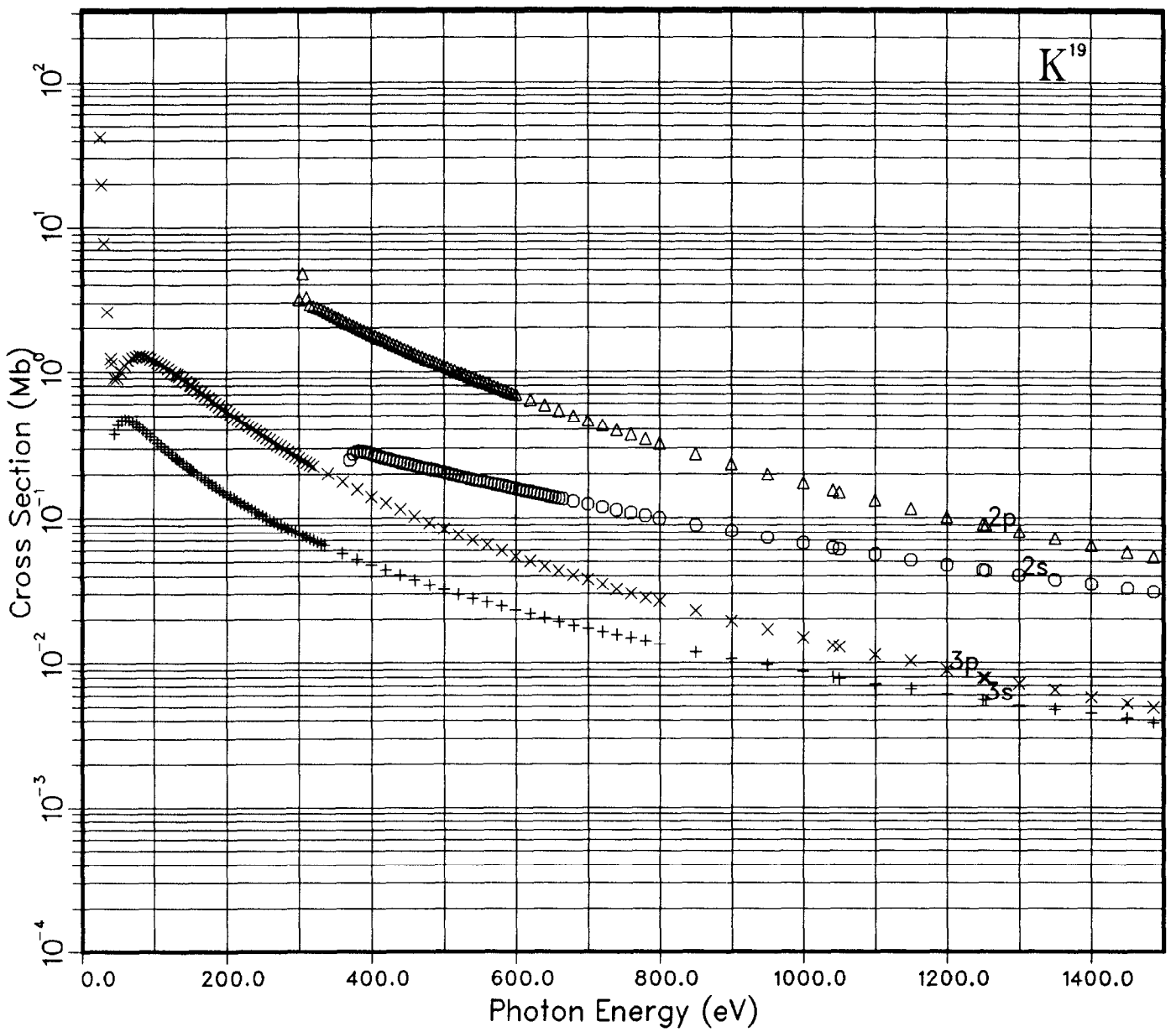


Ar binding energies(eV) are:

1s(2) 3163.66	2s(2) 311.076	2p(6) 247.713
3s(2) 28.6644	3p(6) 14.4948	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

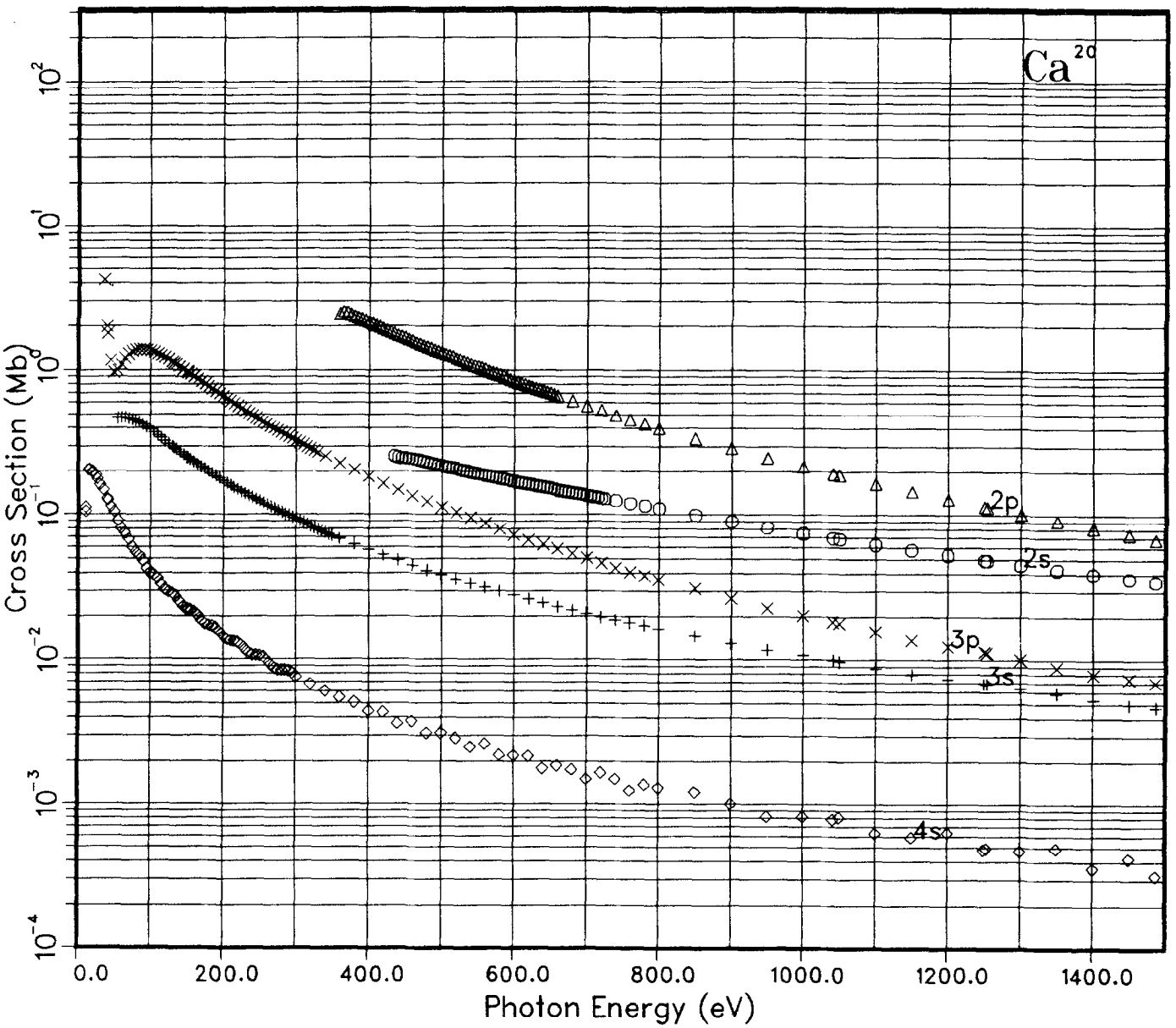


K binding energies(eV) are:

1s(2) 3565.89	2s(2) 368.151	2p(6) 299.426
3s(2) 40.1660	3p(6) 23.5775	4s(1) 4.19850

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

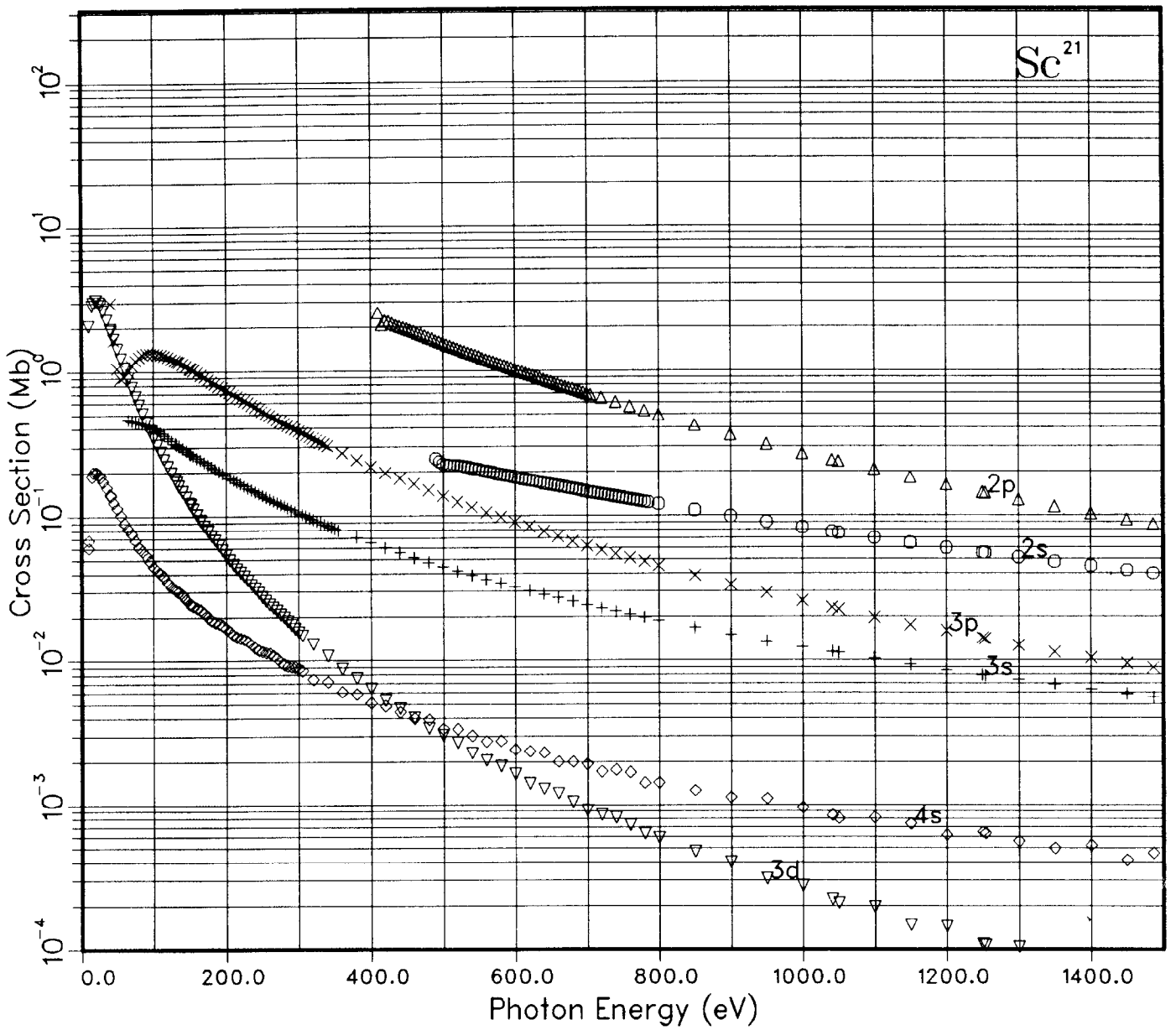


Ca binding energies(eV) are:

1s(2) 3993.48	2s(2) 430.295	2p(6) 356.164
3s(2) 52.7221	3p(6) 33.7730	4s(2) 5.42295

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

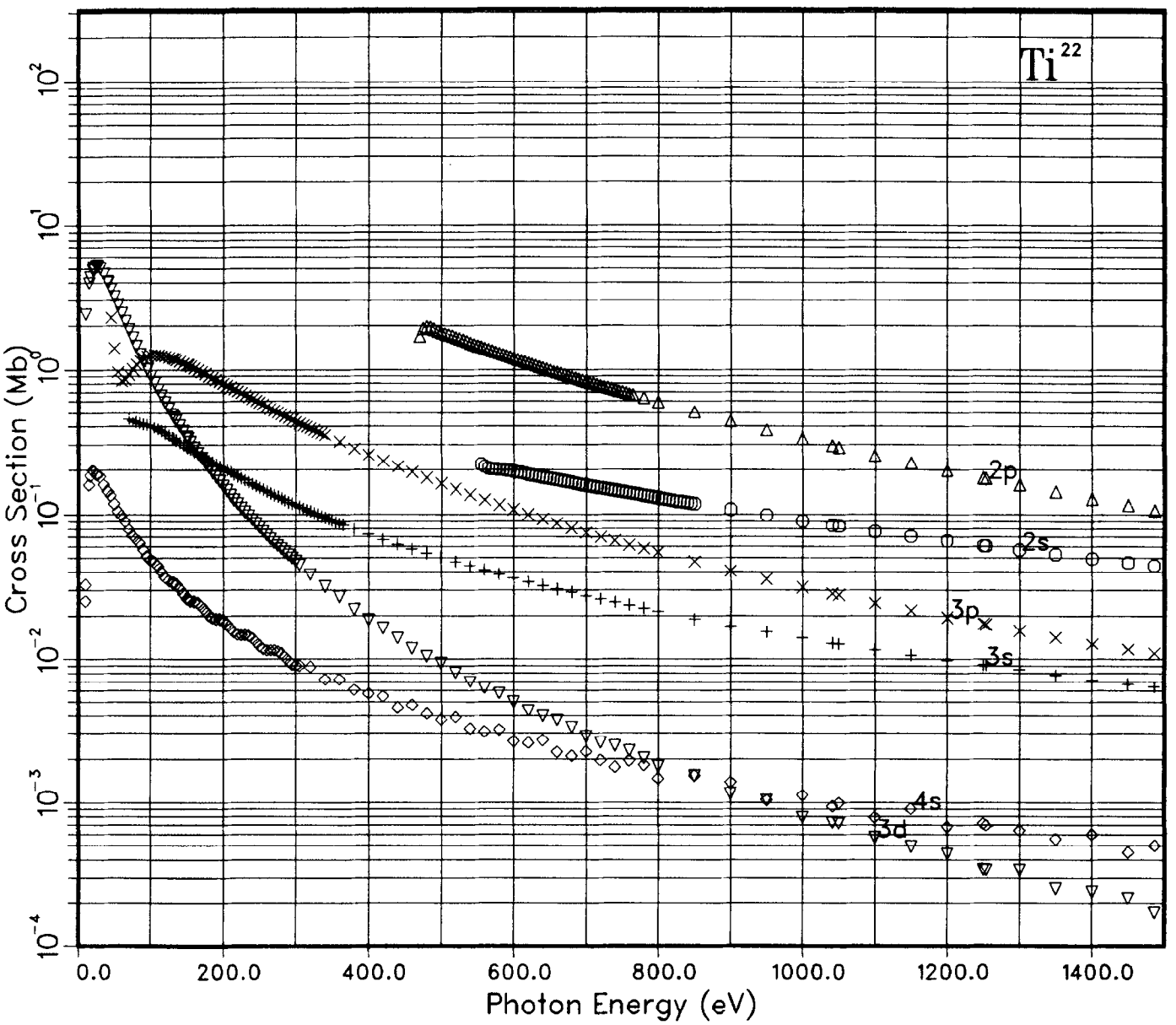


Sc binding energies(eV) are:

1s(2) 4439.29	2s(2) 489.391	2p(6) 409.887
3s(2) 60.2783	3p(6) 39.2219	4s(2) 5.85967
3d(1) 7.21881		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

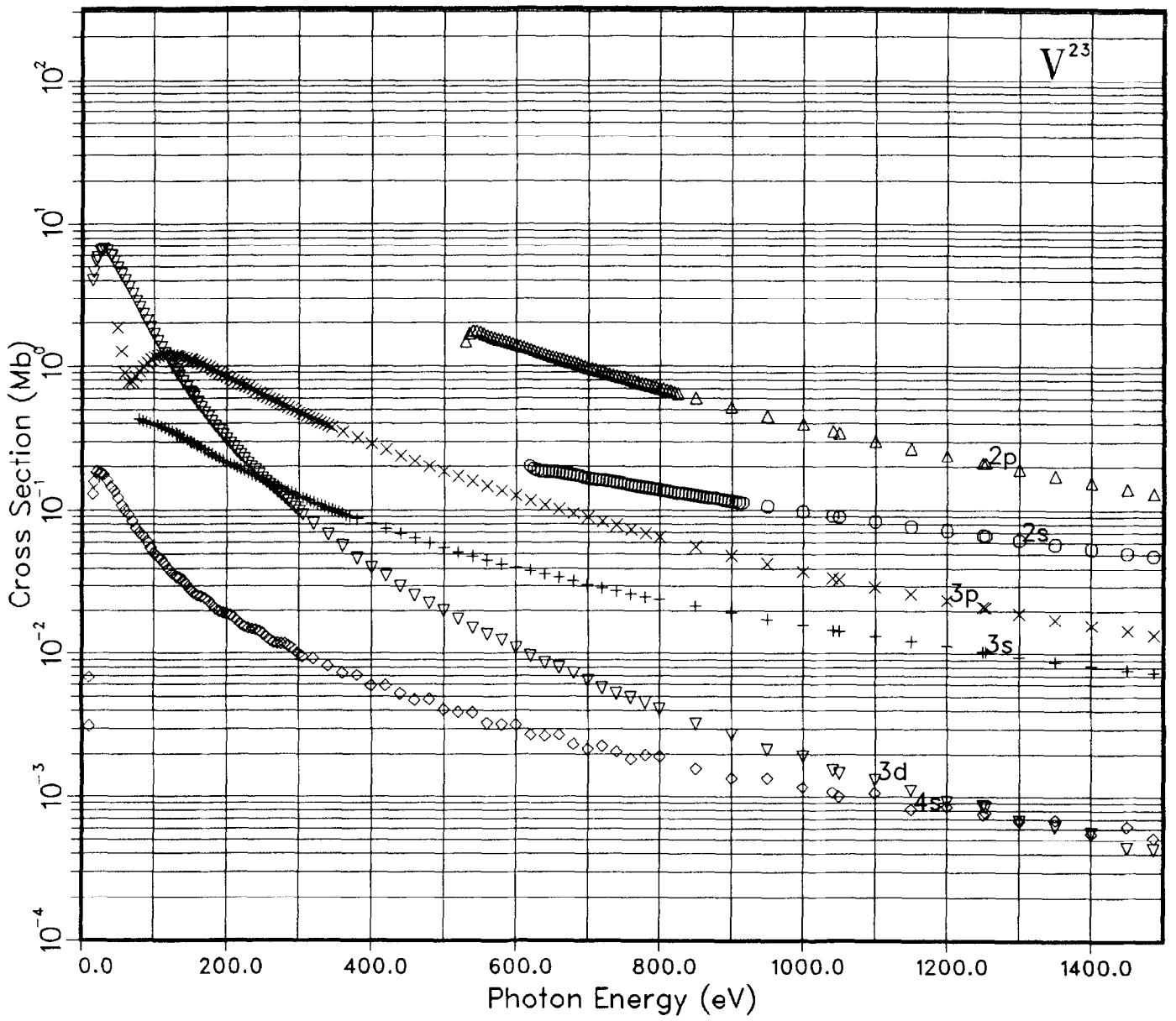


Ti binding energies(eV) are:

1s(2) 4908.27	2s(2) 551.295	2p(6) 466.381
3s(2) 67.7719	3p(6) 44.5713	4s(2) 6.22837
3d(2) 8.54394		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

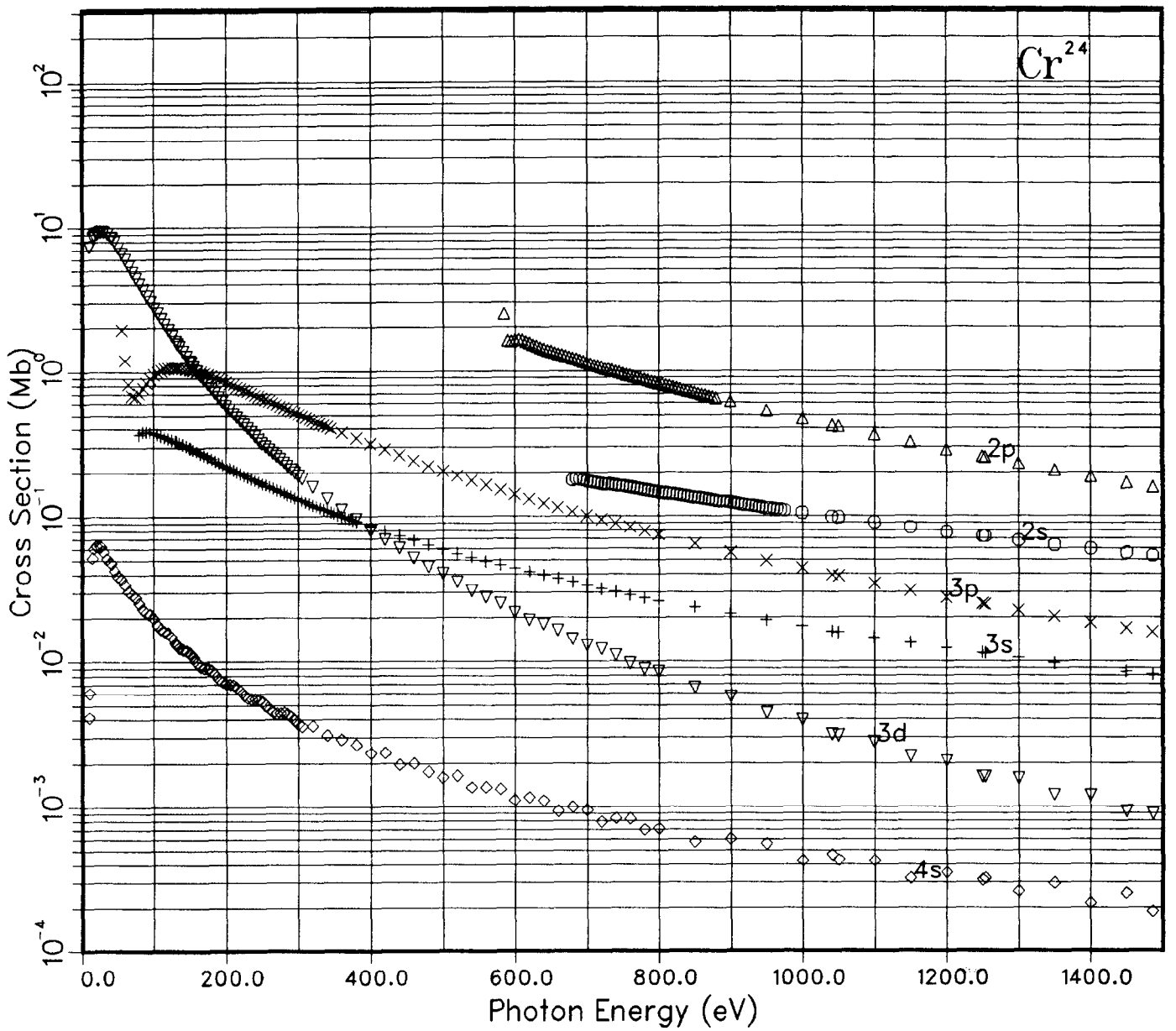


V binding energies(eV) are:

1s(2) 5400.57	2s(2) 616.164	2p(6) 525.786
3s(2) 75.3336	3p(6) 49.9385	4s(2) 6.55761
3d(3) 9.77383		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

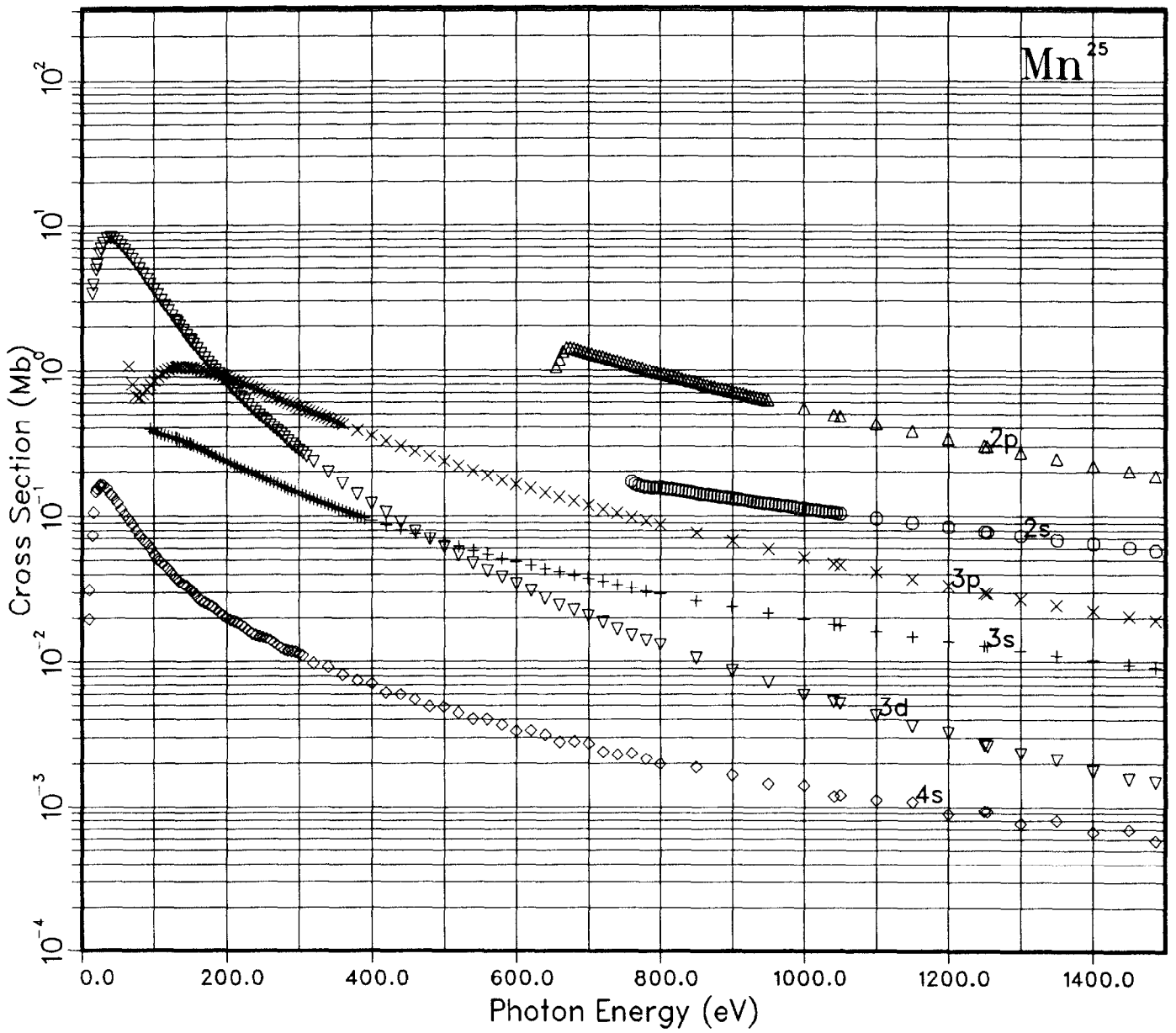


Cr binding energies(eV) are:

1s(2) 5910.66	2s(2) 677.857	2p(6) 582.026
3s(2) 77.7077	3p(6) 50.2201	4s(1) 5.86784
3d(5) 6.51816		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

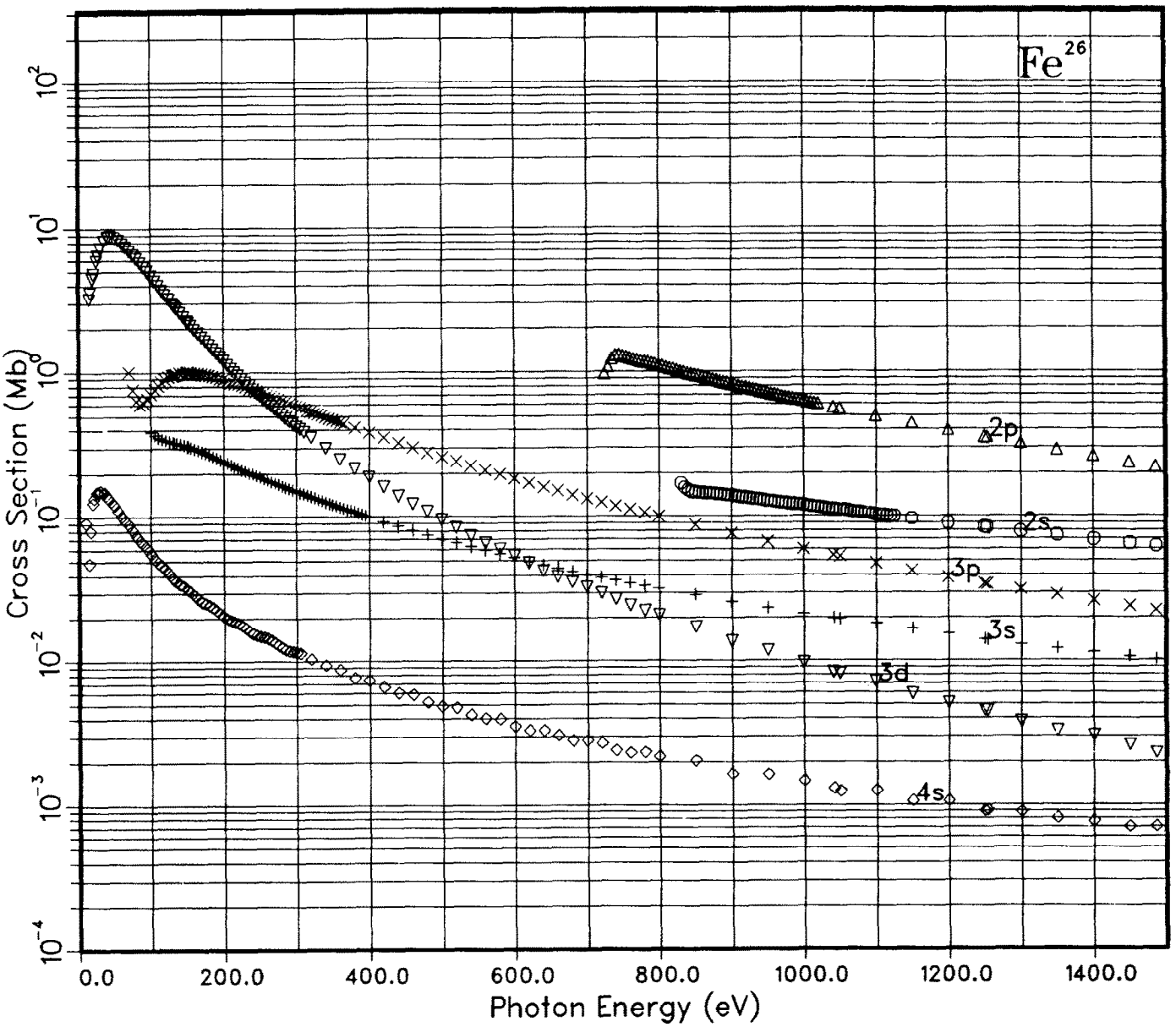


Mn binding energies(eV) are:

1s(2) 6455.26	2s(2) 755.155	2p(6) 653.681
3s(2) 90.8814	3p(6) 60.9150	4s(2) 7.14671
3d(5) 12.0486		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

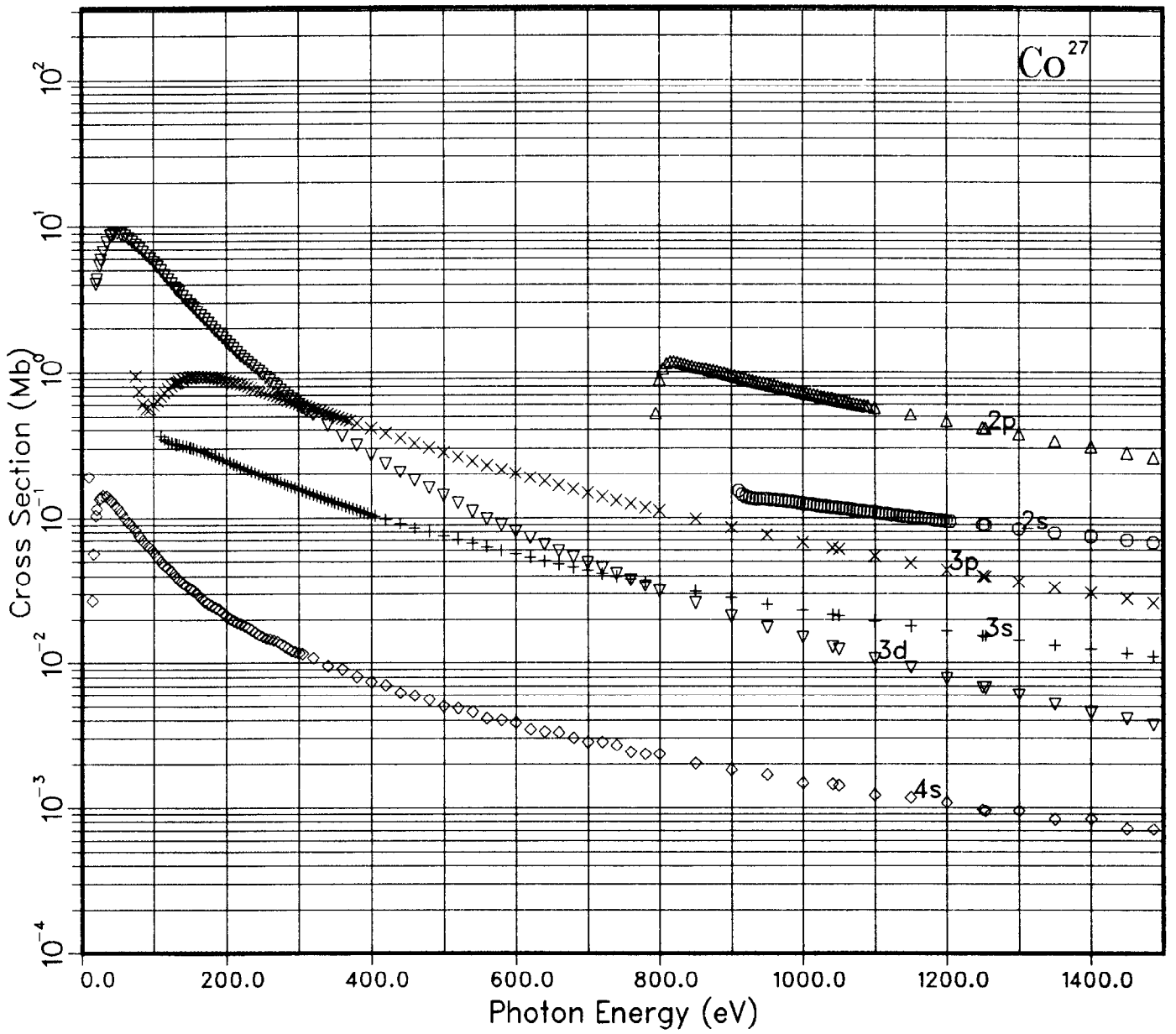


Fe binding energies(eV) are:

1s(2) 7017.74	2s(2) 829.347	2p(6) 722.246
3s(2) 98.9233	3p(6) 66.5706	4s(2) 7.41881
3d(6) 13.1179		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

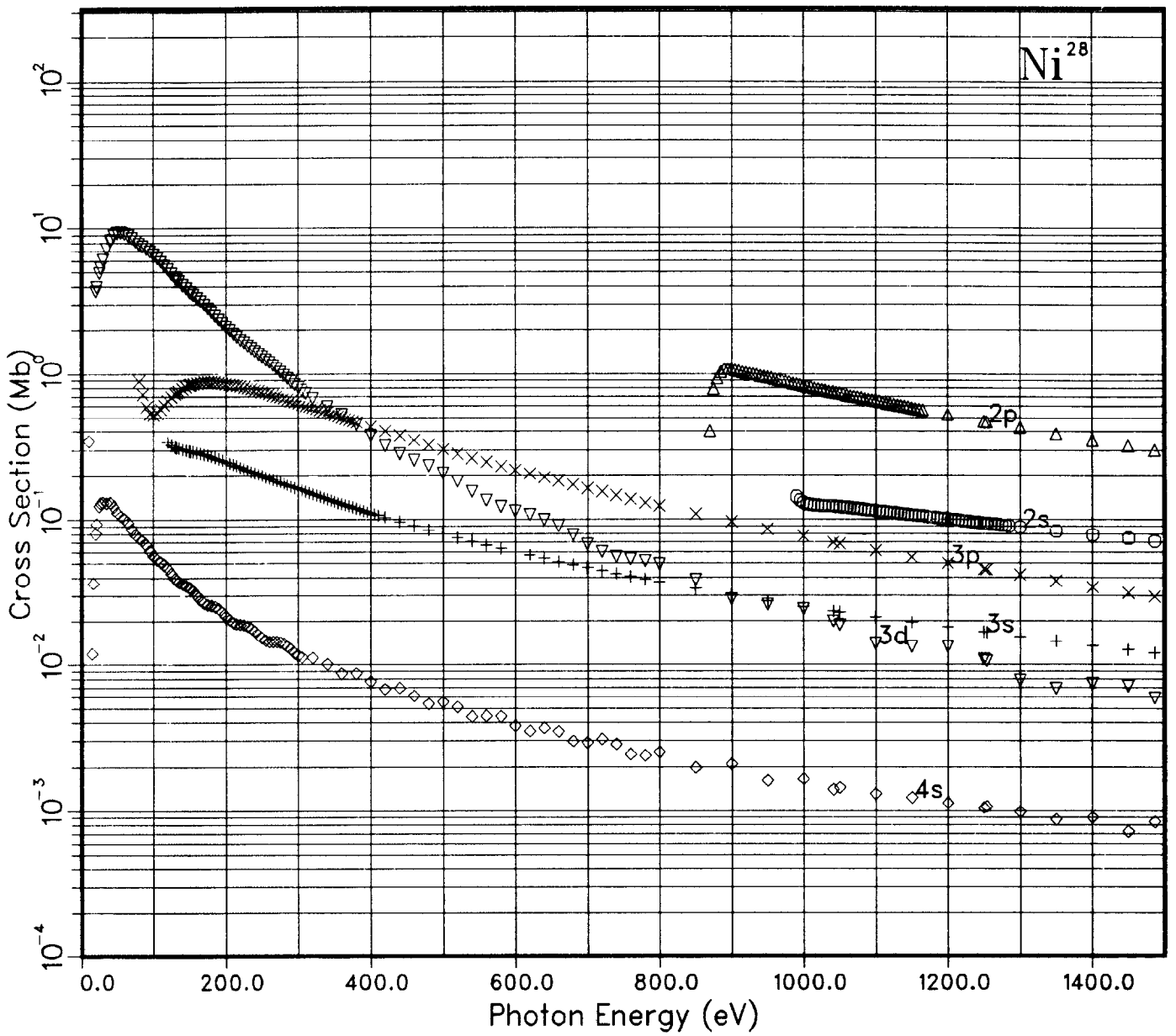


Co binding energies(eV) are:

1s(2) 7603.64	2s(2) 906.731	2p(6) 793.944
3s(2) 107.172	3p(6) 72.3636	4s(2) 7.67866
3d(7) 14.1560		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

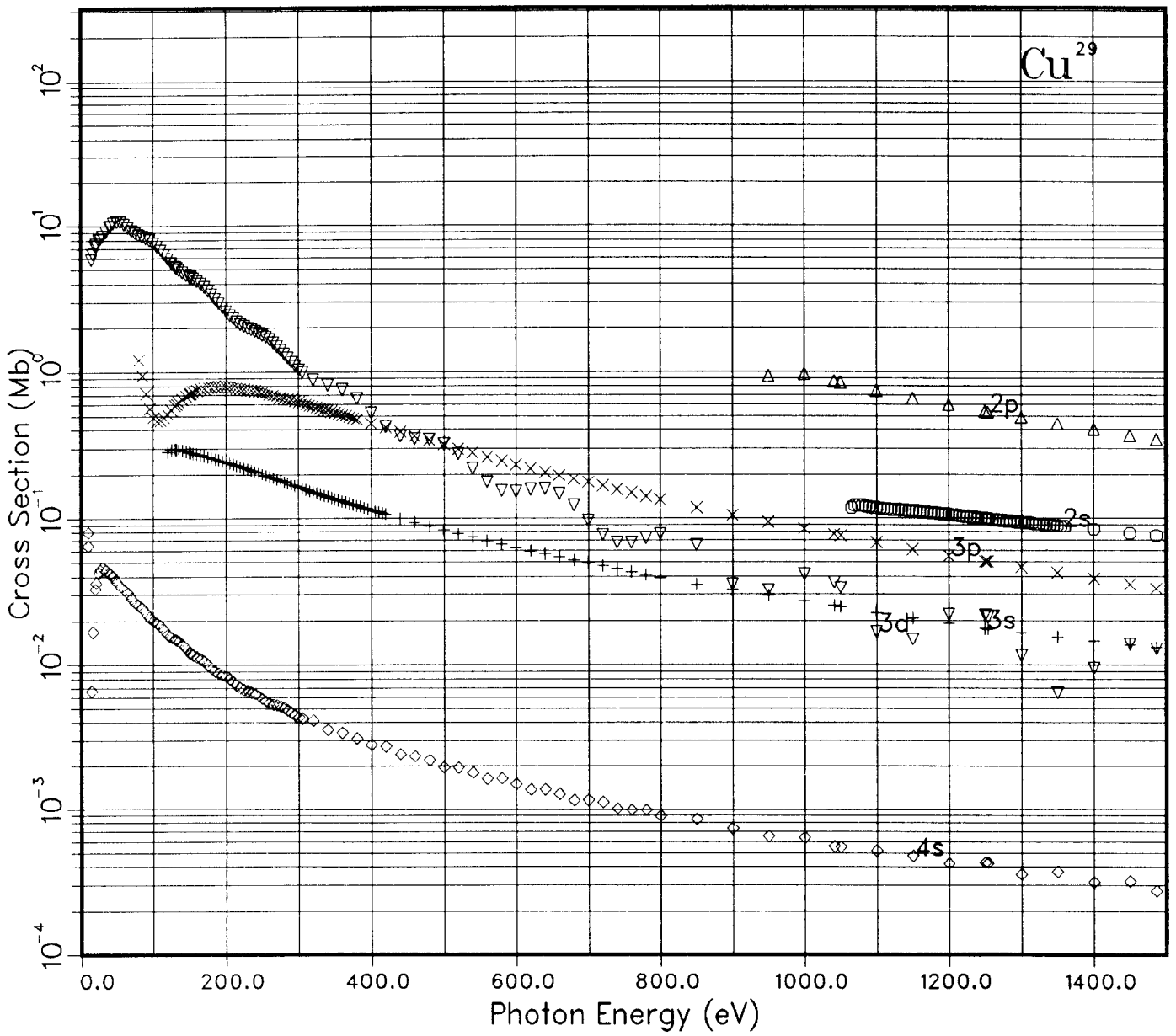


Ni binding energies(eV) are:

1s(2) 8213.02	2s(2) 987.301	2p(6) 868.772
3s(2) 115.630	3p(6) 78.2927	4s(2) 7.93172
3d(8) 15.1614		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

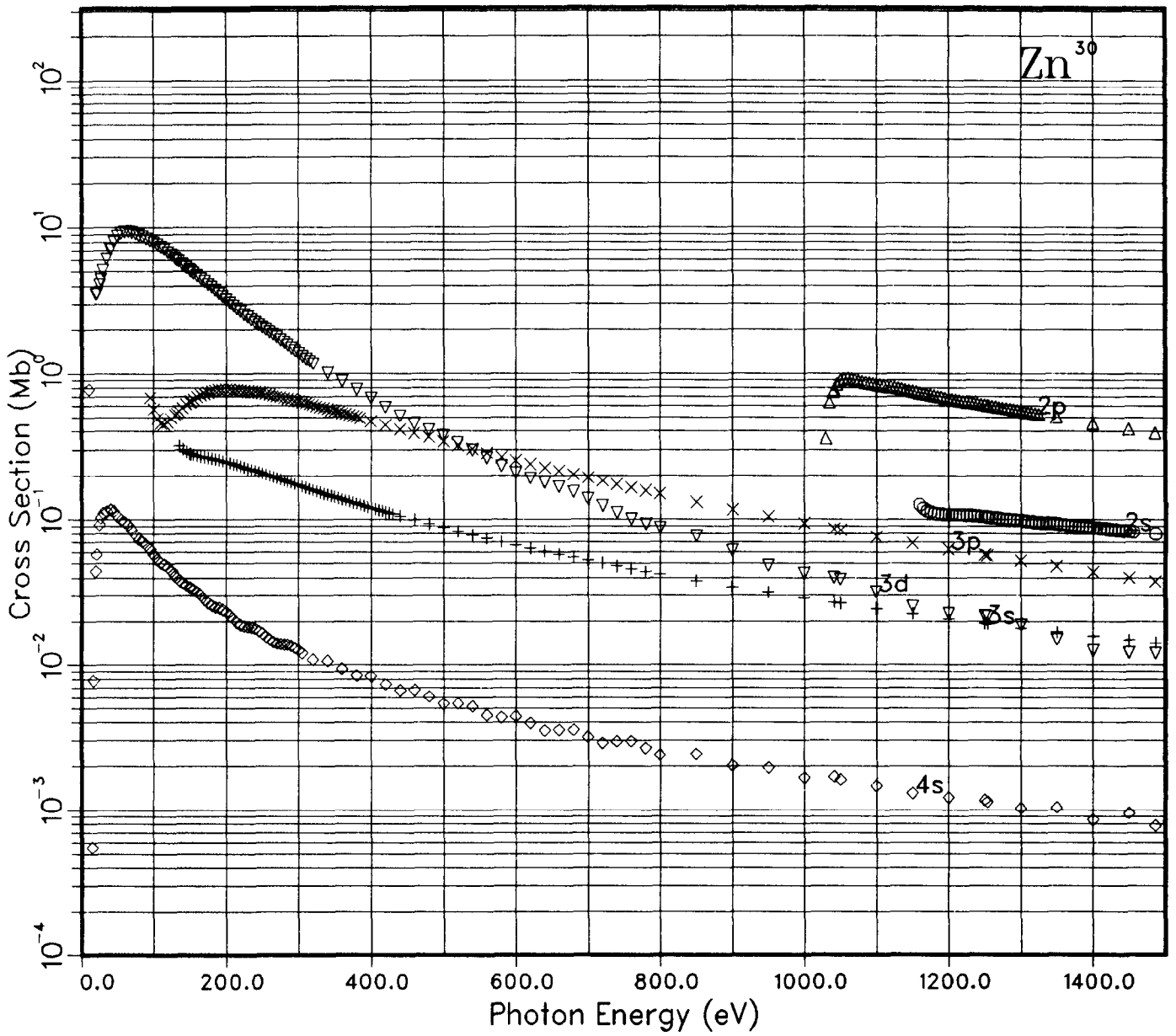


Cu binding energies(eV) are:

1s(2) 8838.79	2s(2) 1063.32	2p(6) 939.062
3s(2) 117.495	3p(6) 77.6900	4s(1) 6.92903
3d(10) 10.1316		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

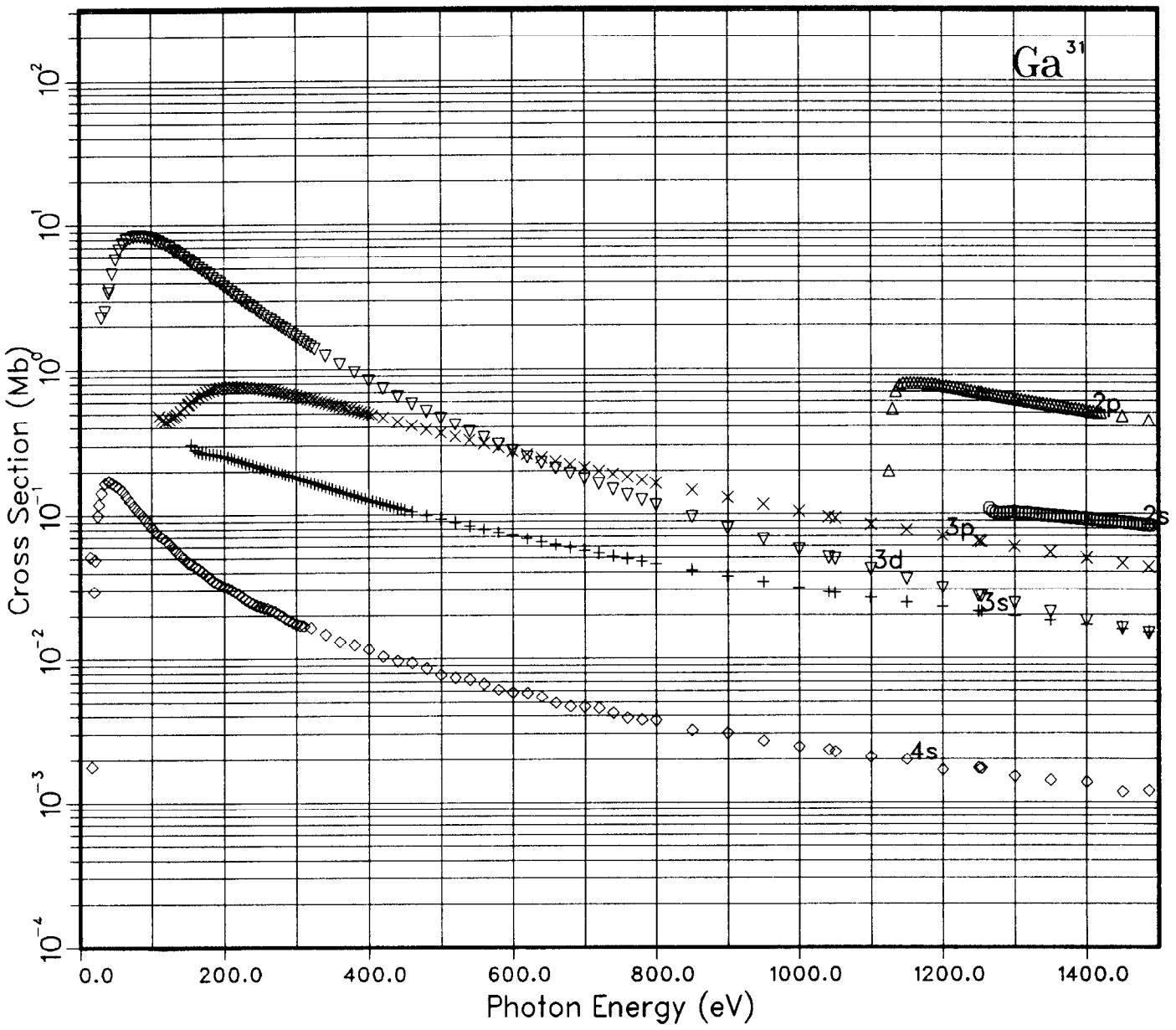


Zn binding energies(eV) are:

1s(2) 9502.19	2s(2) 1158.07	2p(6) 1027.89
3s(2) 133.224	3p(6) 90.6079	4s(2) 8.41469
3d(10) 17.1069		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

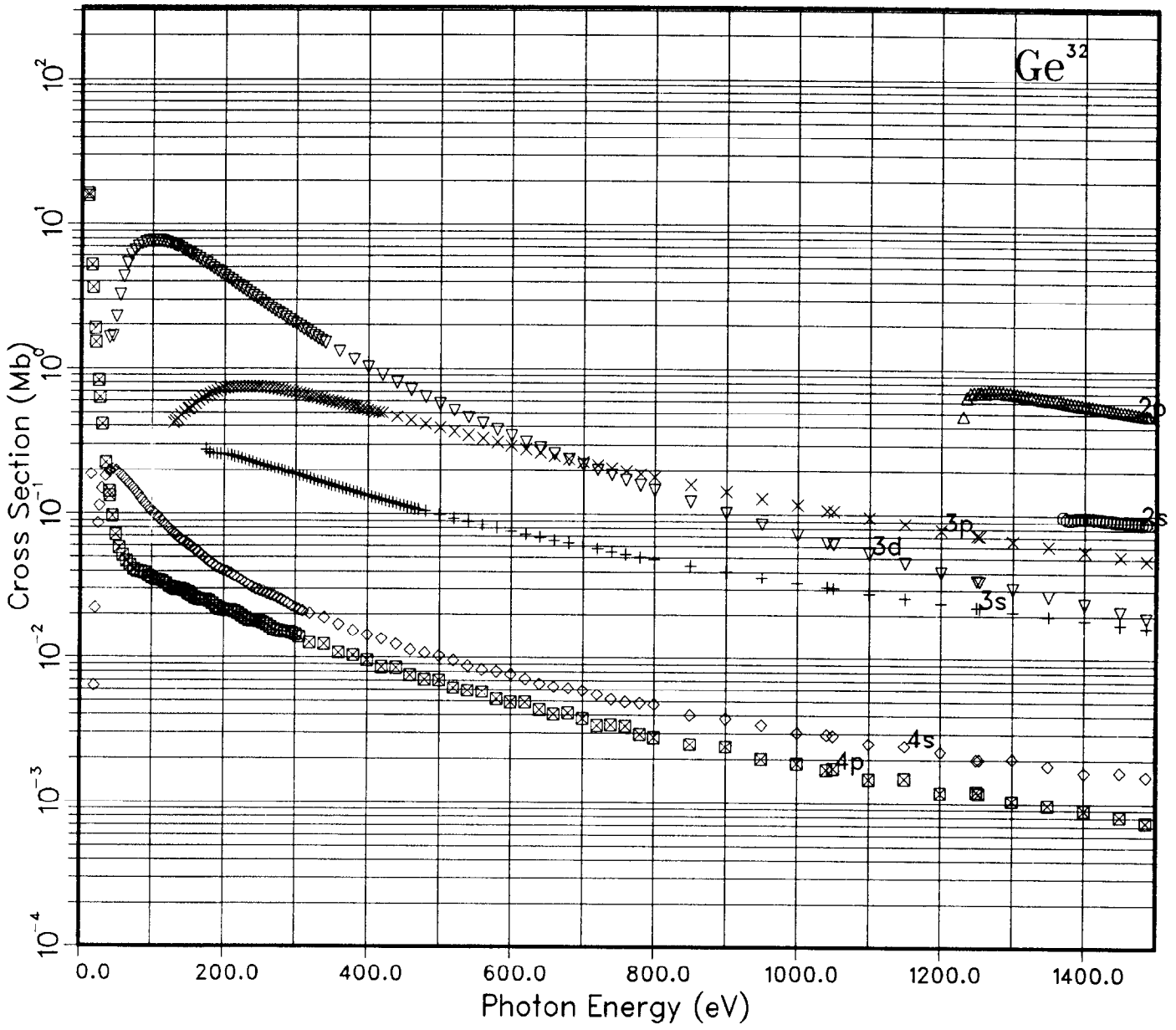


Ga binding energies(eV) are:

1s(2) 10193.2	2s(2) 1260.35	2p(6) 1124.19
3s(2) 152.903	3p(6) 107.383	4s(2) 11.3996
3d(10) 27.7637	4p(1) 4.92501	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

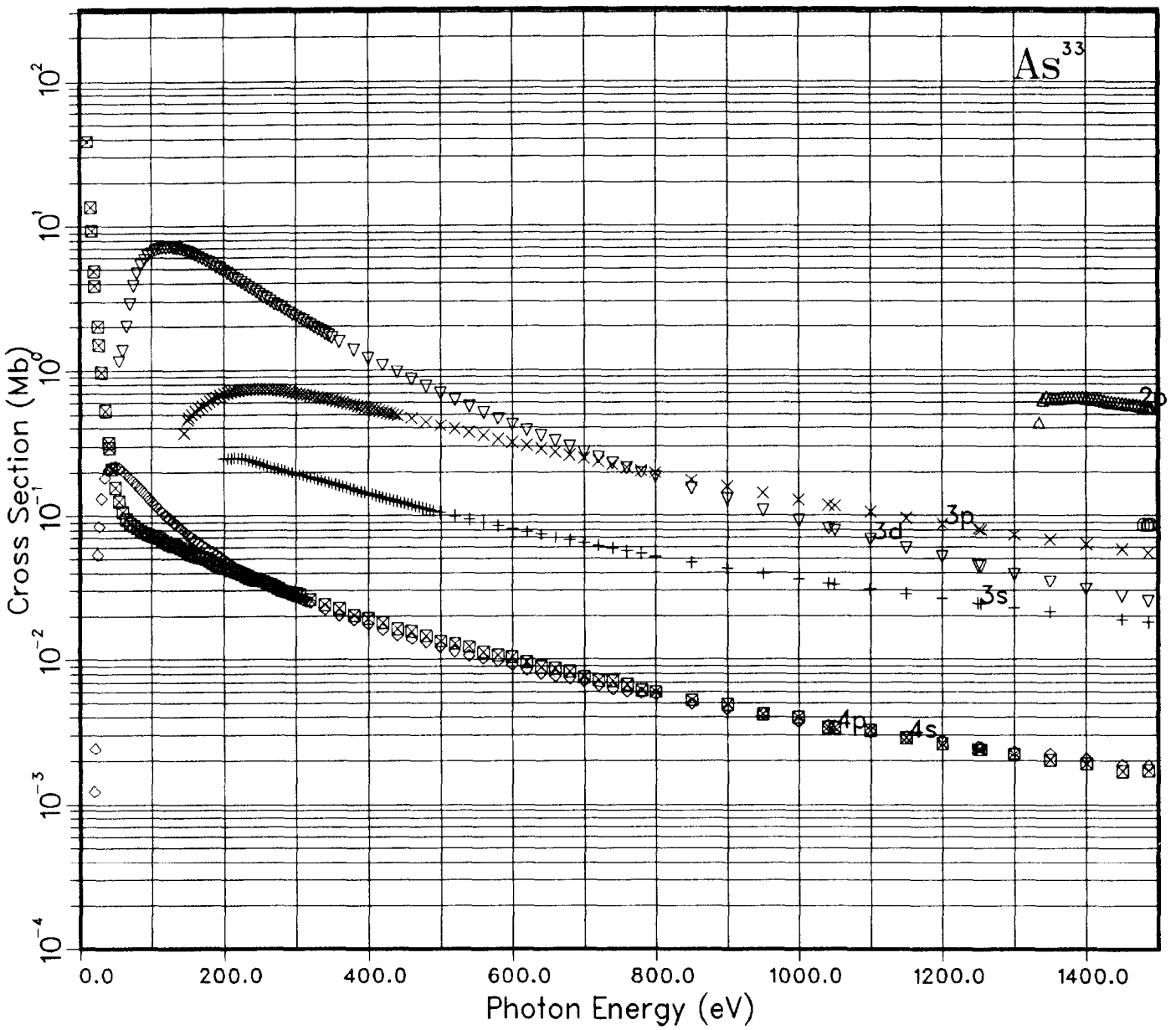


Ge binding energies(eV) are:

1s(2) 10909.0	2s(2) 1367.38	2p(6) 1225.15
3s(2) 173.650	3p(6) 125.150	4s(2) 14.3846
3d(10) 39.3484	4p(2) 6.37258	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

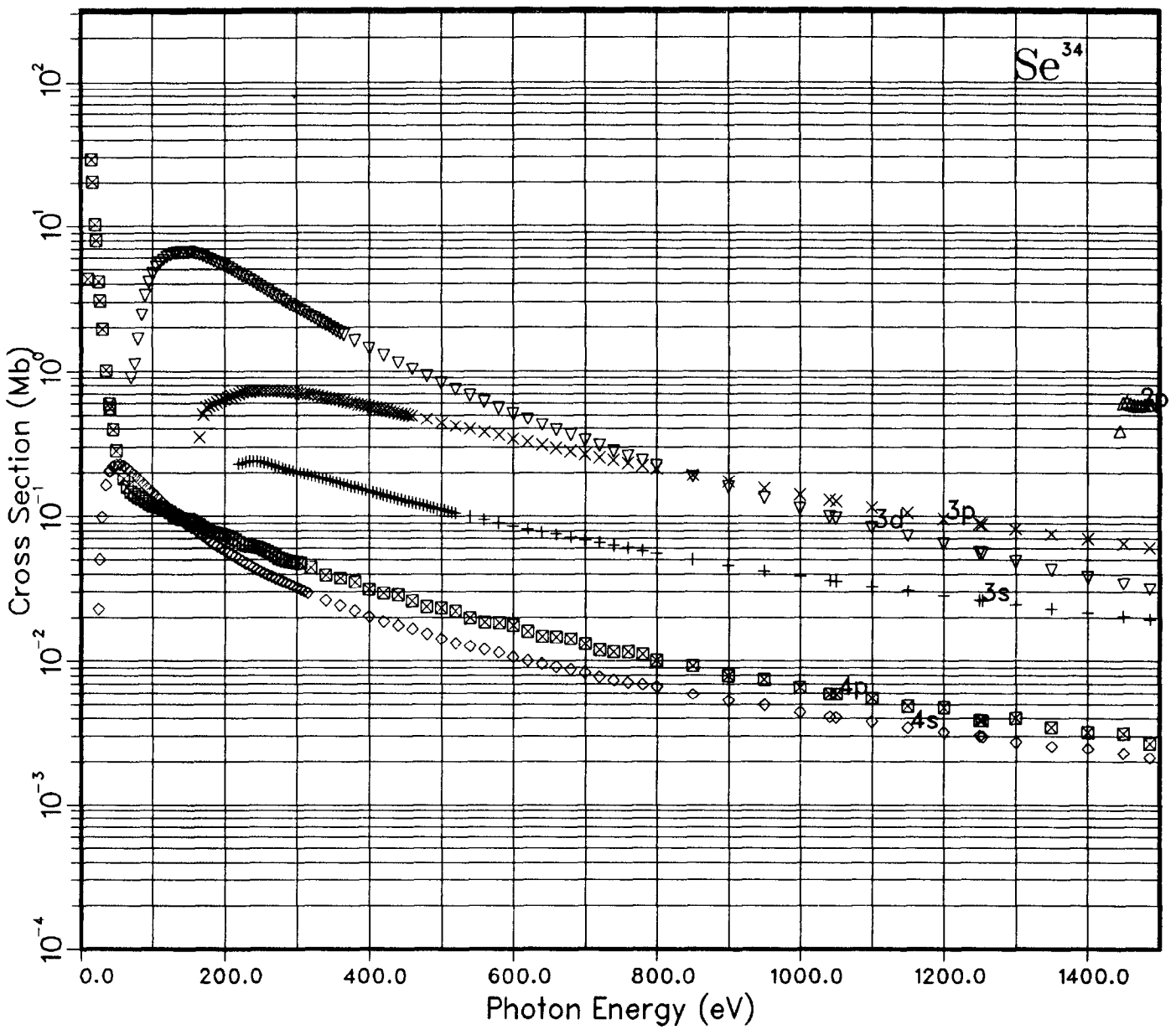


As binding energies(eV) are:

1s(2) 11649.8	2s(2) 1479.25	2p(6) 1330.90
3s(2) 195.569	3p(6) 144.028	4s(2) 17.3518
3d(10) 52.0010	4p(3) 7.92491	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

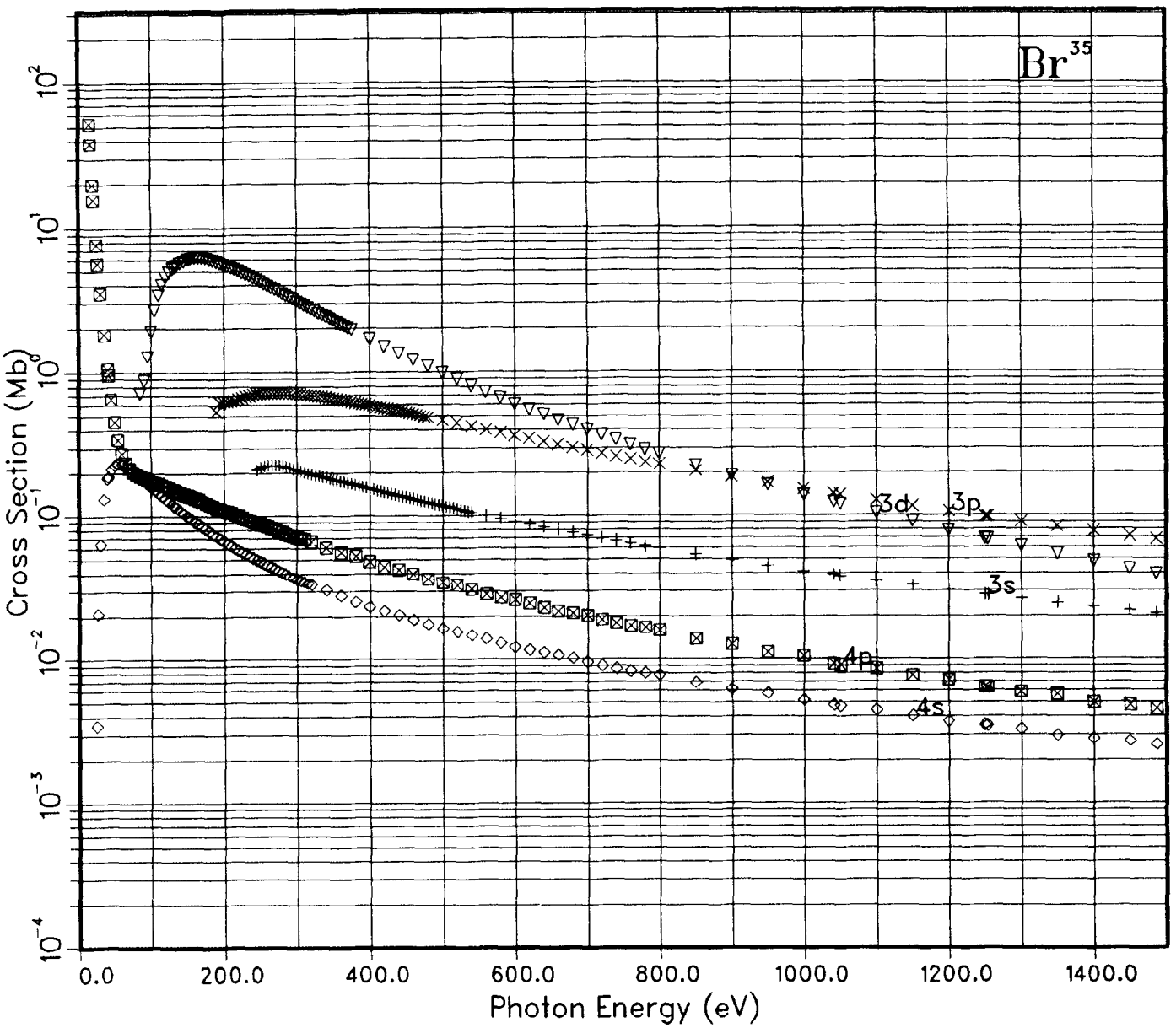


Se binding energies(eV) are:

1s(2) 12415.6	2s(2) 1595.96	2p(6) 1441.45
3s(2) 218.674	3p(6) 164.042	4s(2) 20.3436
3d(10) 65.7543	4p(4) 9.54391	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

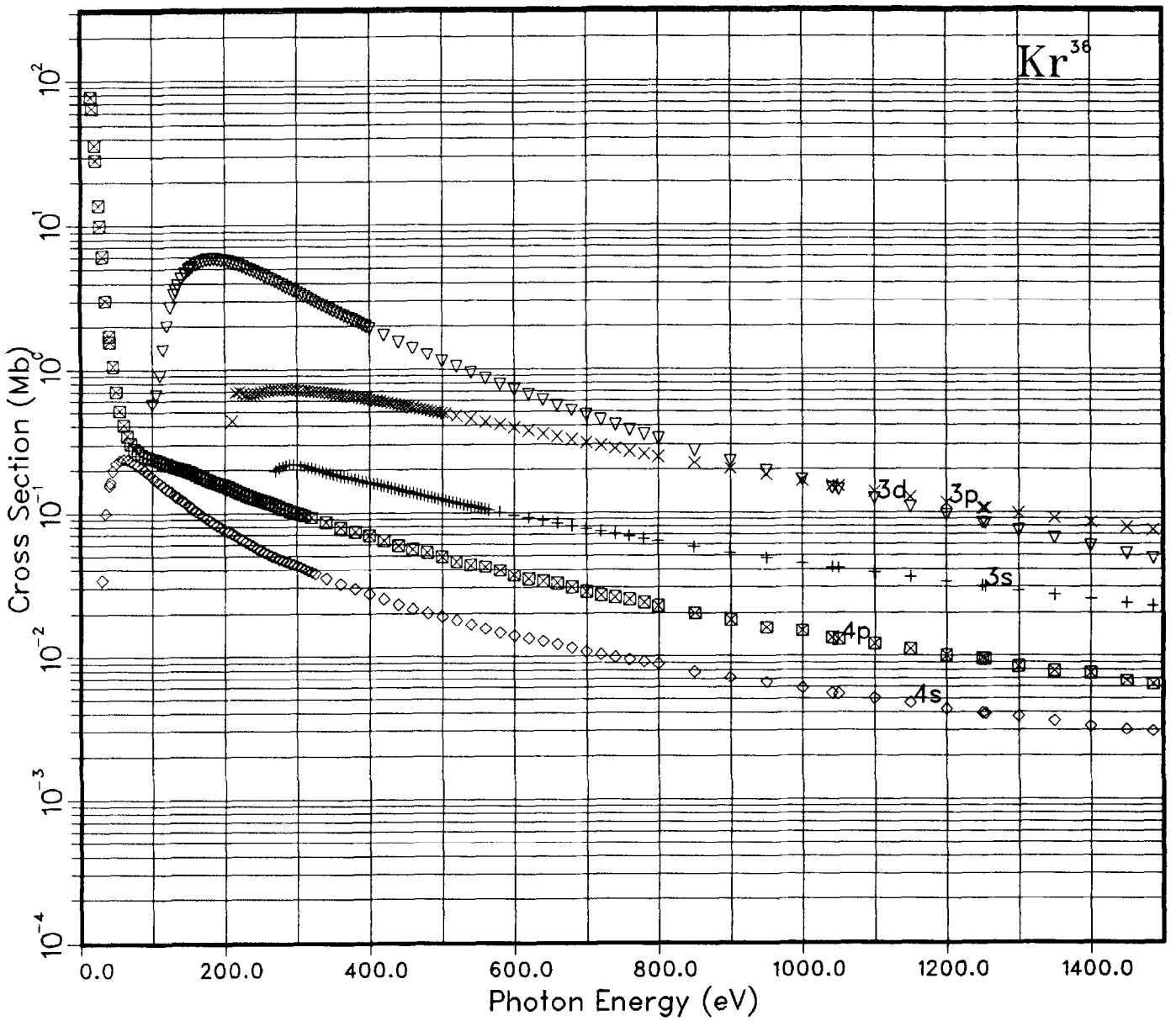


Br binding energies(eV) are:

1s(2) 13206.3	2s(2) 1717.49	2p(6) 1556.74
3s(2) 242.961	3p(6) 185.193	4s(2) 23.3788
3d(10) 80.6137	4p(5) 11.2200	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

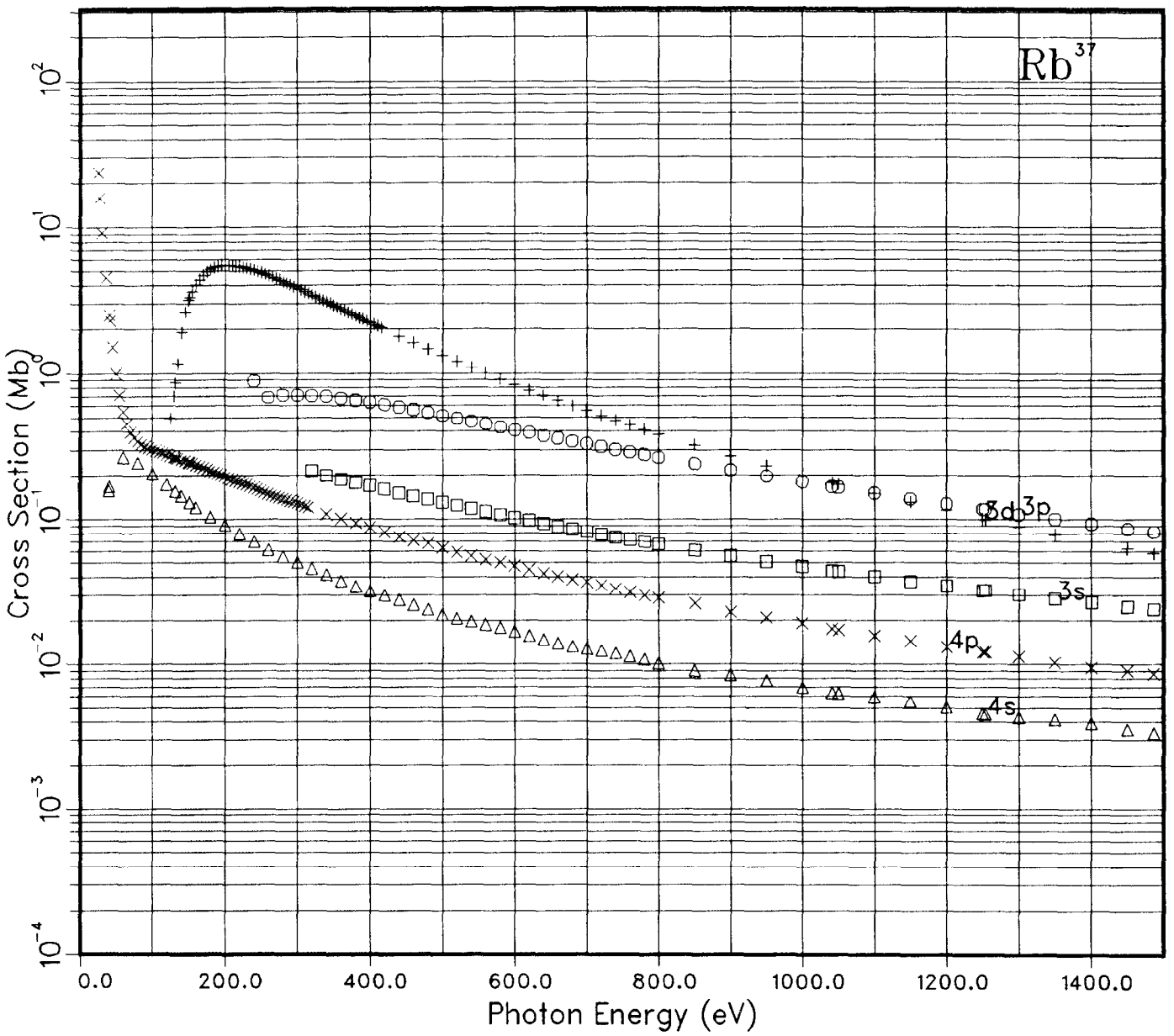


Kr binding energies(eV) are:

1s(2) 14022.0	2s(2) 1843.83	2p(6) 1676.79
3s(2) 268.409	3p(6) 207.464	4s(2) 26.4699
3d(10) 96.5642	4p(6) 12.9506	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

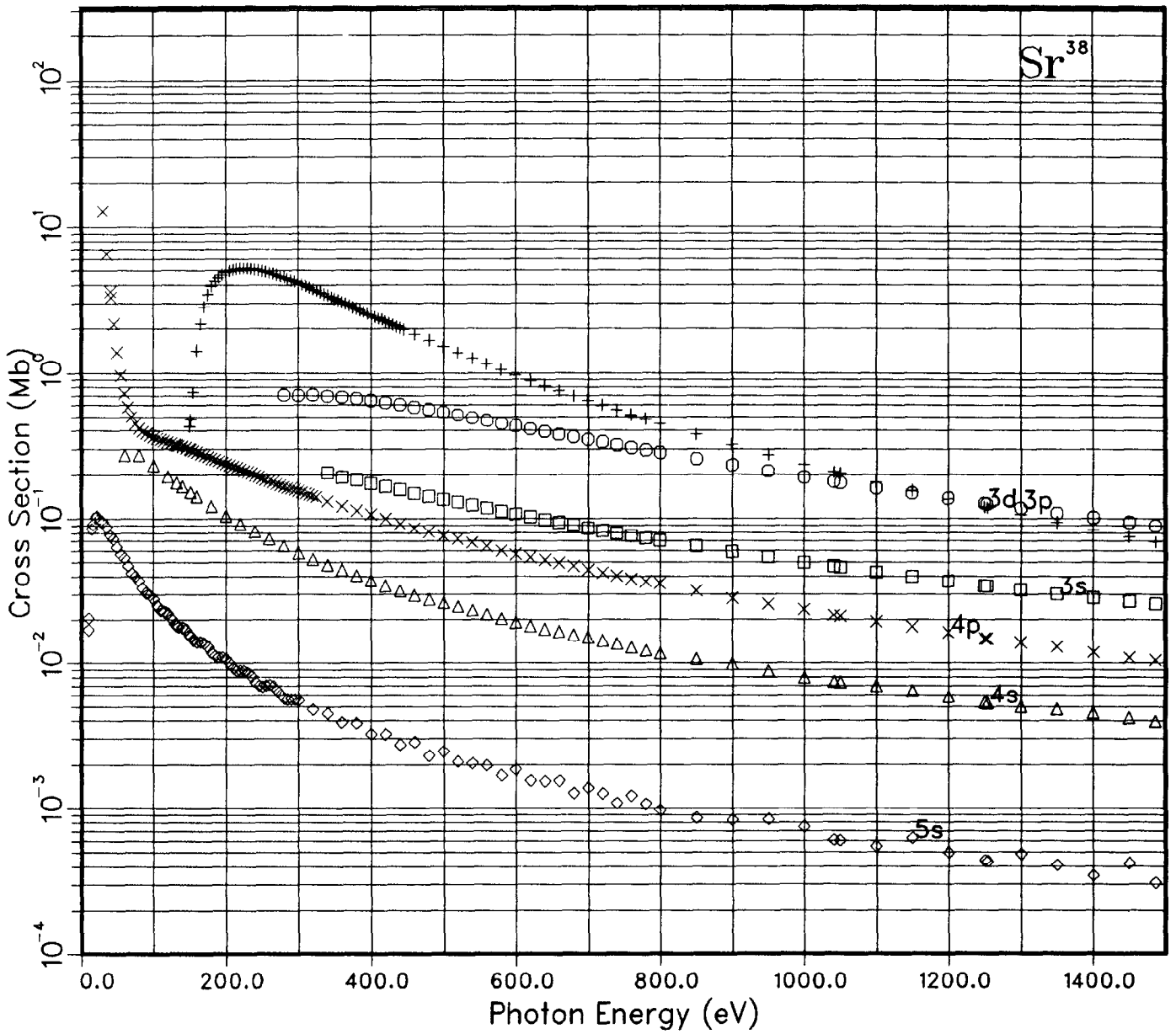


Rb binding energies(eV) are:

1s(2) 14869.6	2s(2) 1982.09	2p(6) 1808.74
3s(2) 302.072	3p(6) 237.912	4s(2) 35.5458
3d(10) 120.653	4p(6) 20.1041	5s(1) 3.95225

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

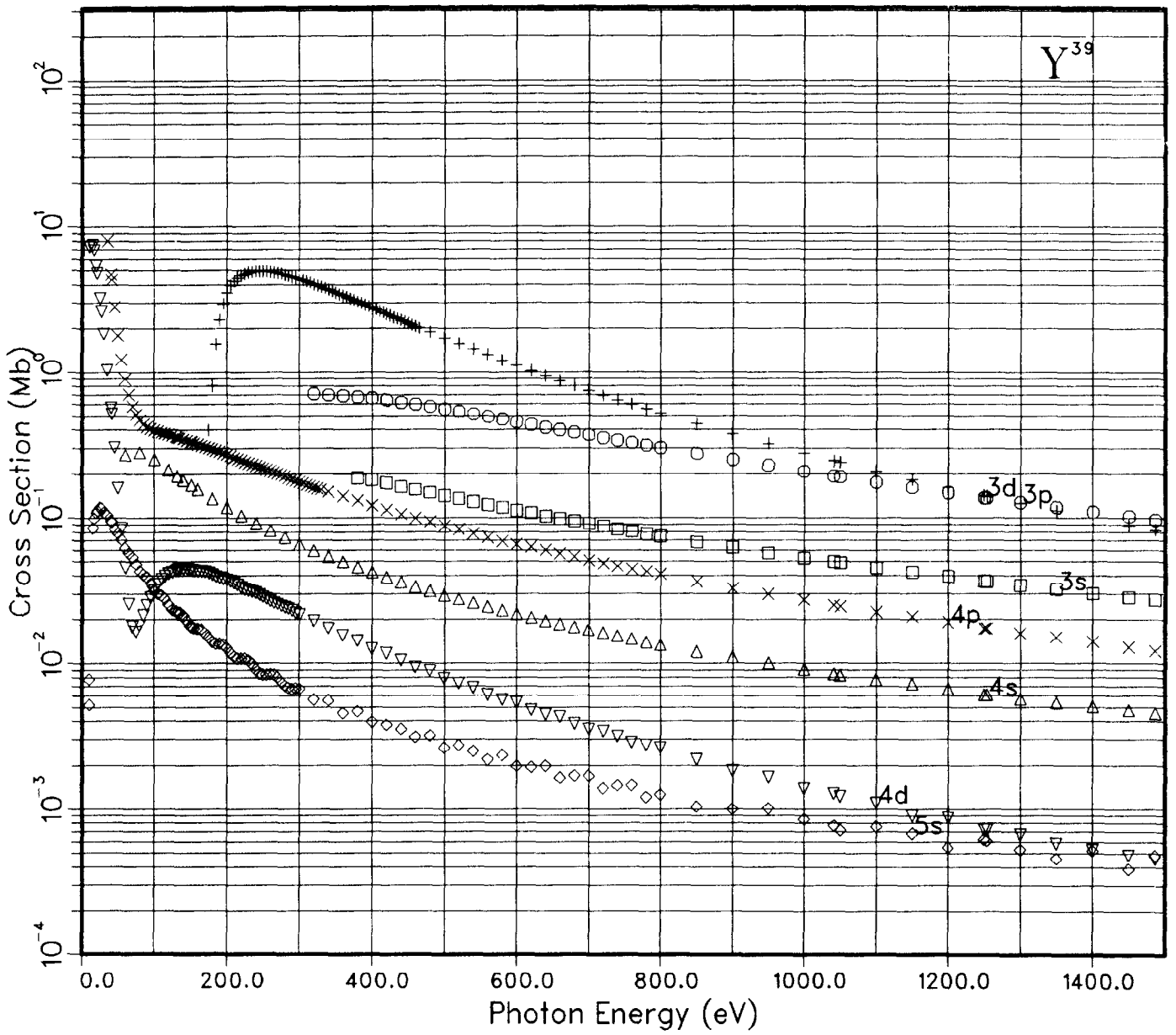


Sr binding energies(eV) are:

1s(2) 15743.6	2s(2) 2126.09	2p(6) 1946.37
3s(2) 337.698	3p(6) 270.289	4s(2) 44.9740
3d(10) 146.640	4p(6) 27.6916	5s(2) 5.00936

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

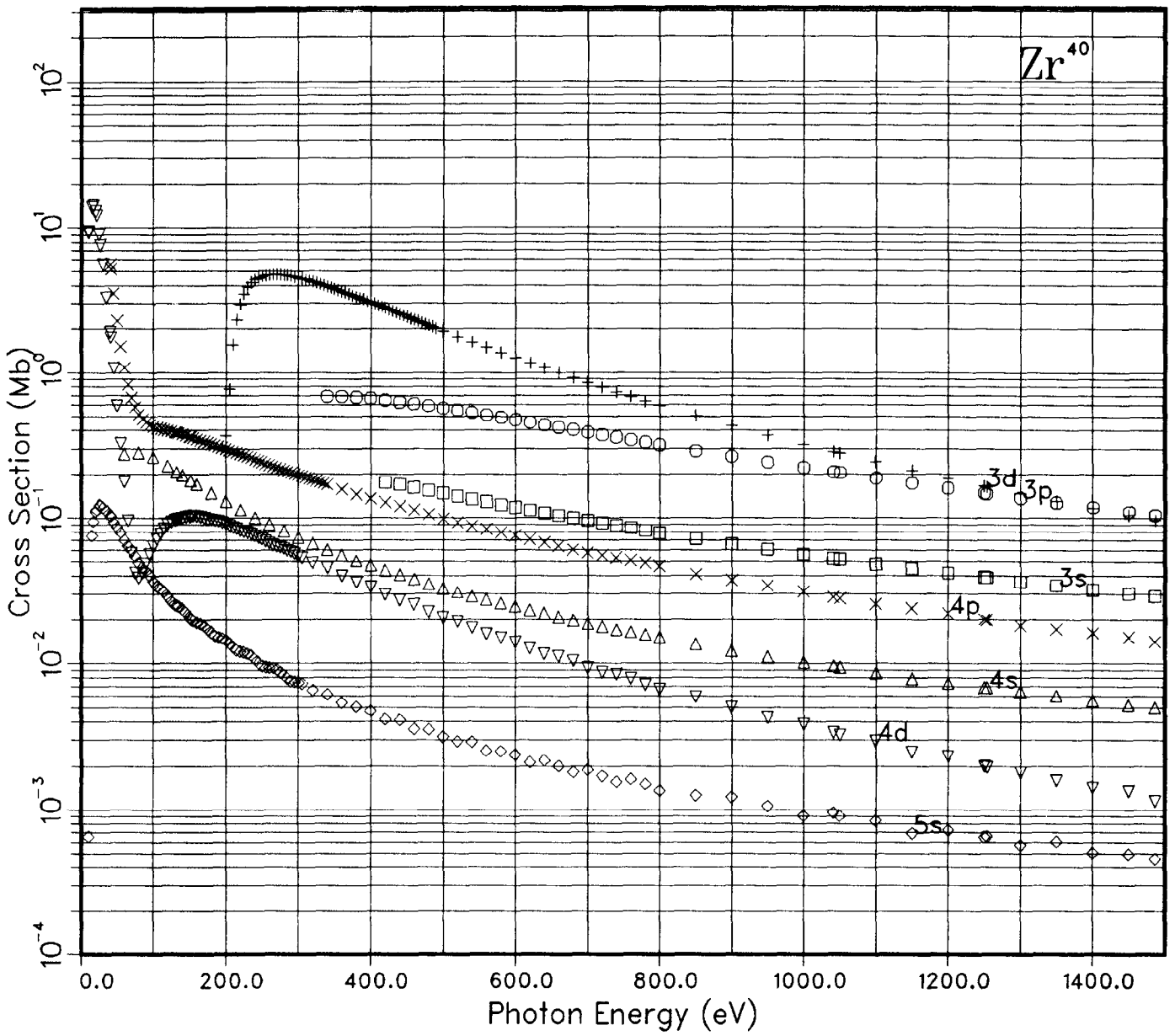


Y binding energies(eV) are:

1s(2) 16639.4	2s(2) 2271.59	2p(6) 2085.50
3s(2) 371.221	3p(6) 300.532	4s(2) 51.4568
3d(10) 170.454	4p(6) 32.5554	5s(2) 5.53587
4d(1) 5.56308		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

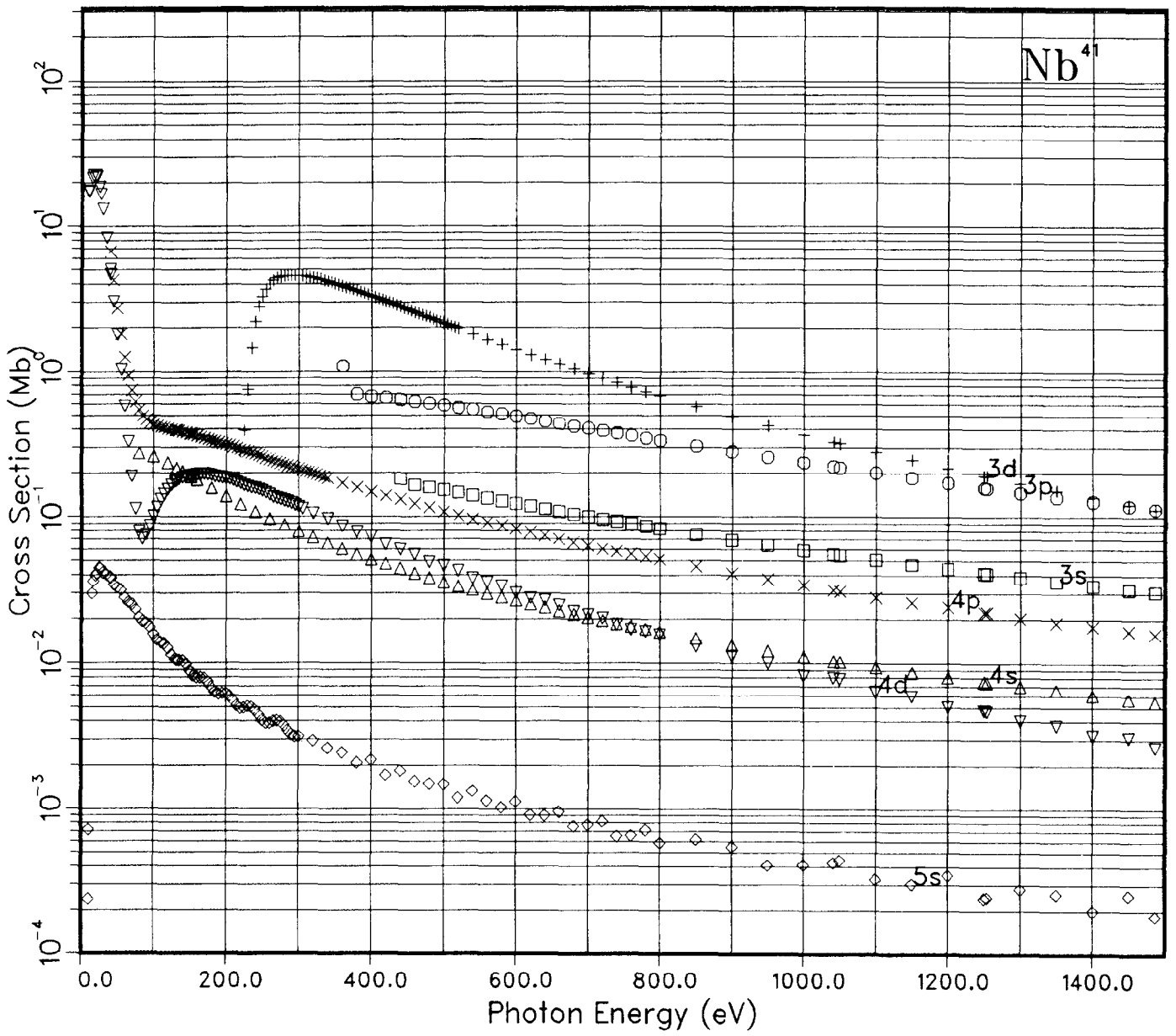


Zr binding energies(eV) are:

1s(2) 17559.9	2s(2) 2421.35	2p(6) 2228.87
3s(2) 405.383	3p(6) 331.382	4s(2) 57.6022
3d(10) 194.845	4p(6) 37.1212	5s(2) 5.93042
4d(2) 7.01882		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

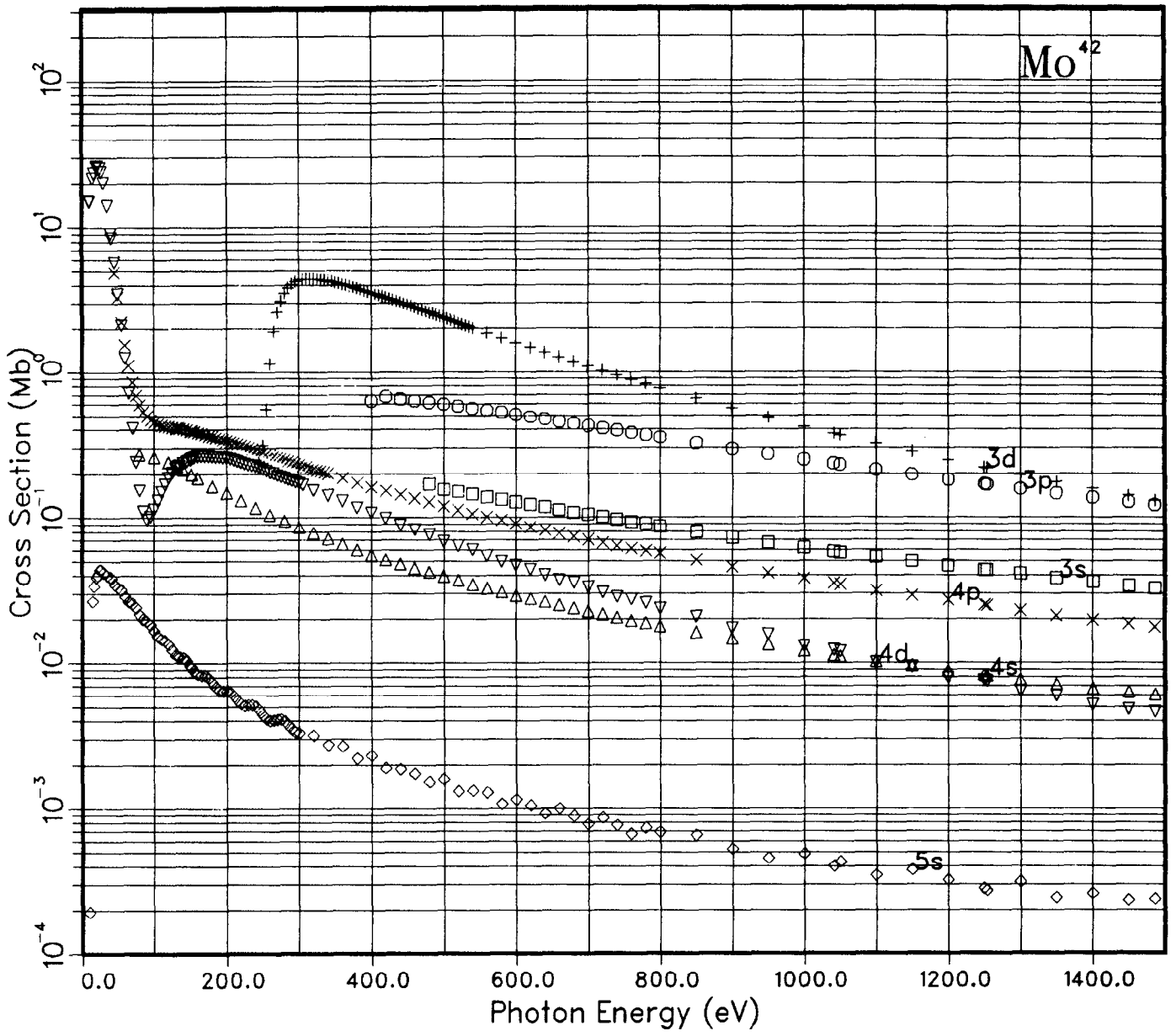


Nb binding energies(eV) are:

1s(2) 18501.6	2s(2) 2571.82	2p(6) 2372.90
3s(2) 436.704	3p(6) 359.368	4s(2) 60.3477
3d(10) 216.315	4p(6) 38.4613	5s(1) 5.46513
4d(4) 6.08960		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

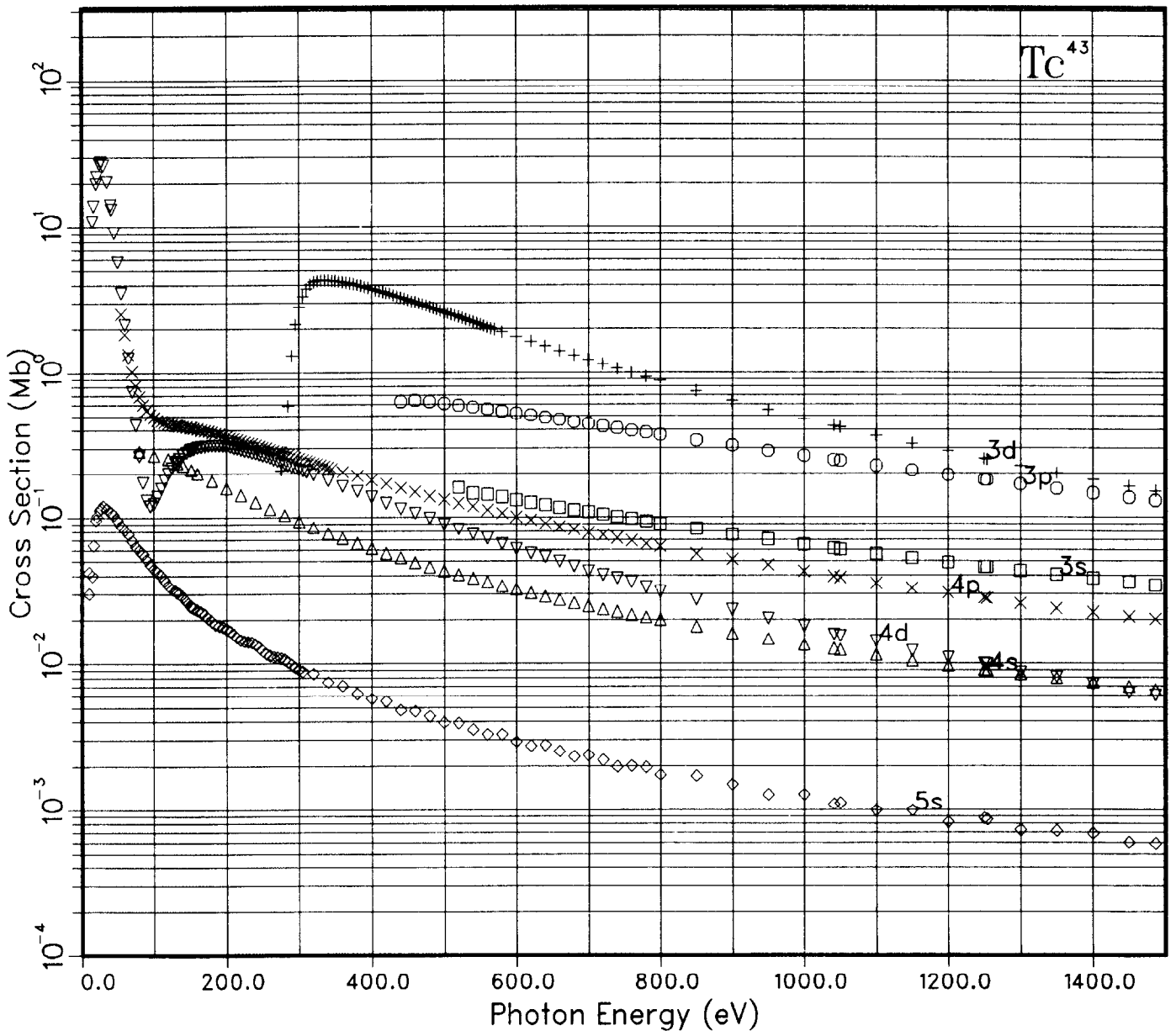


Mo binding energies(eV) are:

1s(2) 19471.3	2s(2) 2730.19	2p(6) 2524.81
3s(2) 472.257	3p(6) 391.559	4s(2) 65.9666
3d(10) 241.973	4p(6) 42.5224	5s(1) 5.67601
4d(5) 7.16439		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

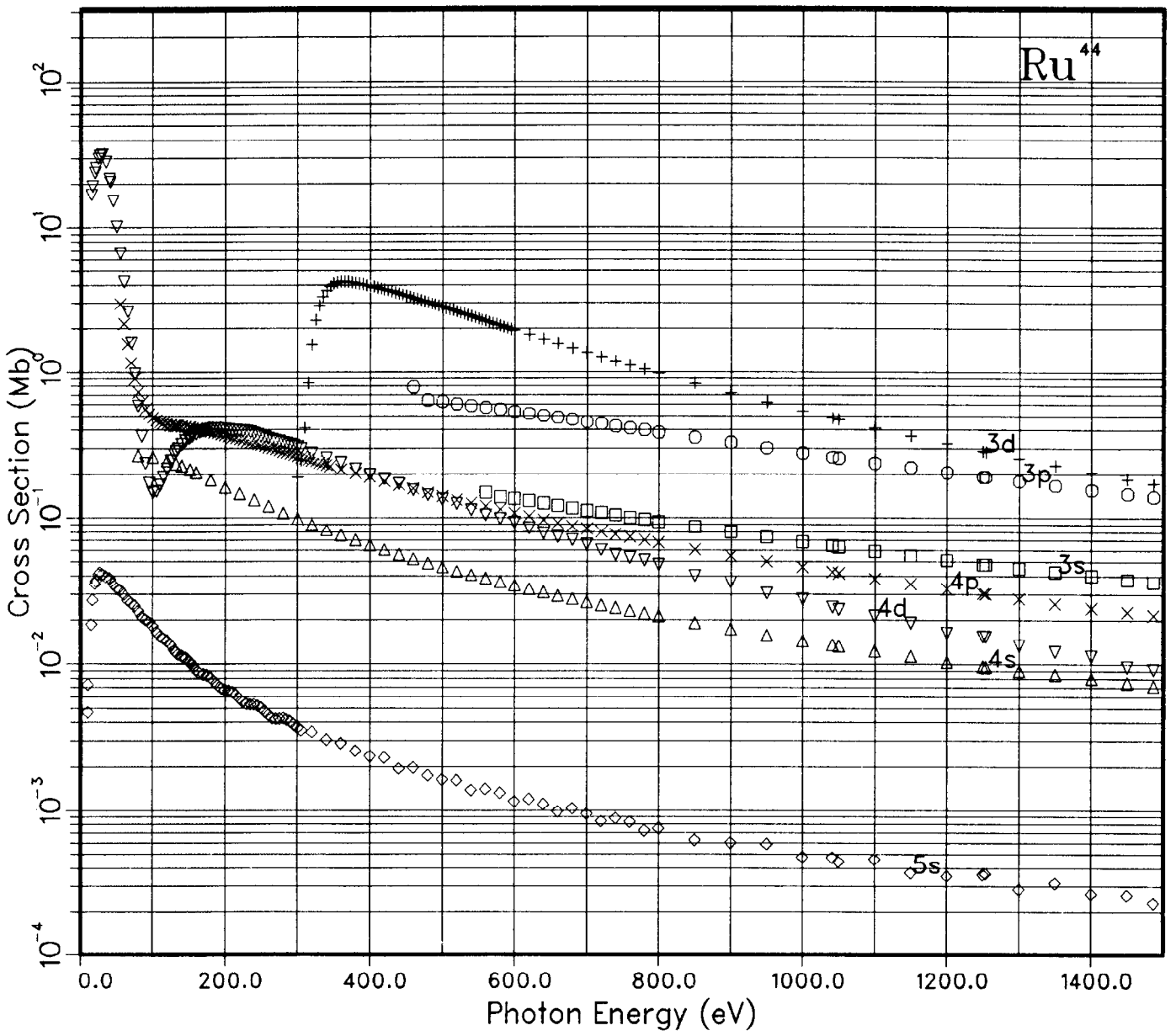


Tc binding energies(eV) are:

1s(2) 20469.9	2s(2) 2897.64	2p(6) 2685.74
3s(2) 513.171	3p(6) 429.085	4s(2) 75.4656
3d(10) 272.952	4p(6) 50.3031	5s(2) 6.77393
4d(5) 11.2364		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs



Ru binding energies(eV) are:

1s(2) 21485.4	2s(2) 3060.73	2p(6) 2842.31
3s(2) 546.325	3p(6) 458.819	4s(2) 77.1893
3d(10) 296.057	4p(6) 50.6242	5s(1) 6.02021
4d(7) 9.33303		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

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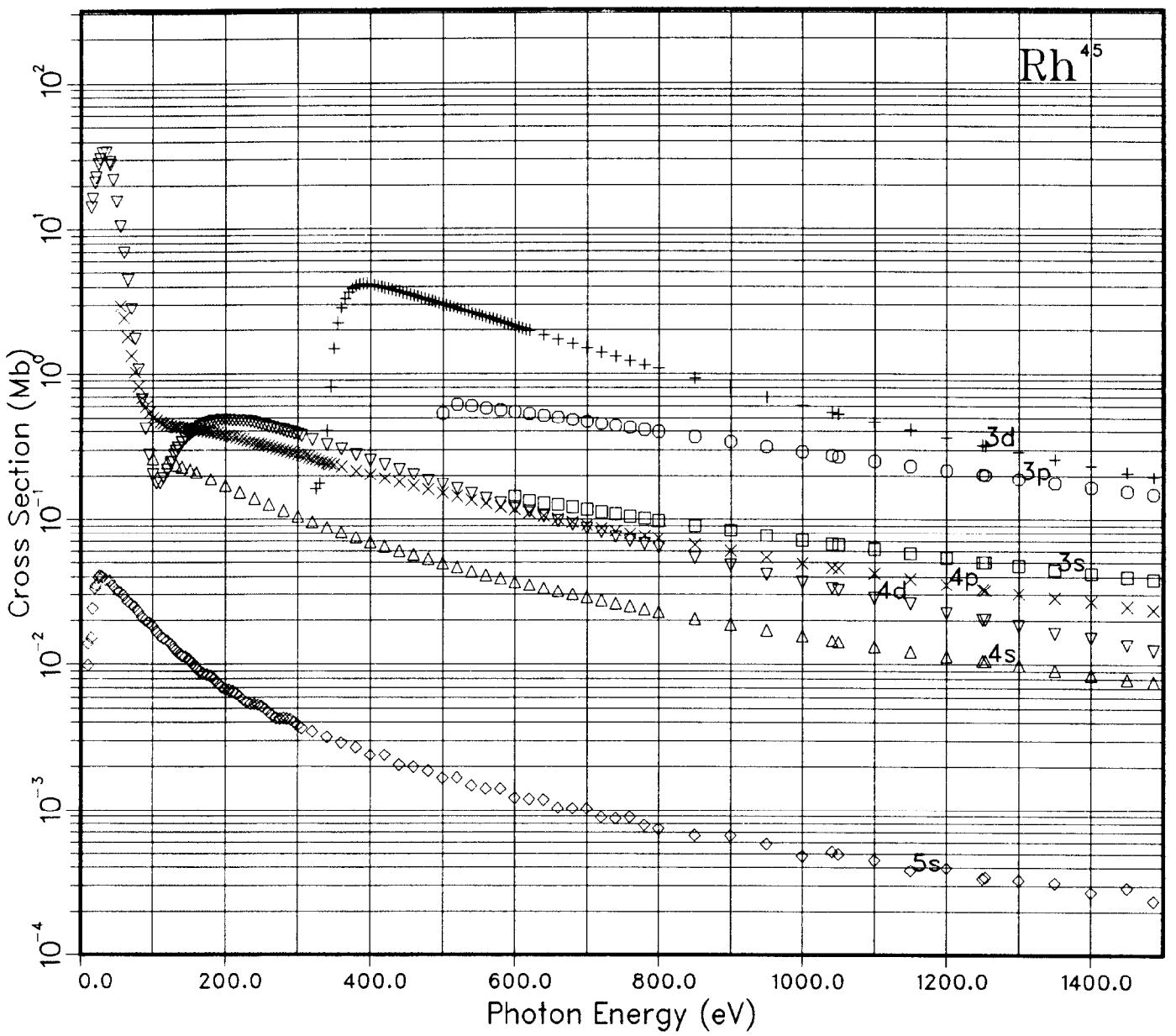

Rh binding energies(eV) are:

1s(2) 22529.7	2s(2) 3232.91	2p(6) 3007.92
3s(2) 584.876	3p(6) 493.934	4s(2) 82.8232
3d(10) 324.519	4p(6) 54.6880	5s(1) 6.16715
4d(8) 10.4255		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

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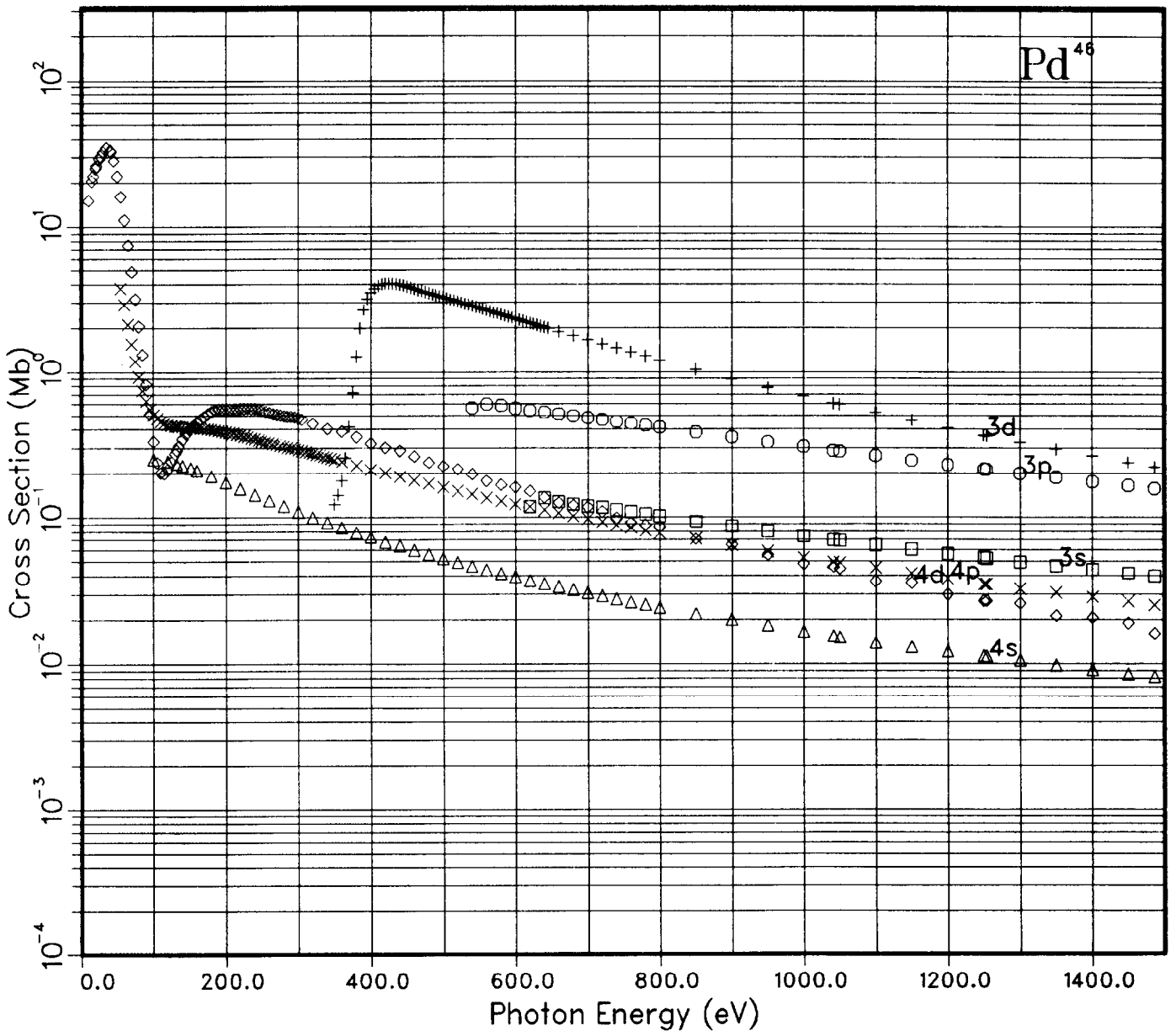
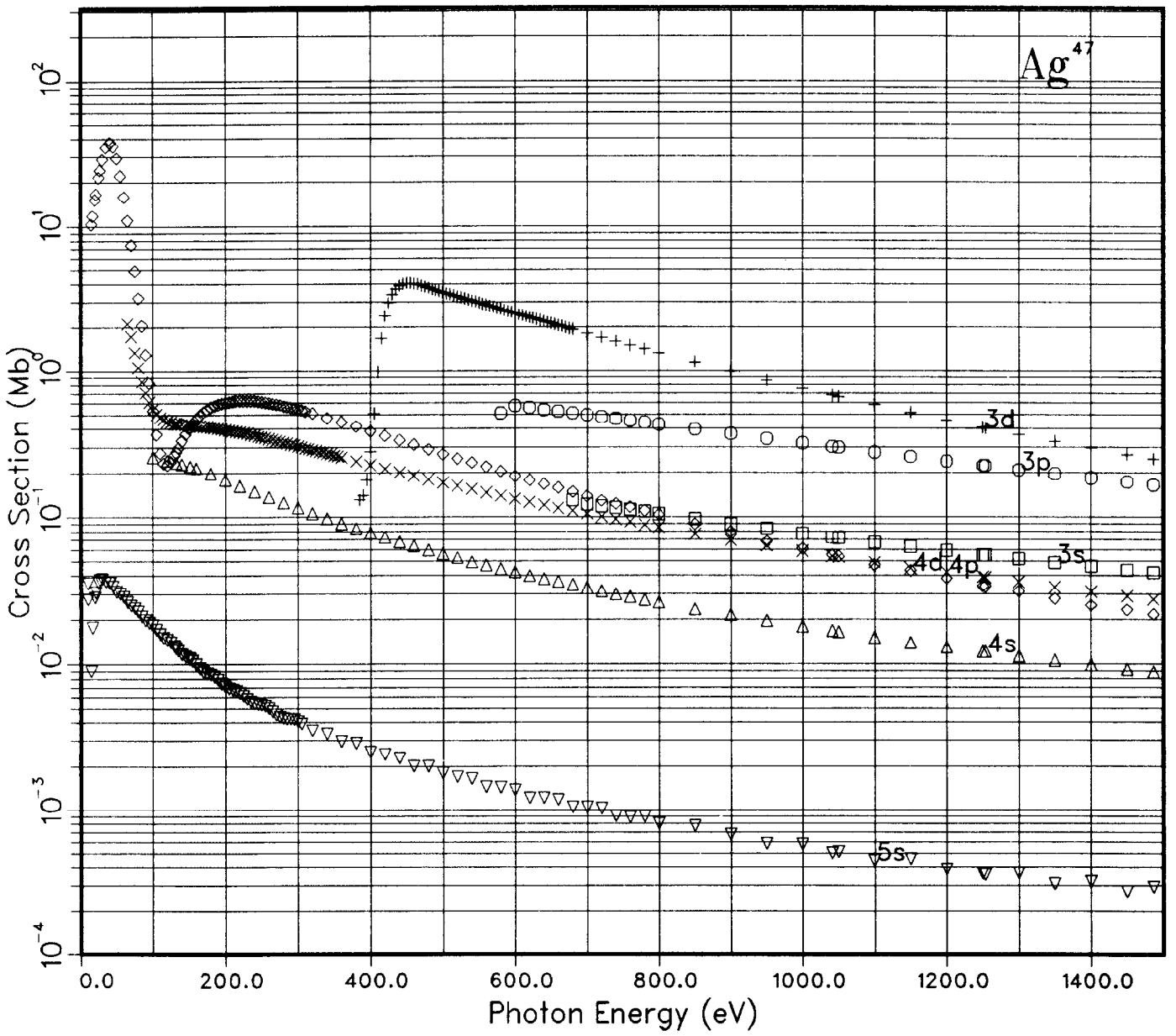


Pd binding energies(eV) are:

1s(2) 23594.7	2s(2) 3405.07	2p(6) 3173.50
3s(2) 619.845	3p(6) 525.437	4s(2) 84.1646
3d(10) 349.323	4p(6) 54.5642	4d(10) 7.98477

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs



Ag binding energies(eV) are:

1s(2) 24693.5	2s(2) 3591.17	2p(6) 3352.94
3s(2) 665.102	3p(6) 567.203	4s(2) 94.2146
3d(10) 384.360	4p(6) 62.9041	4d(10) 12.6499
5s(1) 6.42700		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

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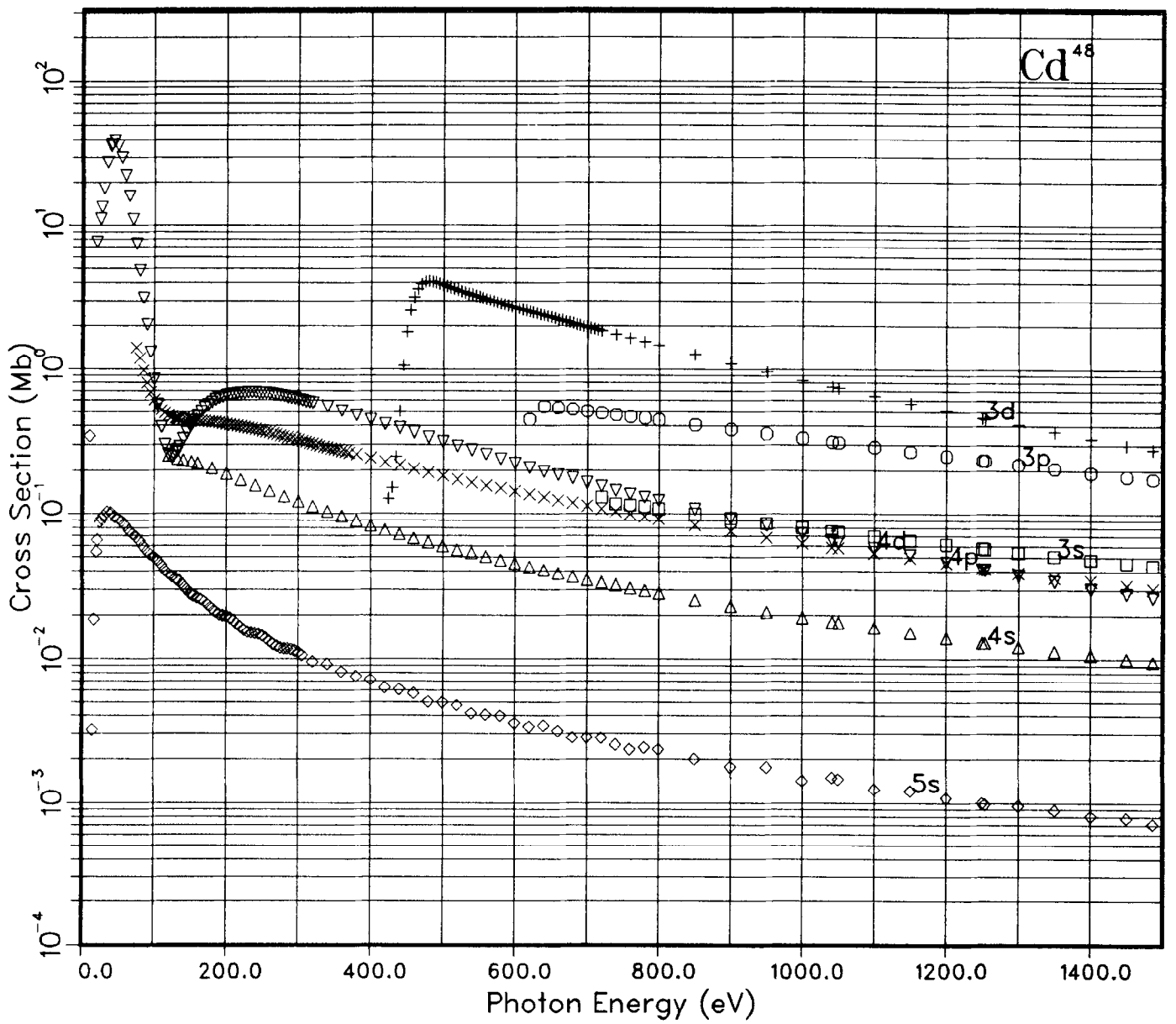

Cd binding energies(eV) are:

1s(2) 25818.7	2s(2) 3783.41	2p(6) 3538.52
3s(2) 712.805	3p(6) 611.395	4s(2) 105.367
3d(10) 421.799	4p(6) 72.2847	5s(2) 7.71403
4d(10) 18.2797		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

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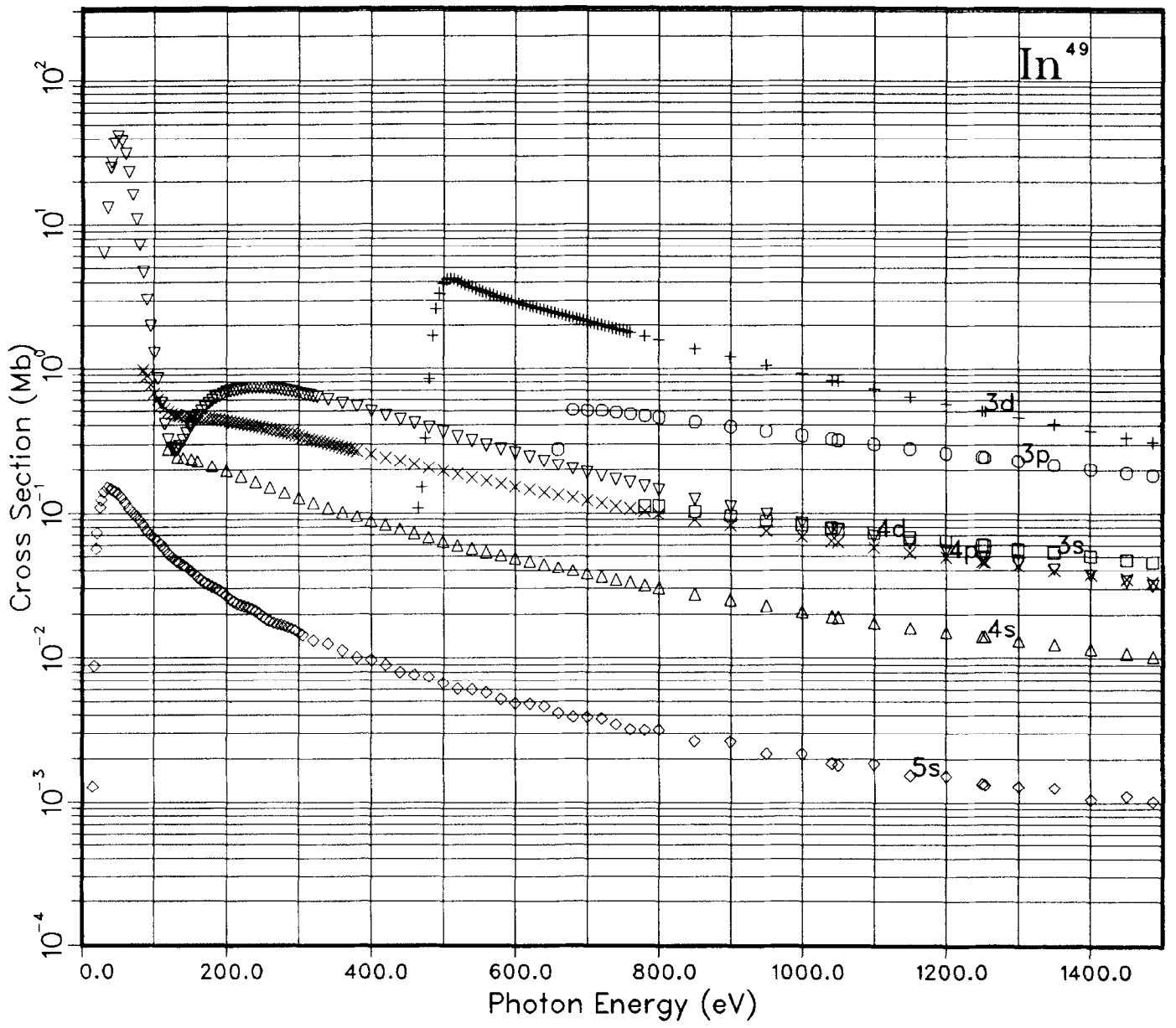

In binding energies(eV) are:

1s(2) 26971.5	2s(2) 3983.01	2p(6) 3731.41
3s(2) 764.232	3p(6) 659.286	4s(2) 118.953
3d(10) 462.909	4p(6) 84.0558	5s(2) 10.1384
4d(10) 26.2168	5p(1) 4.69781	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

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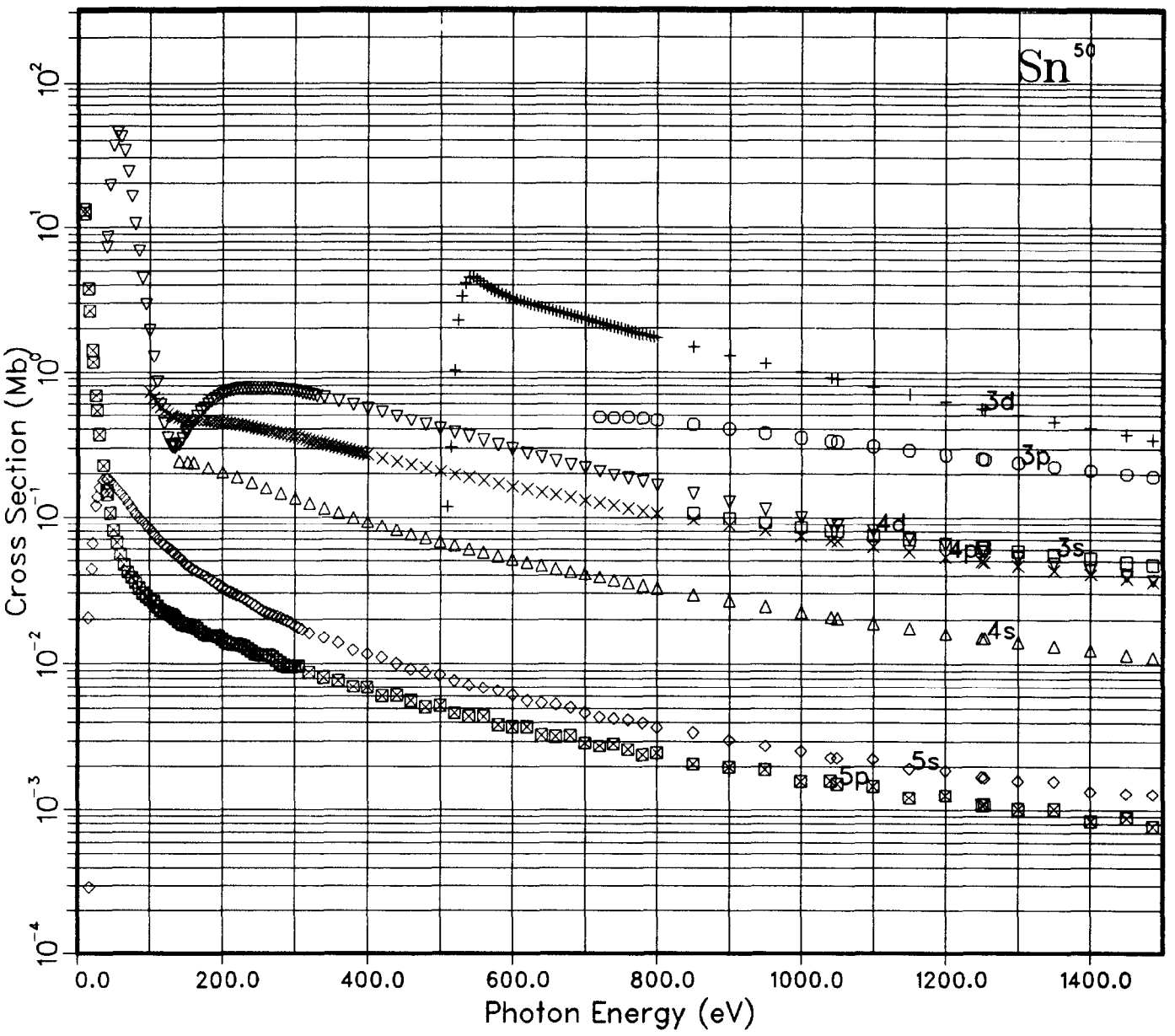
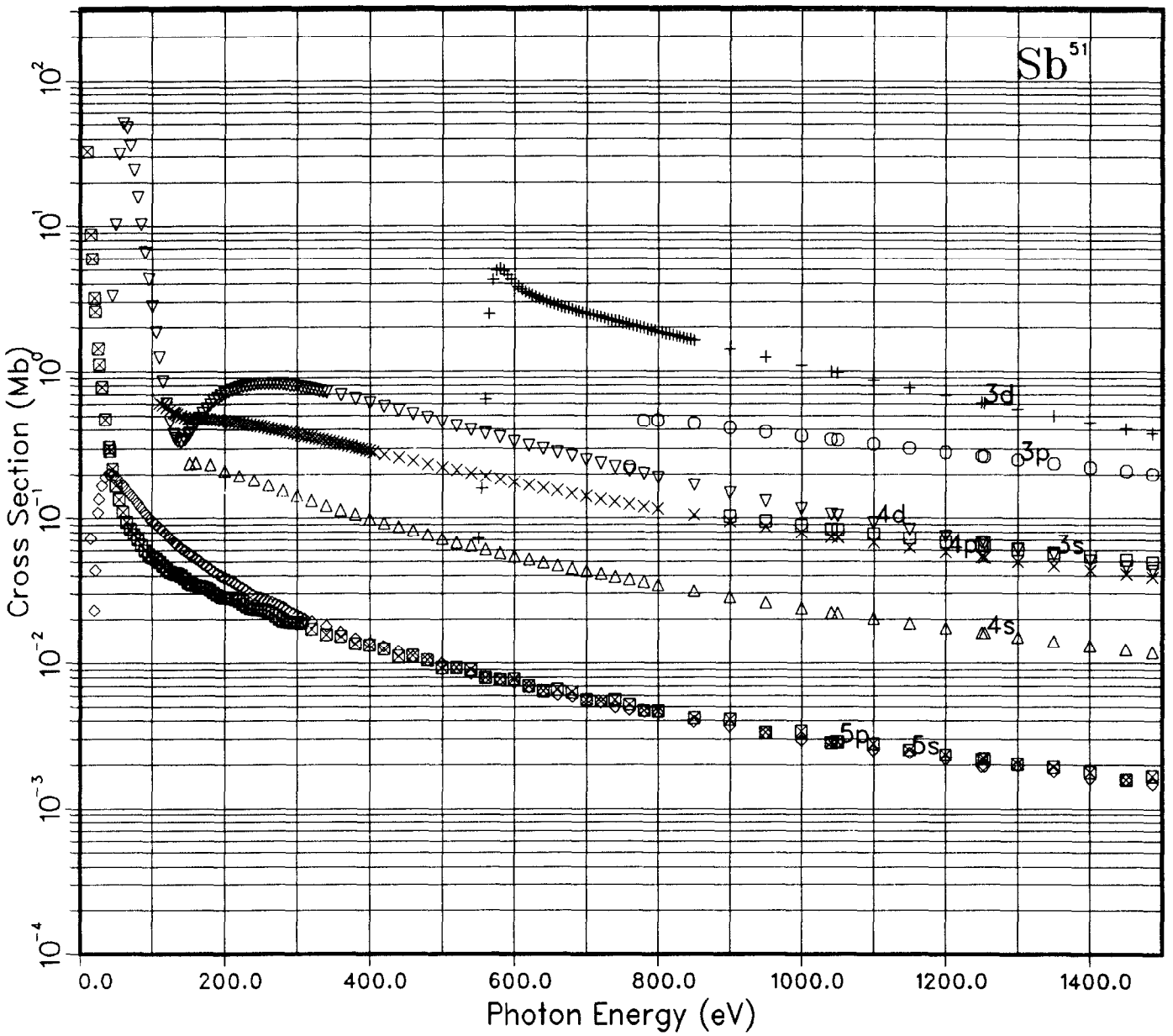


Sn binding energies(eV) are:

1s(2) 28149.9	2s(2) 4187.87	2p(6) 3929.52
3s(2) 817.227	3p(6) 708.725	4s(2) 132.805
3d(10) 505.540	4p(6) 96.0567	5s(2) 12.5071
4d(10) 34.3717	5p(2) 5.94538	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

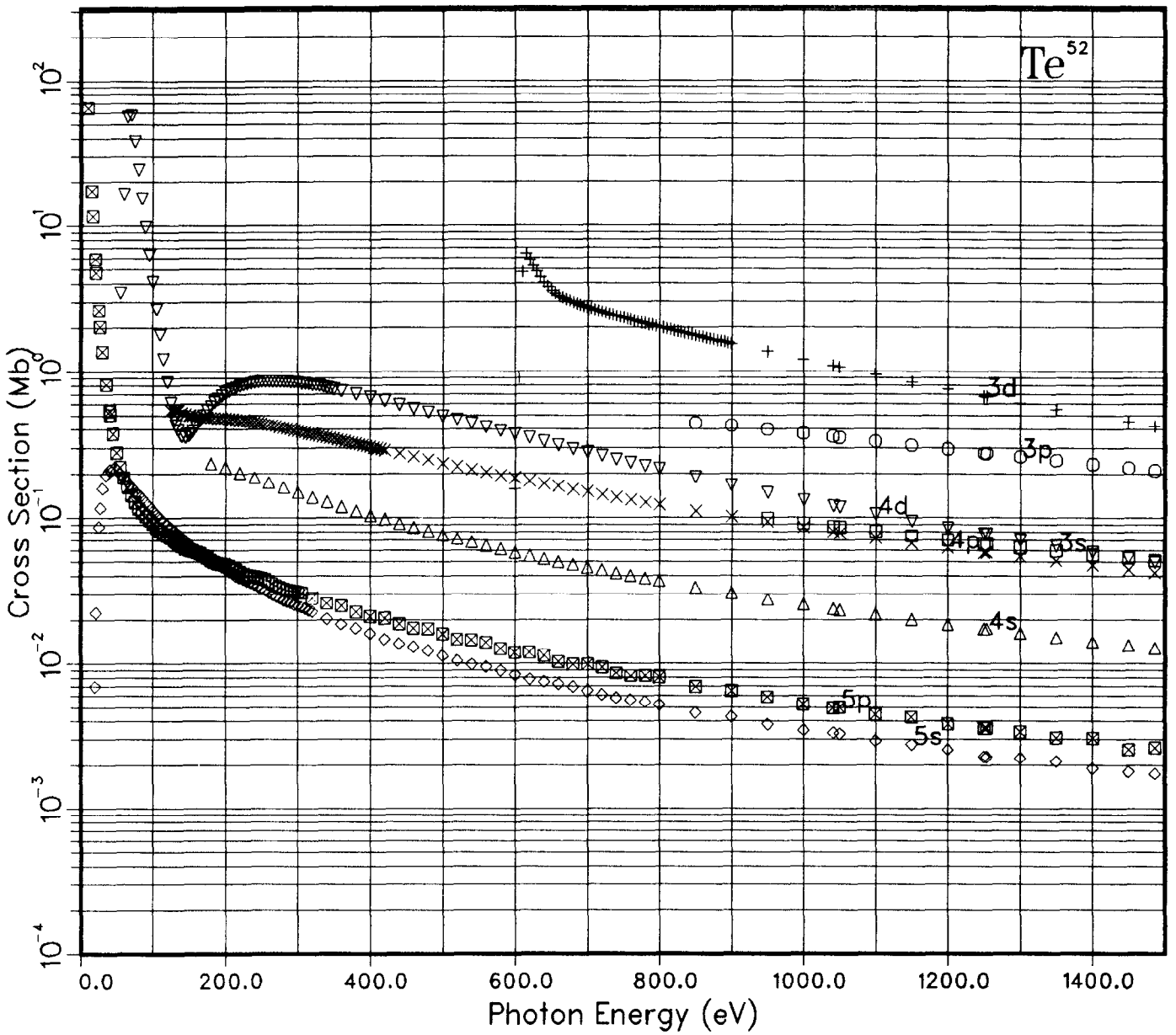


Sb binding energies(eV) are:

1s(2) 29353.9	2s(2) 4398.14	2p(6) 4133.02
3s(2) 871.961	3p(6) 759.883	4s(2) 147.097
3d(10) 549.864	4p(6) 108.474	5s(2) 14.8254
4d(10) 42.9387	5p(3) 7.25963	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

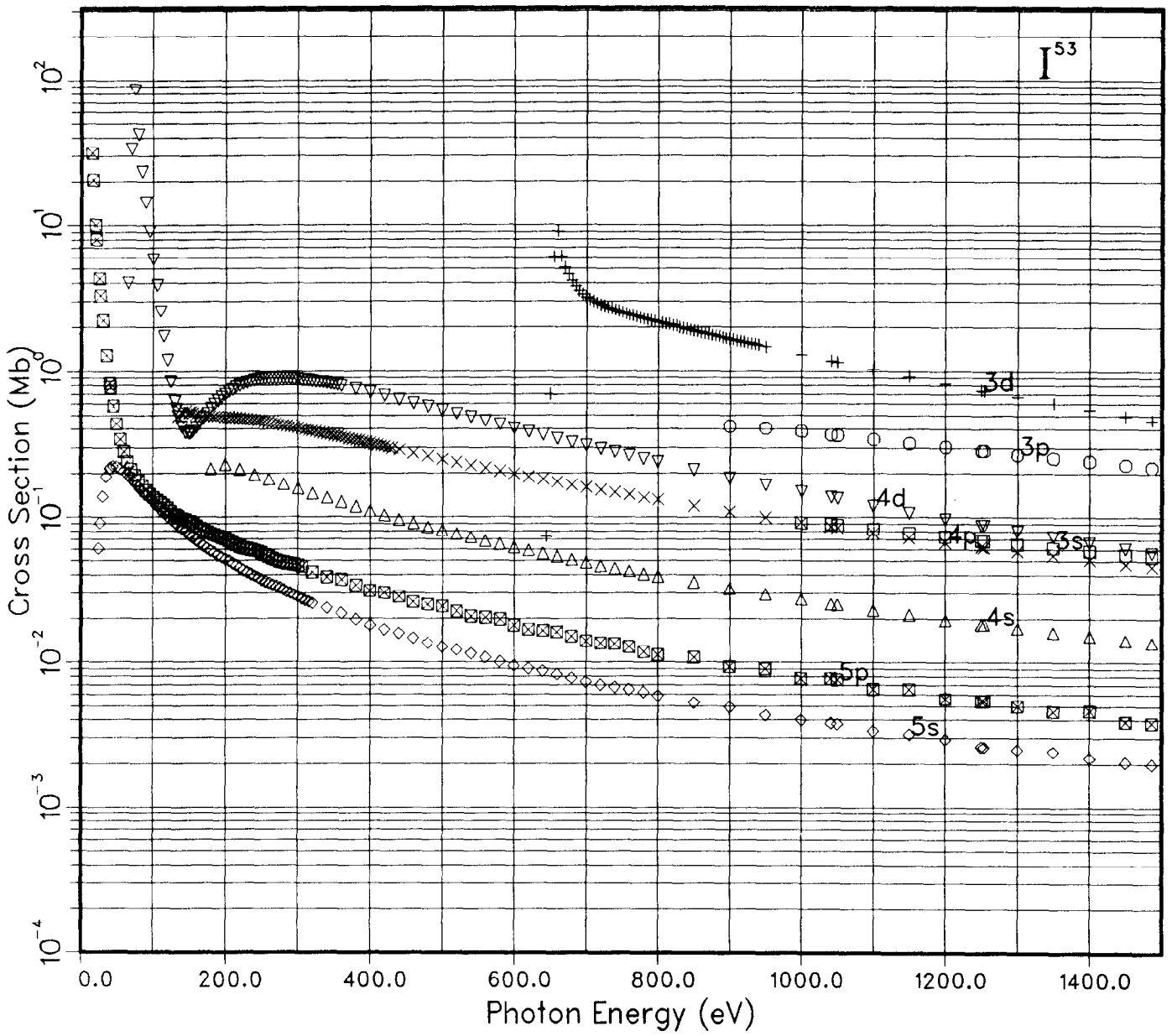


Te binding energies(eV) are:

1s(2) 30583.7	2s(2) 4613.88	2p(6) 4341.96
3s(2) 928.468	3p(6) 812.797	4s(2) 161.883
3d(10) 595.911	4p(6) 121.361	5s(2) 17.1314
4d(10) 51.9779	5p(4) 8.60652	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs



I binding energies(eV) are:

1s(2) 31839.2	2s(2) 4835.08	2p(6) 4556.33
3s(2) 986.761	3p(6) 867.477	4s(2) 177.174
3d(10) 643.710	4p(6) 134.737	5s(2) 19.4443
4d(10) 61.5041	5p(5) 9.98199	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

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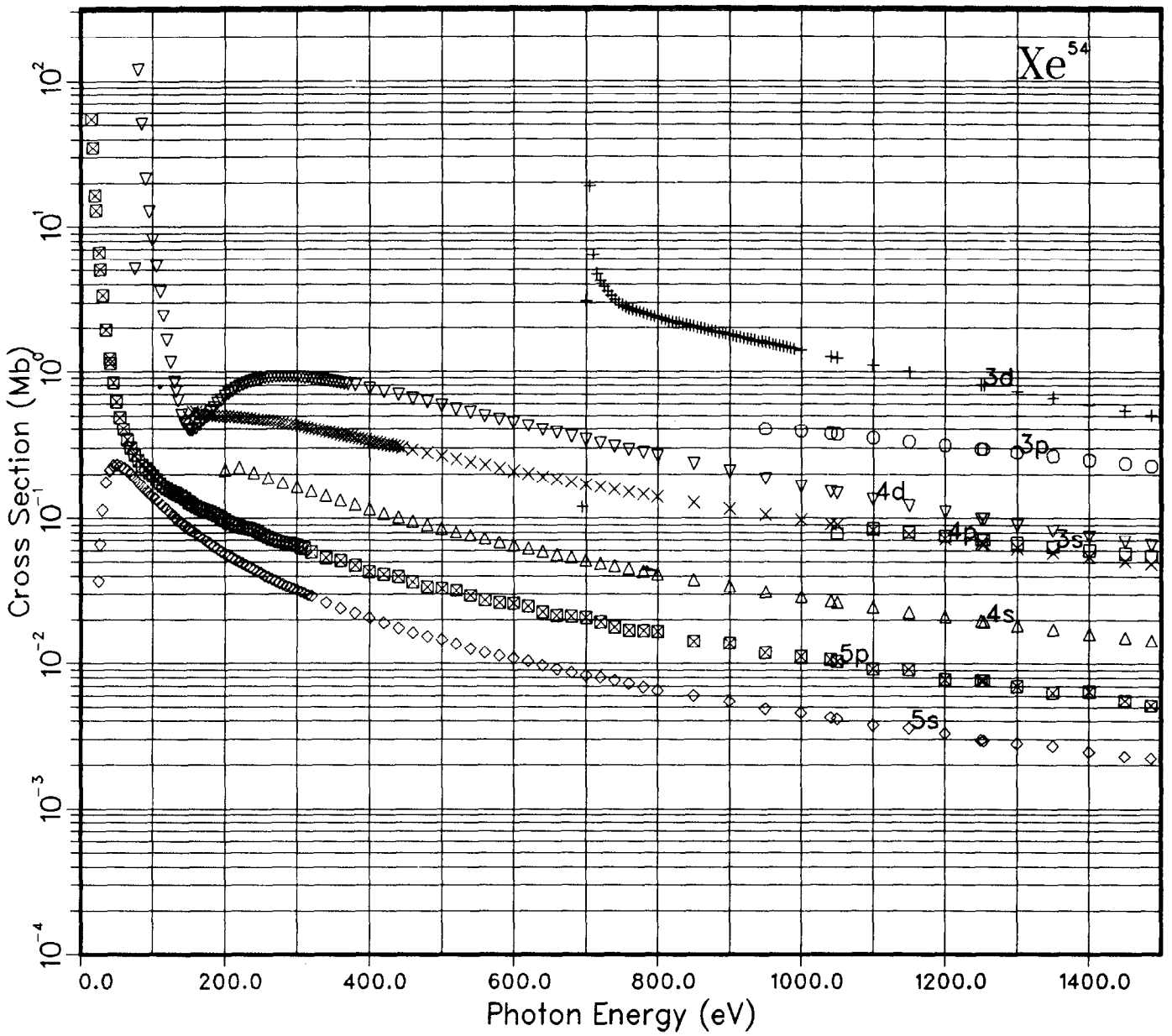
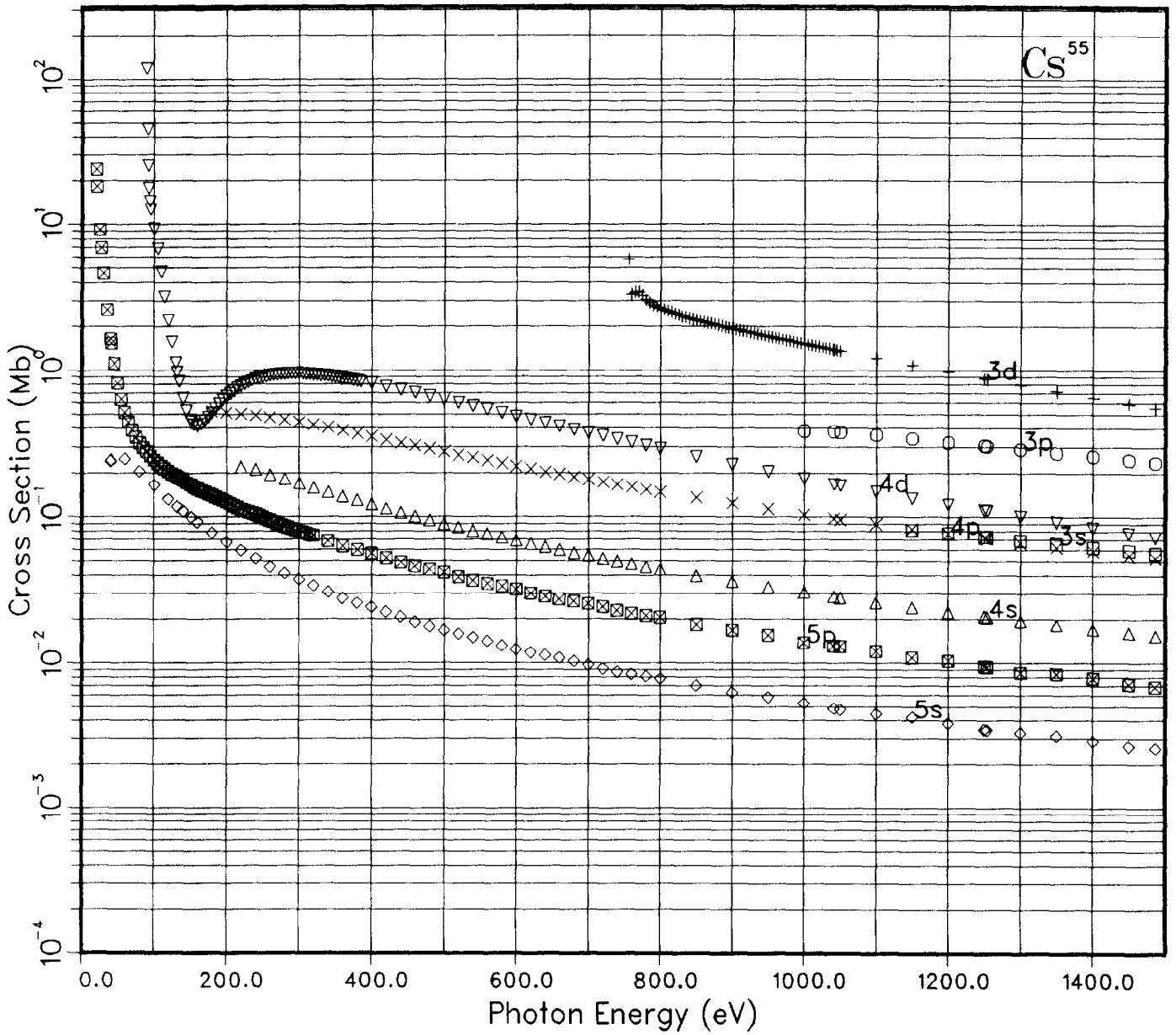


Xe binding energies(eV) are:

1s(2) 33120.5	2s(2) 5061.76	2p(6) 4776.15
3s(2) 1046.84	3p(6) 923.921	4s(2) 192.976
3d(10) 693.243	4p(6) 148.607	5s(2) 21.7721
4d(10) 71.5215	5p(6) 11.3847	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

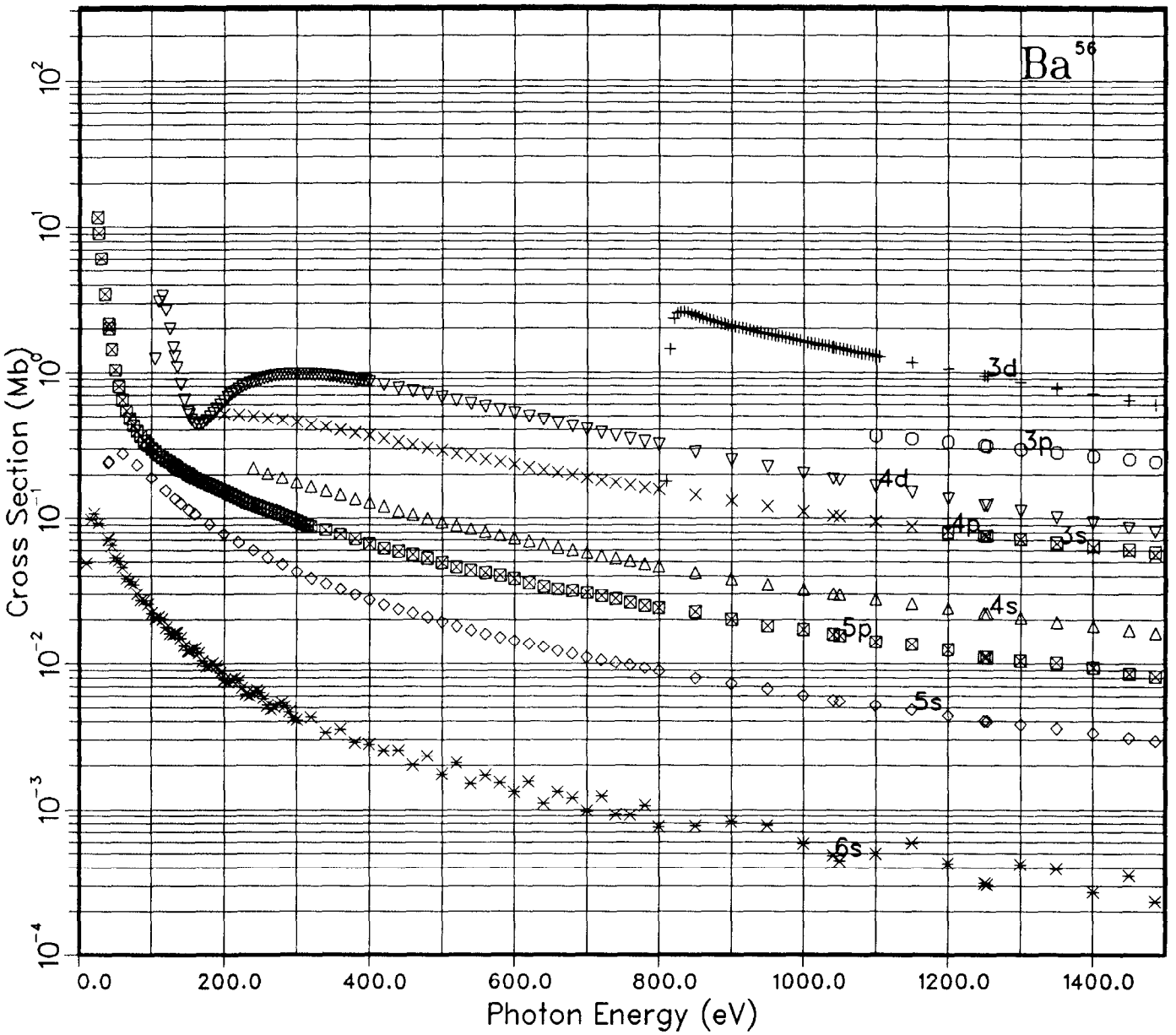


Cs binding energies(eV) are:

1s(2) 34433.1	2s(2) 5299.55	2p(6) 5007.05
3s(2) 1114.33	3p(6) 987.760	4s(2) 214.866
3d(10) 750.152	4p(6) 168.548	5s(2) 28.8290
4d(10) 87.5849	5p(6) 17.0688	6s(1) 3.56315

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

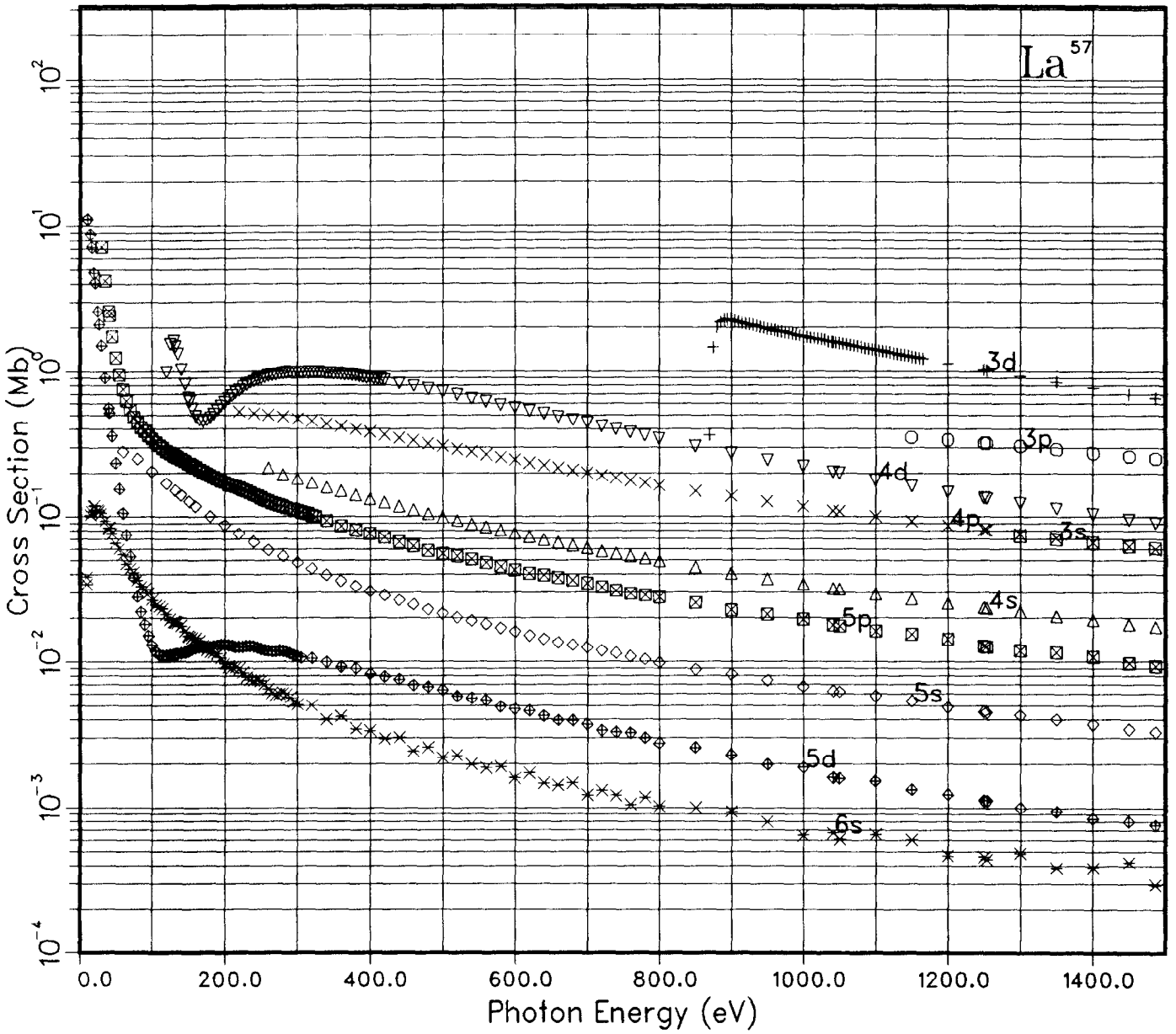


Ba binding energies(eV) are:

1s(2) 35772.1	2s(2) 5543.27	2p(6) 5243.87
3s(2) 1184.01	3p(6) 1053.78	4s(2) 237.609
3d(10) 809.219	4p(6) 189.319	5s(2) 35.9145
4d(10) 104.459	5p(6) 22.8632	6s(2) 4.46244

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

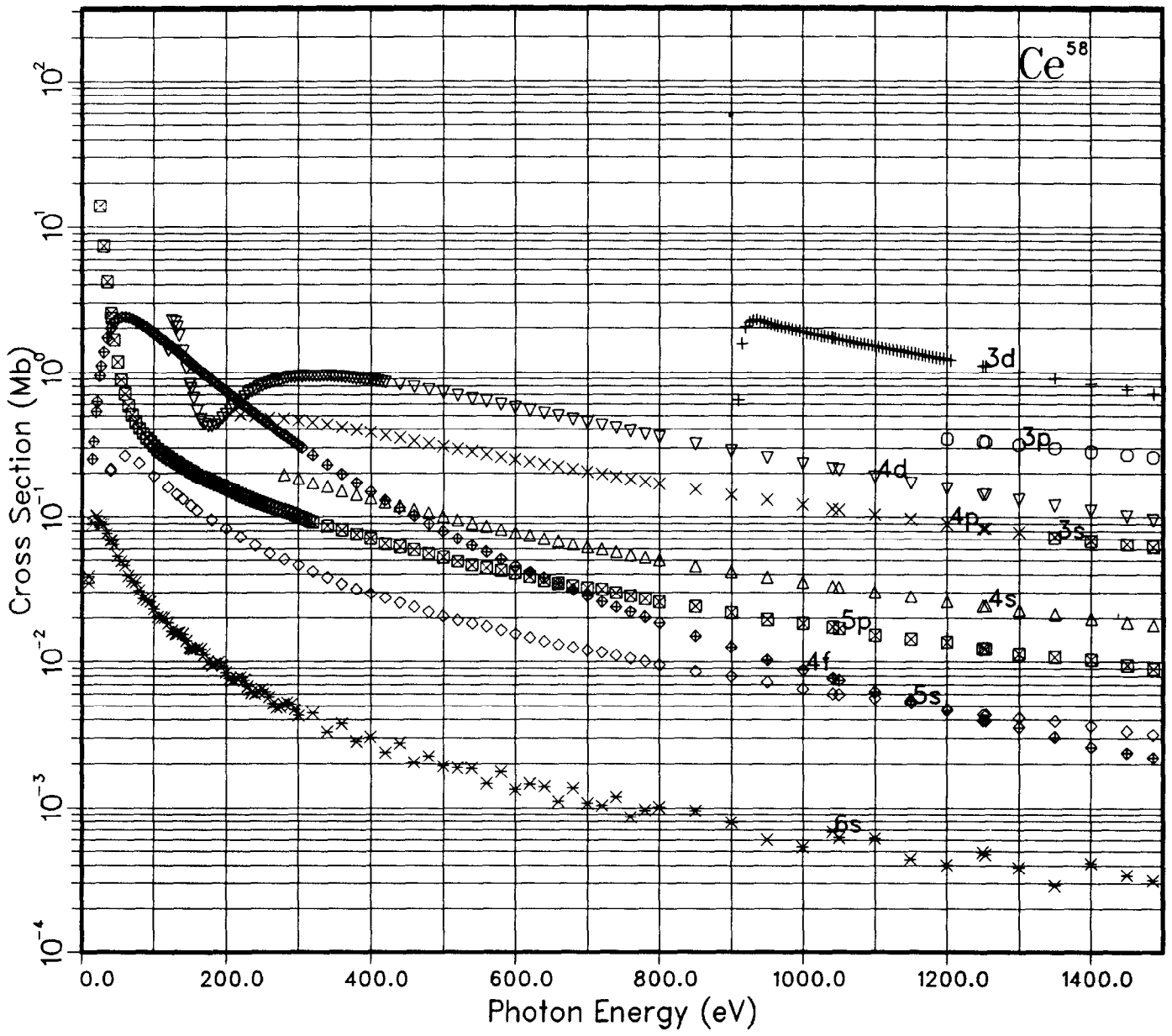


La binding energies(eV) are:

1s(2) 37134.2	2s(2) 5789.62	2p(6) 5483.35
3s(2) 1252.69	3p(6) 1118.78	4s(2) 258.094
3d(10) 867.234	4p(6) 207.822	5s(2) 40.4980
4d(10) 119.063	5p(6) 26.3556	6s(2) 4.86651
5d(1) 6.19300		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

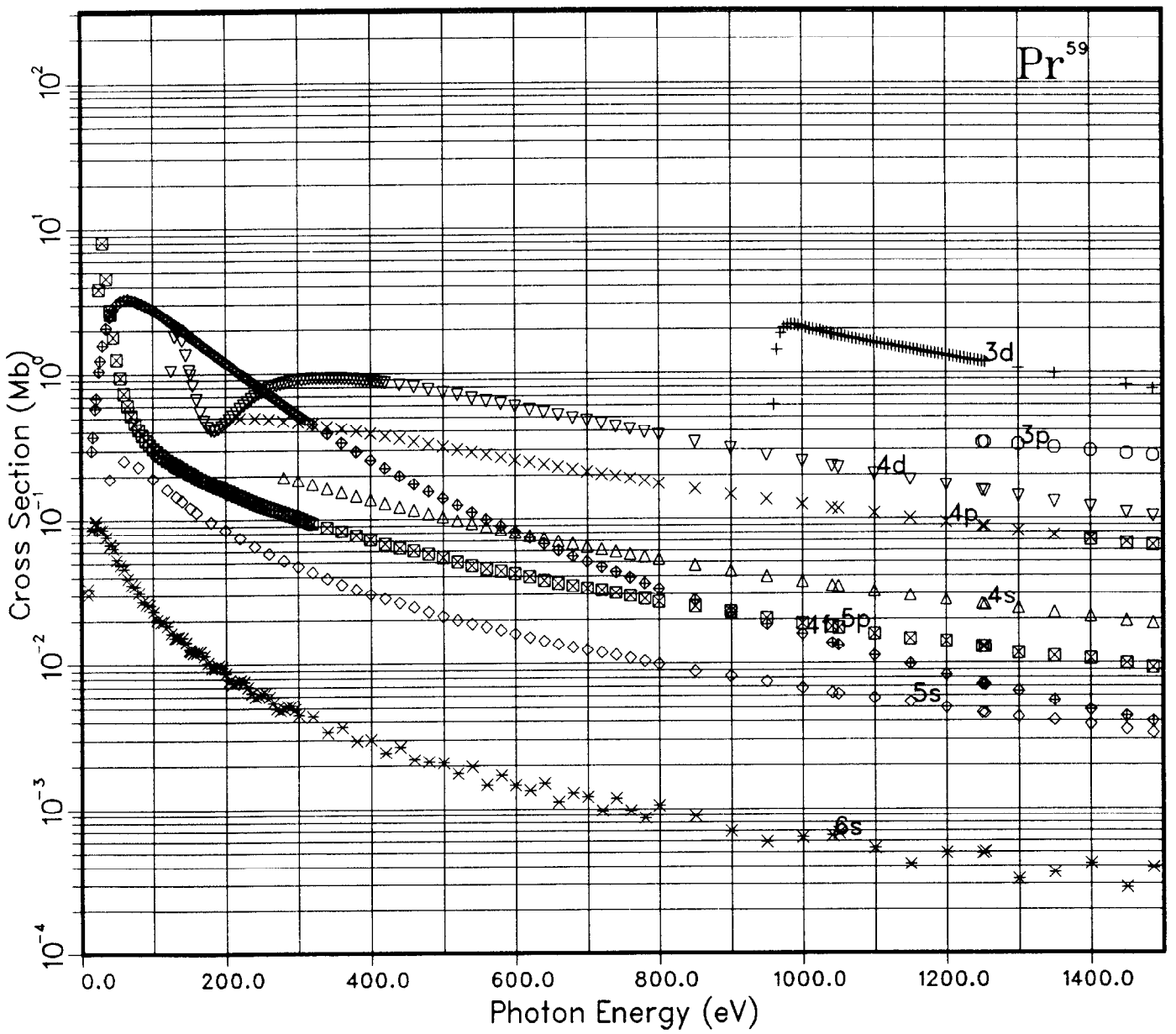


Ce binding energies(eV) are:

1s(2) 38505.3	2s(2) 6022.84	2p(6) 5710.04
3s(2) 1301.97	3p(6) 1164.46	4s(2) 261.167
3d(10) 906.160	4p(6) 209.223	5s(2) 38.4450
4d(10) 117.336	5p(6) 24.3448	6s(2) 4.59169
4f(2) 10.1303		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

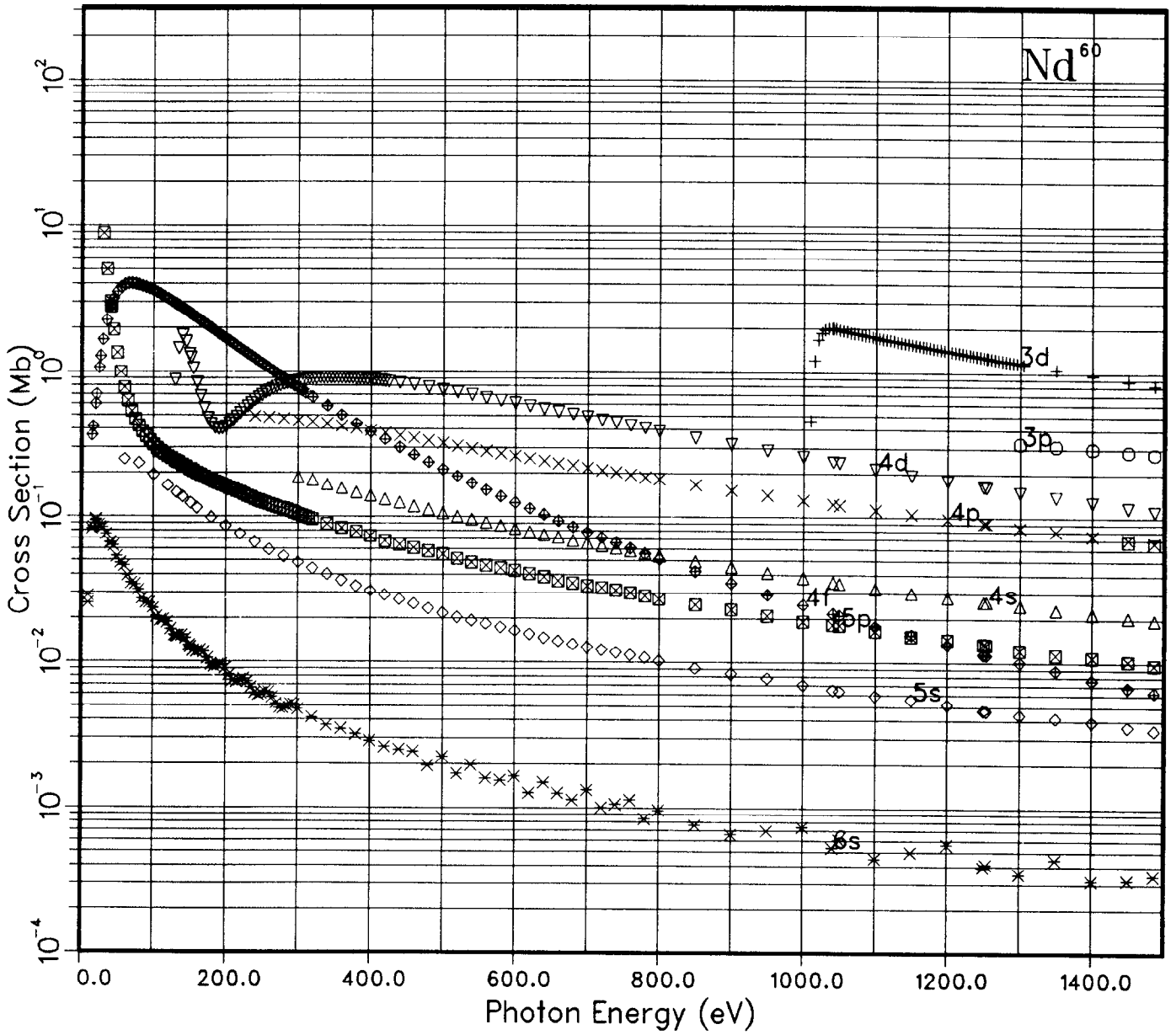


Pr binding energies(eV) are:

1s(2) 39909.2	2s(2) 6269.45	2p(6) 5949.89
3s(2) 1362.06	3p(6) 1220.88	4s(2) 272.738
3d(10) 955.682	4p(6) 218.952	5s(2) 39.6001
4d(10) 123.528	5p(6) 24.9937	6s(2) 4.64883
4f(3) 11.0282		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

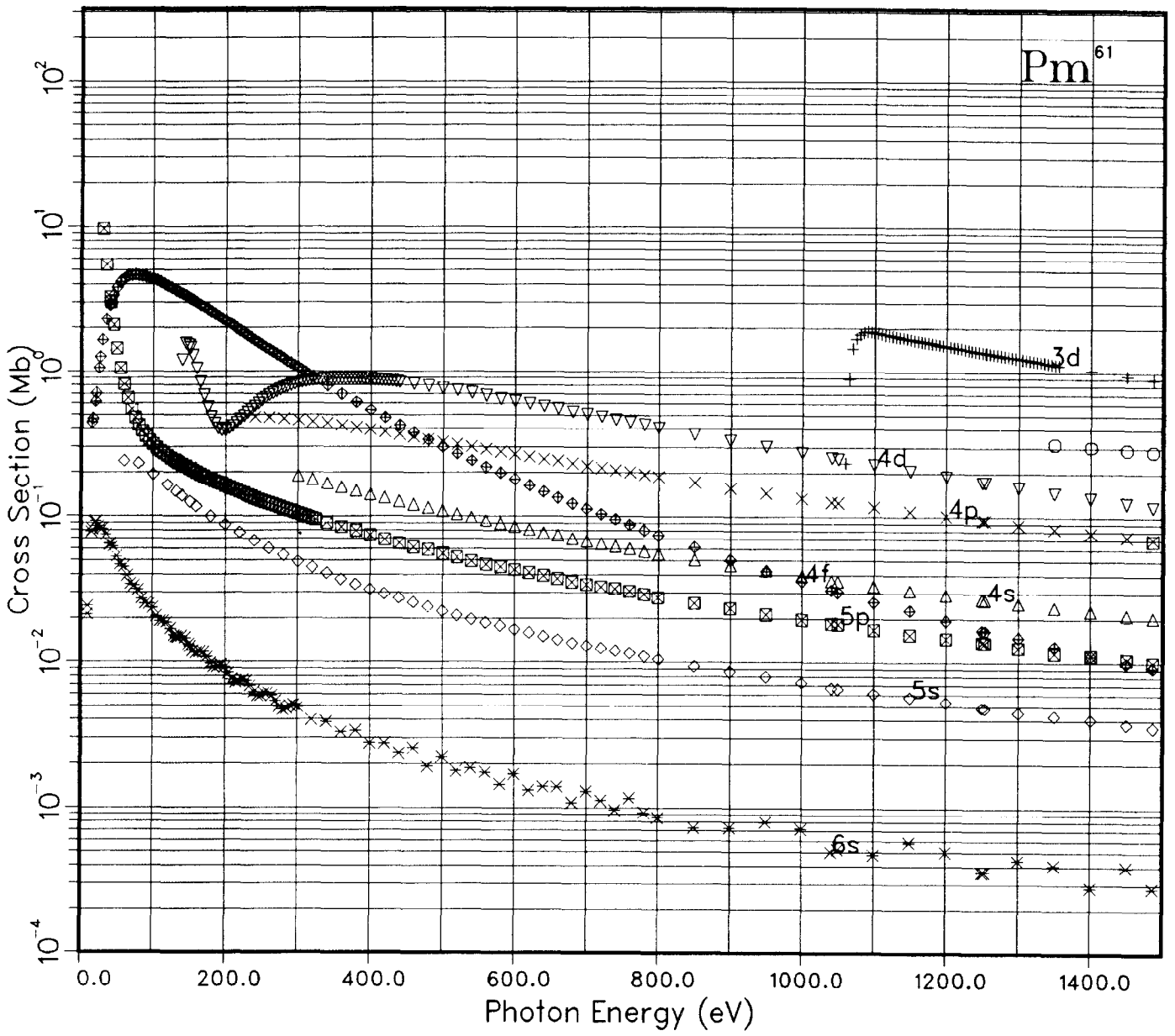


Nd binding energies(eV) are:

1s(2) 41338.3	2s(2) 6520.62	2p(6) 6194.31
3s(2) 1423.01	3p(6) 1278.16	4s(2) 284.270
3d(10) 1006.03	4p(6) 228.632	5s(2) 40.7116
4d(10) 129.641	5p(6) 25.6060	6s(2) 4.70189
4f(4) 11.8159		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

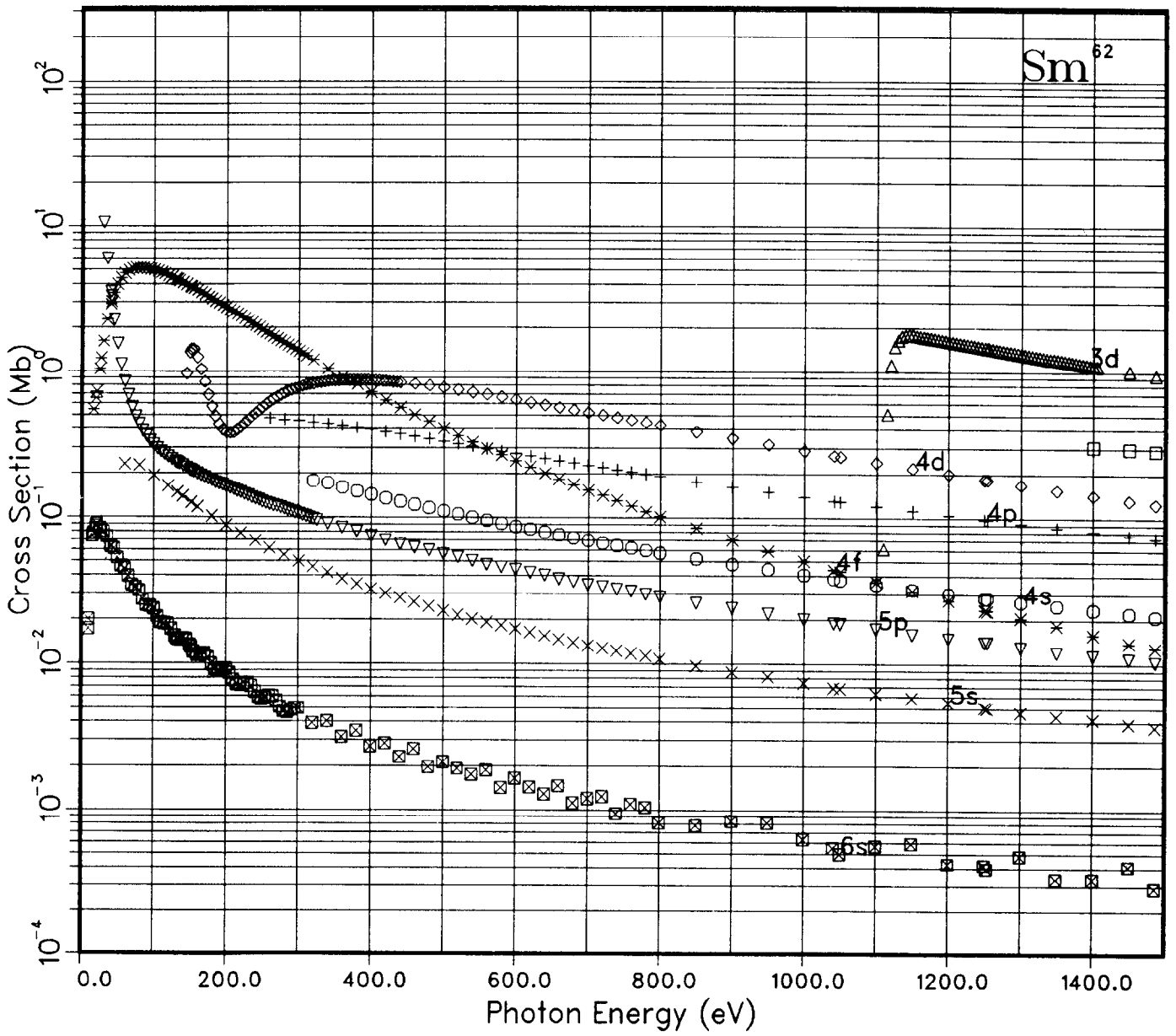


Pm binding energies(eV) are:

1s(2) 42792.4	2s(2) 6776.42	2p(6) 6443.41
3s(2) 1484.86	3p(6) 1336.31	4s(2) 295.793
3d(10) 1057.23	4p(6) 238.289	5s(2) 41.7878
4d(10) 135.700	5p(6) 26.1869	6s(2) 4.75359
4f(5) 12.5044		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

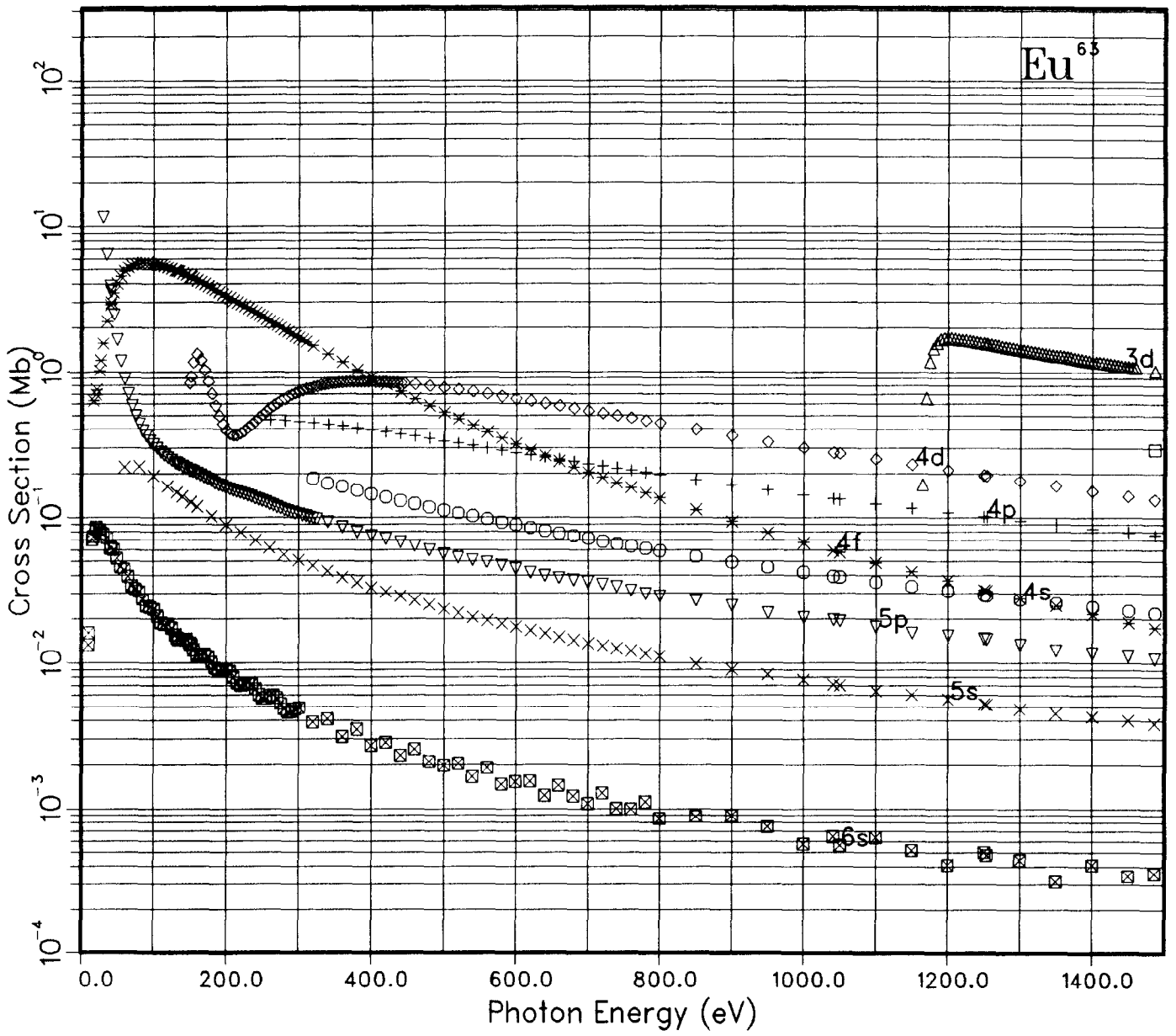


Sm binding energies(eV) are:

1s(2) 44271.5	2s(2) 7036.89	2p(6) 6697.15
3s(2) 1547.67	3p(6) 1395.41	4s(2) 307.346
3d(10) 1109.33	4p(6) 247.957	5s(2) 42.8421
4d(10) 141.737	5p(6) 26.7447	6s(2) 4.80256
4f(6) 13.1152		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

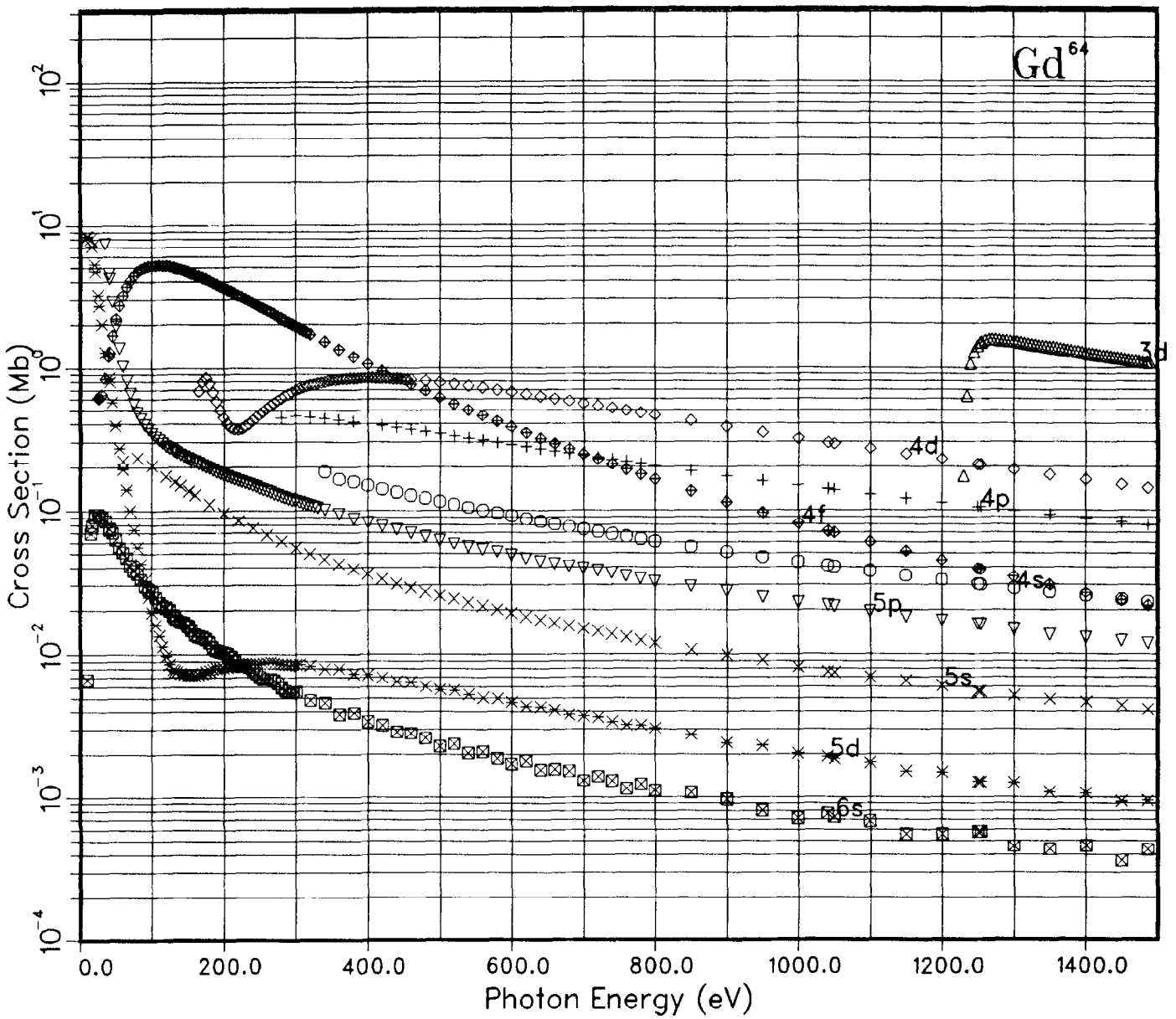


Eu binding energies(eV) are:

1s(2) 45775.7	2s(2) 7302.08	2p(6) 6955.61
3s(2) 1611.47	3p(6) 1455.47	4s(2) 318.954
3d(10) 1162.38	4p(6) 257.664	5s(2) 43.8775
4d(10) 147.771	5p(6) 27.2862	6s(2) 4.85018
4f(7) 13.6581		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

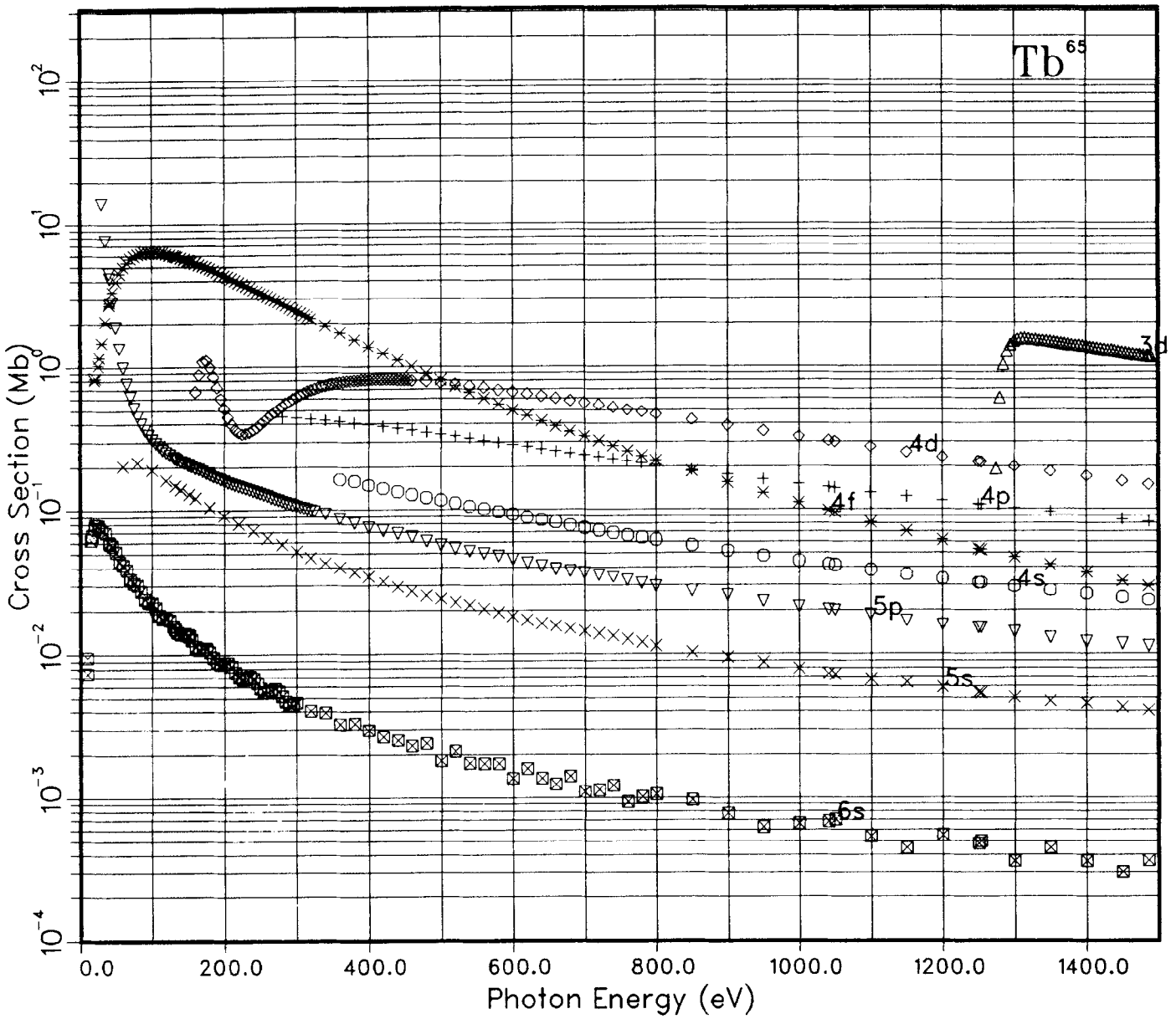


Gd binding energies(eV) are:

1s(2) 47313.6	2s(2) 7580.92	2p(6) 7227.64
3s(2) 1686.28	3p(6) 1526.50	4s(2) 339.488
3d(10) 1226.24	4p(6) 276.172	5s(2) 48.5277
4d(10) 162.309	5p(6) 30.8589	6s(2) 5.27466
5d(1) 5.92906	4f(7) 21.6129	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

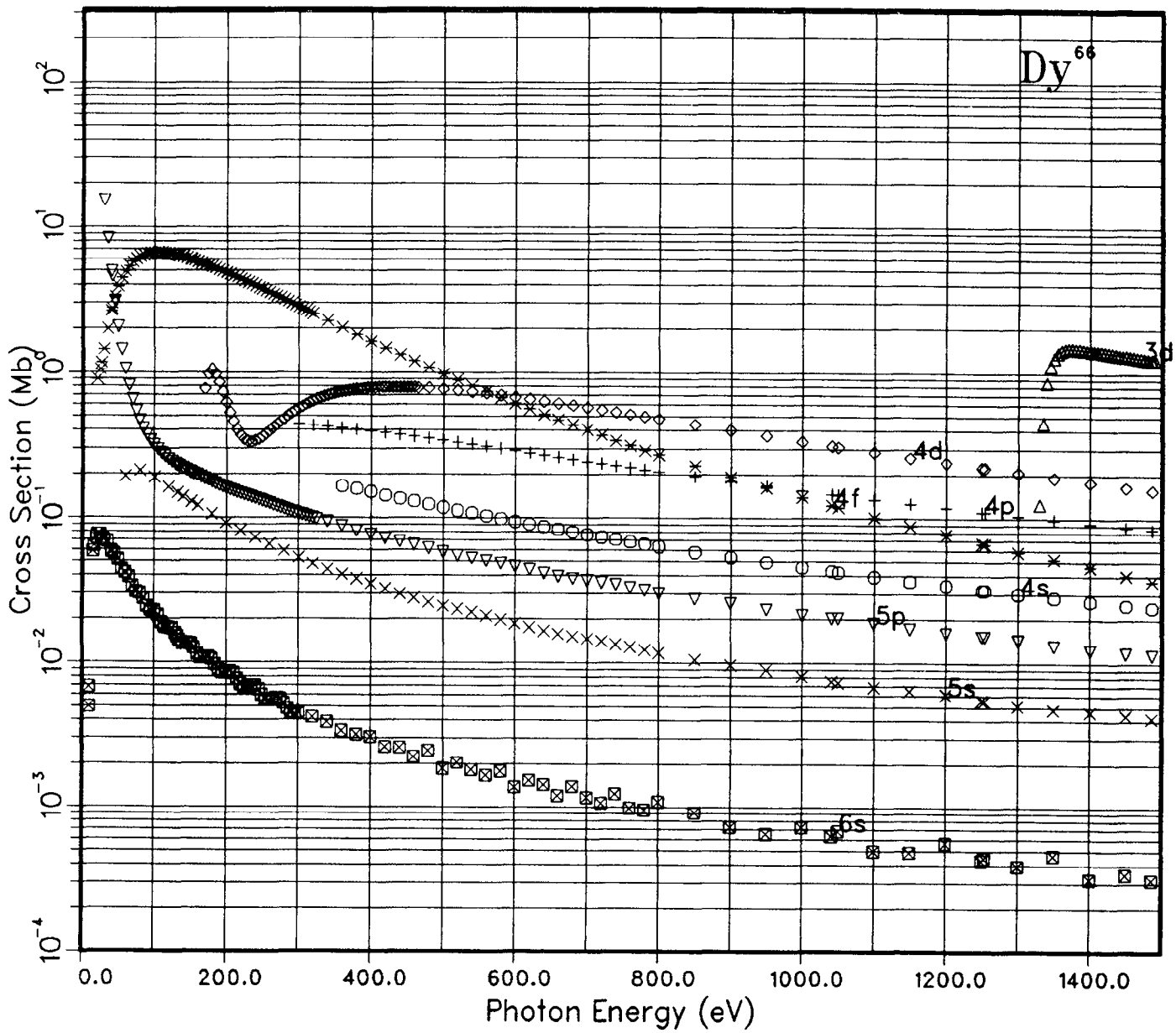


Tb binding energies(eV) are:

1s(2) 48859.7	2s(2) 7846.55	2p(6) 7486.65
3s(2) 1742.05	3p(6) 1578.54	4s(2) 342.368
3d(10) 1271.31	4p(6) 277.218	5s(2) 45.9060
4d(10) 159.861	5p(6) 28.3242	6s(2) 4.94270
4f(9) 14.5574		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

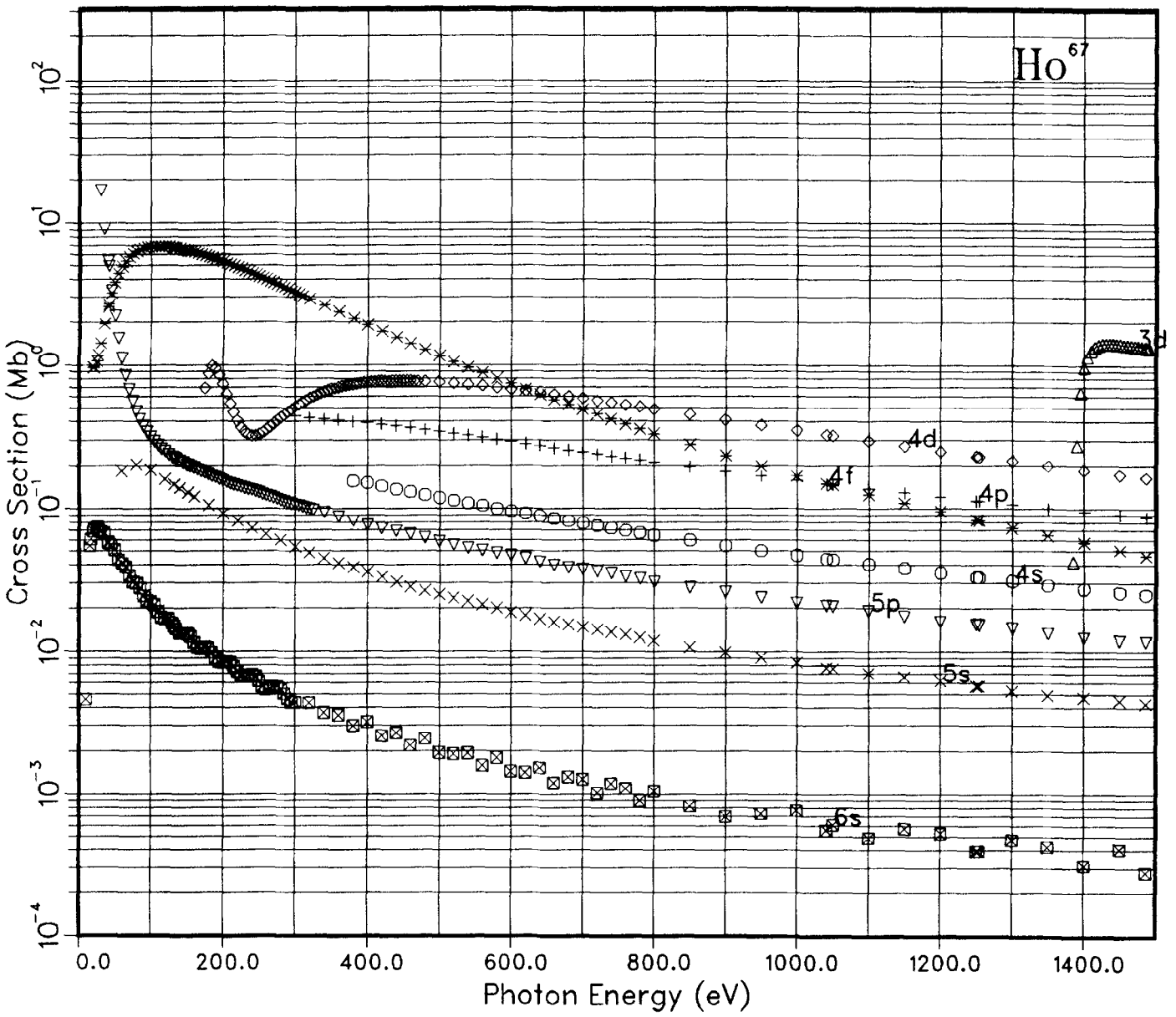


Dy binding energies(eV) are:

1s(2) 50439.4	2s(2) 8125.91	2p(6) 7759.27
3s(2) 1808.89	3p(6) 1641.59	4s(2) 354.209
3d(10) 1327.25	4p(6) 287.102	5s(2) 46.9073
4d(10) 165.946	5p(6) 28.8263	6s(2) 4.98759
4f(10) 14.9301		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

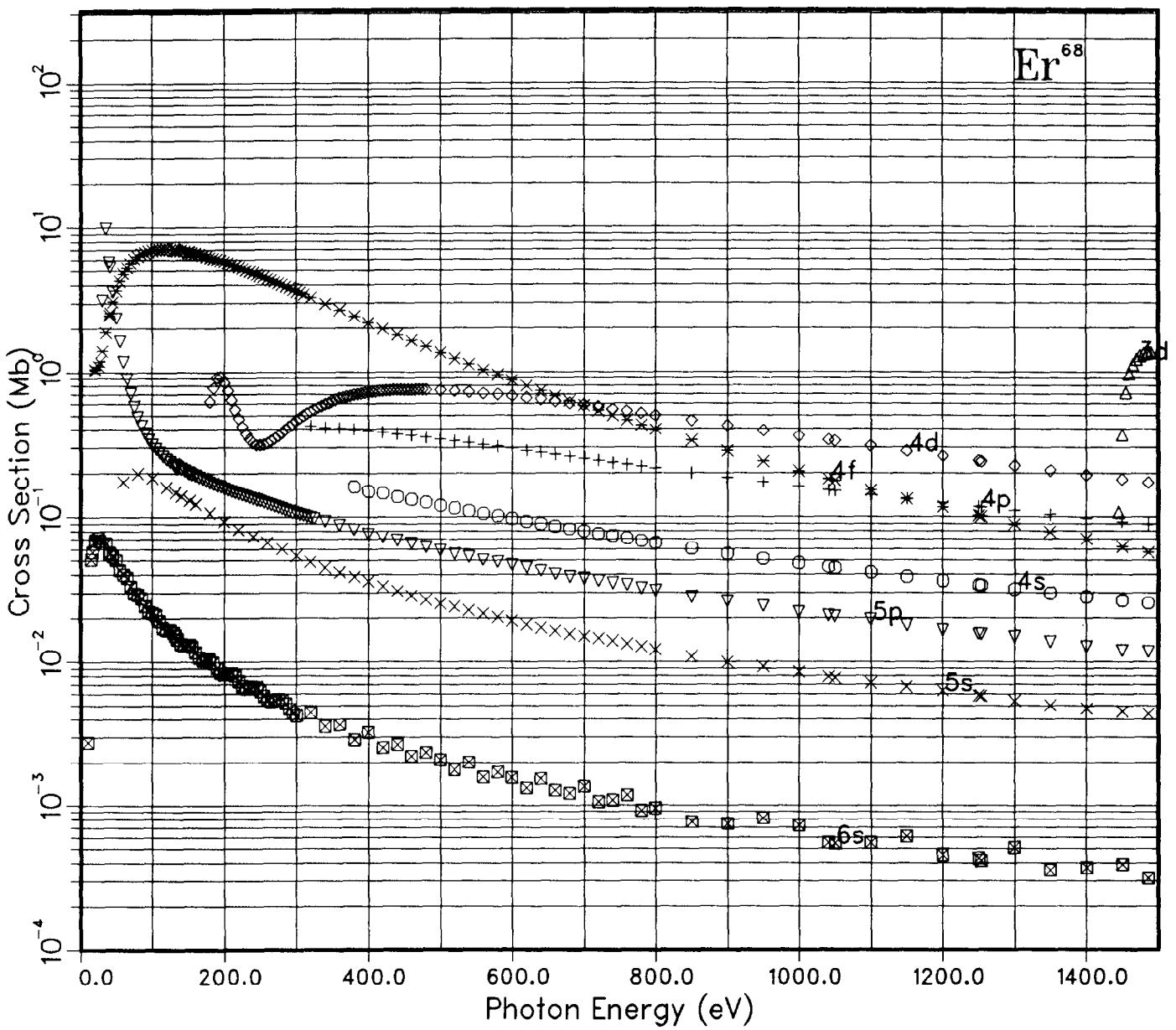


Ho binding energies(eV) are:

1s(2) 52044.2	2s(2) 8410.00	2p(6) 8036.63
3s(2) 1876.76	3p(6) 1705.67	4s(2) 366.146
3d(10) 1384.18	4p(6) 297.060	5s(2) 47.9018
4d(10) 172.060	5p(6) 29.3201	6s(2) 5.03113
4f(11) 15.2553		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

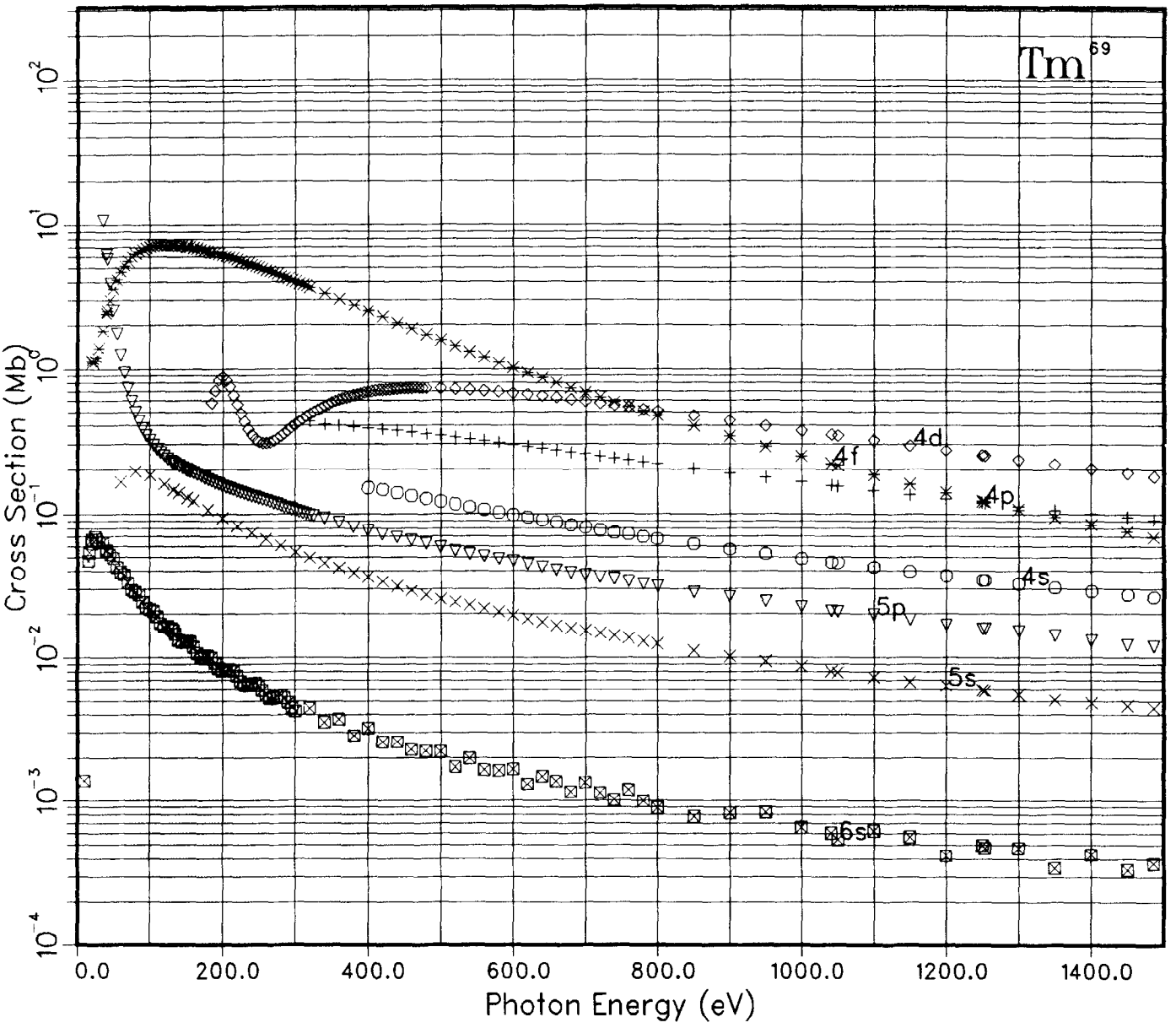


Er binding energies(eV) are:

1s(2) 53674.2	2s(2) 8698.82	2p(6) 8318.72
3s(2) 1945.70	3p(6) 1770.78	4s(2) 378.188
3d(10) 1442.11	4p(6) 307.102	5s(2) 48.8923
4d(10) 178.212	5p(6) 29.8058	6s(2) 5.07466
4f(12) 15.5355		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

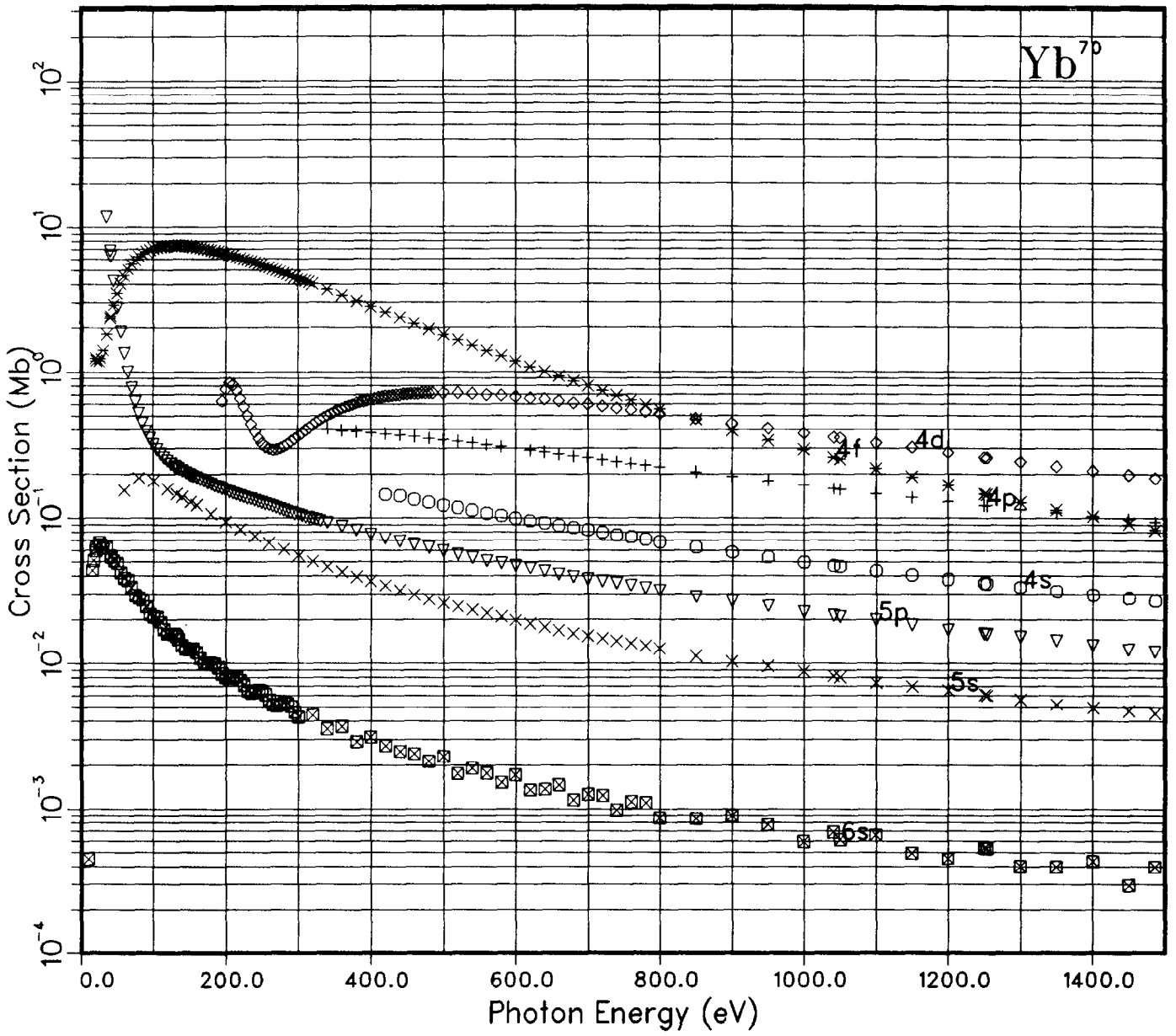


Tm binding energies(eV) are:

1s(2) 55329.5	2s(2) 8992.42	2p(6) 8605.59
3s(2) 2015.69	3p(6) 1836.94	4s(2) 390.341
3d(10) 1501.05	4p(6) 317.235	5s(2) 49.8786
4d(10) 184.408	5p(6) 30.2847	6s(2) 5.11820
4f(13) 15.7777		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

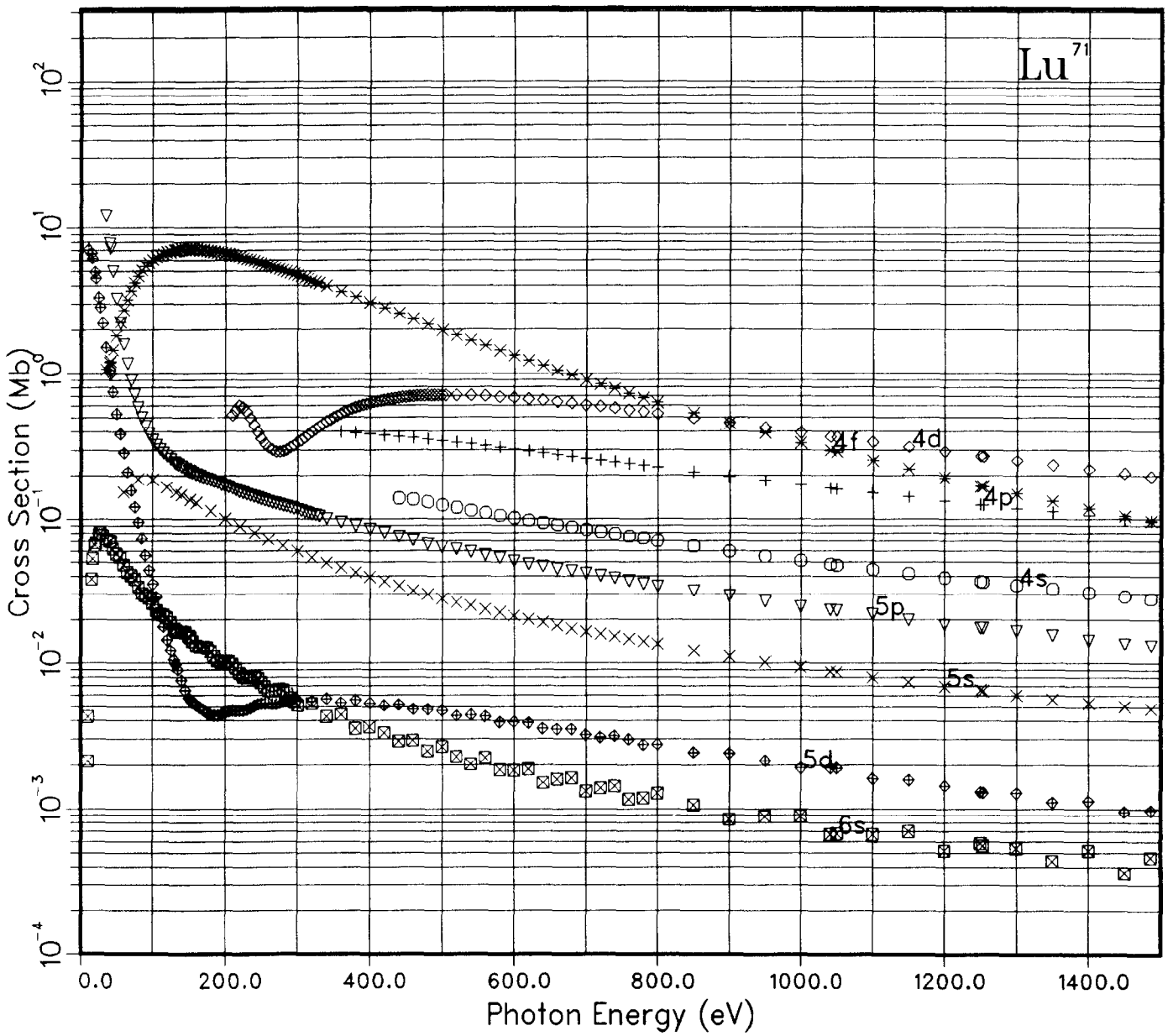


Yb binding energies(eV) are:

1s(2) 57009.8	2s(2) 9290.78	2p(6) 8897.20
3s(2) 2086.76	3p(6) 1904.14	4s(2) 402.610
3d(10) 1561.01	4p(6) 327.461	5s(2) 50.8637
4d(10) 190.652	5p(6) 30.7582	6s(2) 5.16038
4f(14) 15.9818		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

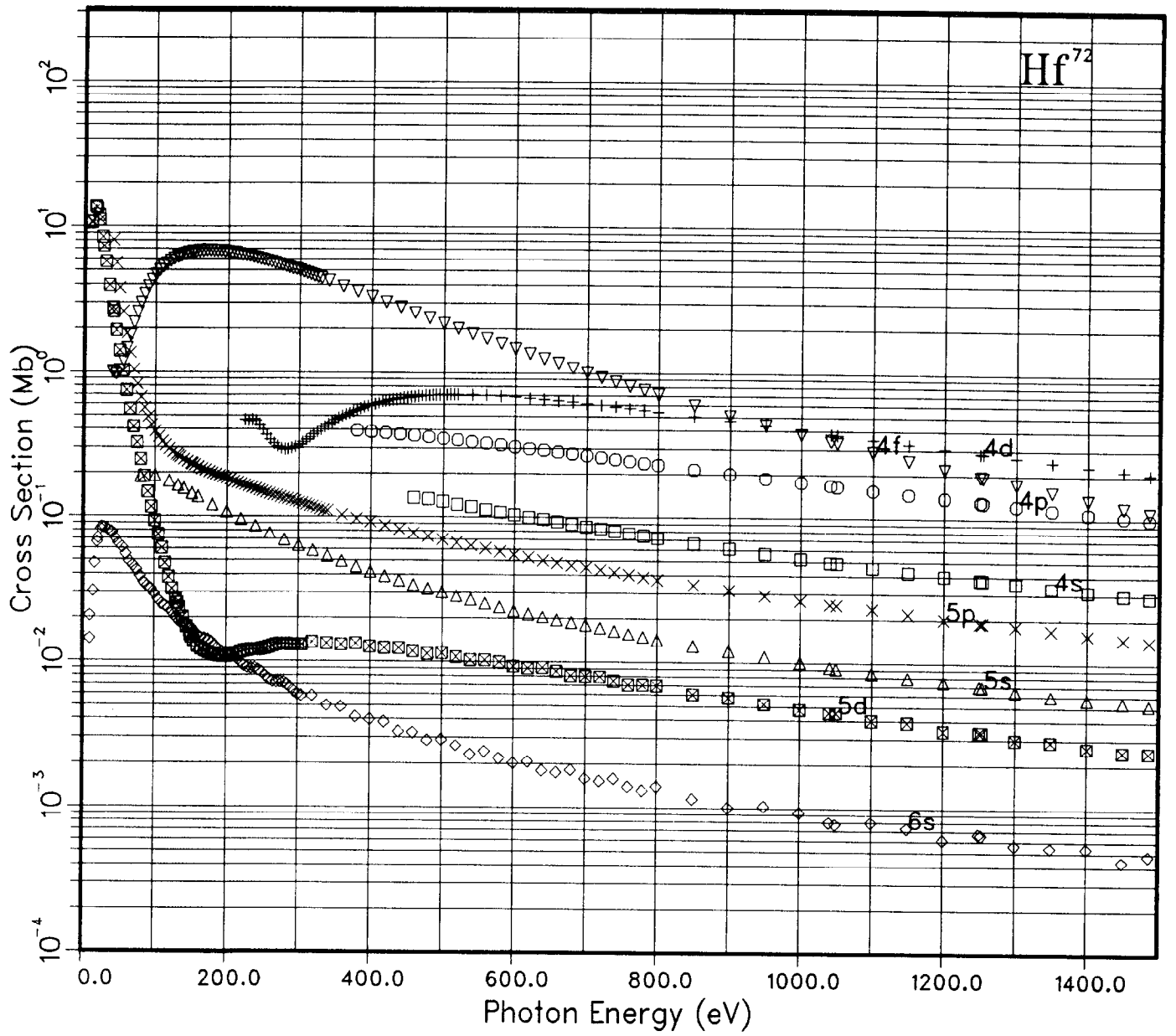


Lu binding energies(eV) are:

1s(2) 58724.2	2s(2) 9603.57	2p(6) 9203.12
3s(2) 2169.47	3p(6) 1982.94	4s(2) 424.620
3d(10) 1632.42	4p(6) 347.329	5s(2) 56.0825
4d(10) 206.290	5p(6) 34.8084	6s(2) 5.65968
4f(14) 24.6046	5d(1) 5.31003	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

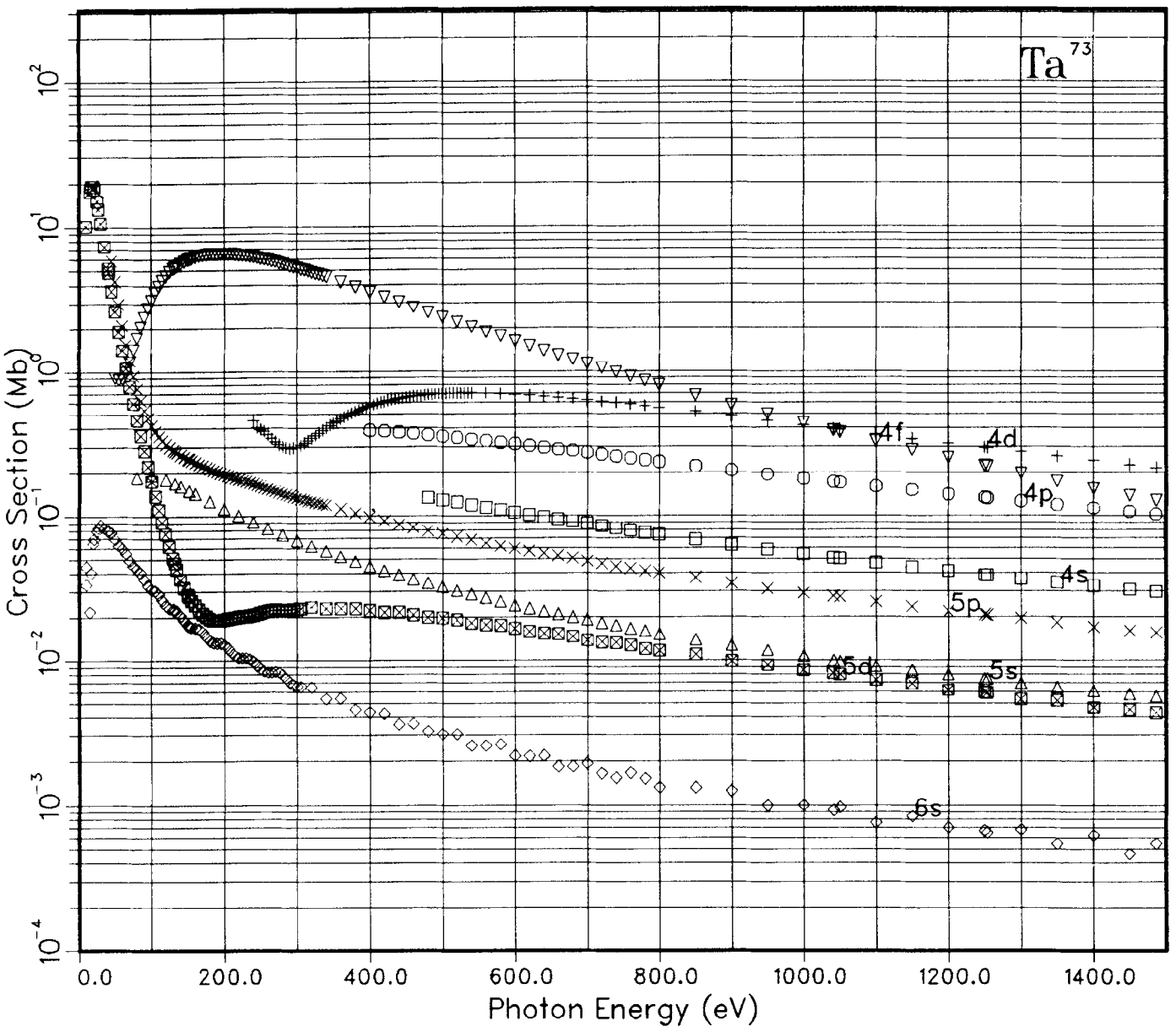


Hf binding energies(eV) are:

1s(2) 60464.4	2s(2) 9921.81	2p(6) 9514.44
3s(2) 2254.08	3p(6) 2063.62	4s(2) 447.294
3d(10) 1705.65	4p(6) 367.822	5s(2) 61.0837
4d(10) 222.495	5p(6) 38.6328	6s(2) 6.03654
4f(14) 33.7526	5d(2) 6.66509	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

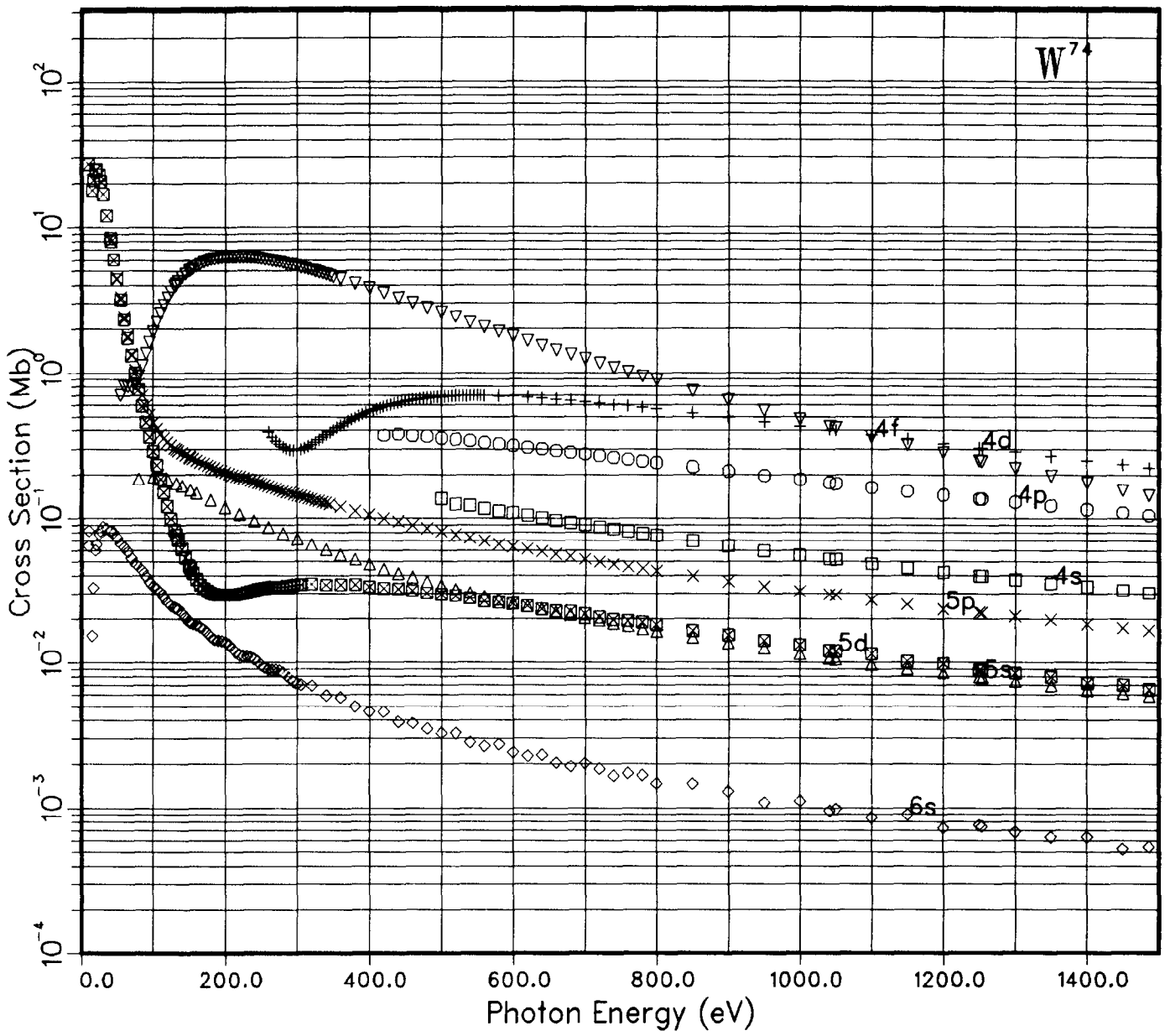


Ta binding energies(eV) are:

1s(2) 62230.6	2s(2) 10245.7	2p(6) 9831.34
3s(2) 2340.70	3p(6) 2146.28	4s(2) 470.703
3d(10) 1780.82	4p(6) 389.023	5s(2) 66.0196
4d(10) 239.349	5p(6) 42.3823	6s(2) 6.34537
4f(14) 43.5278	5d(3) 7.99294	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

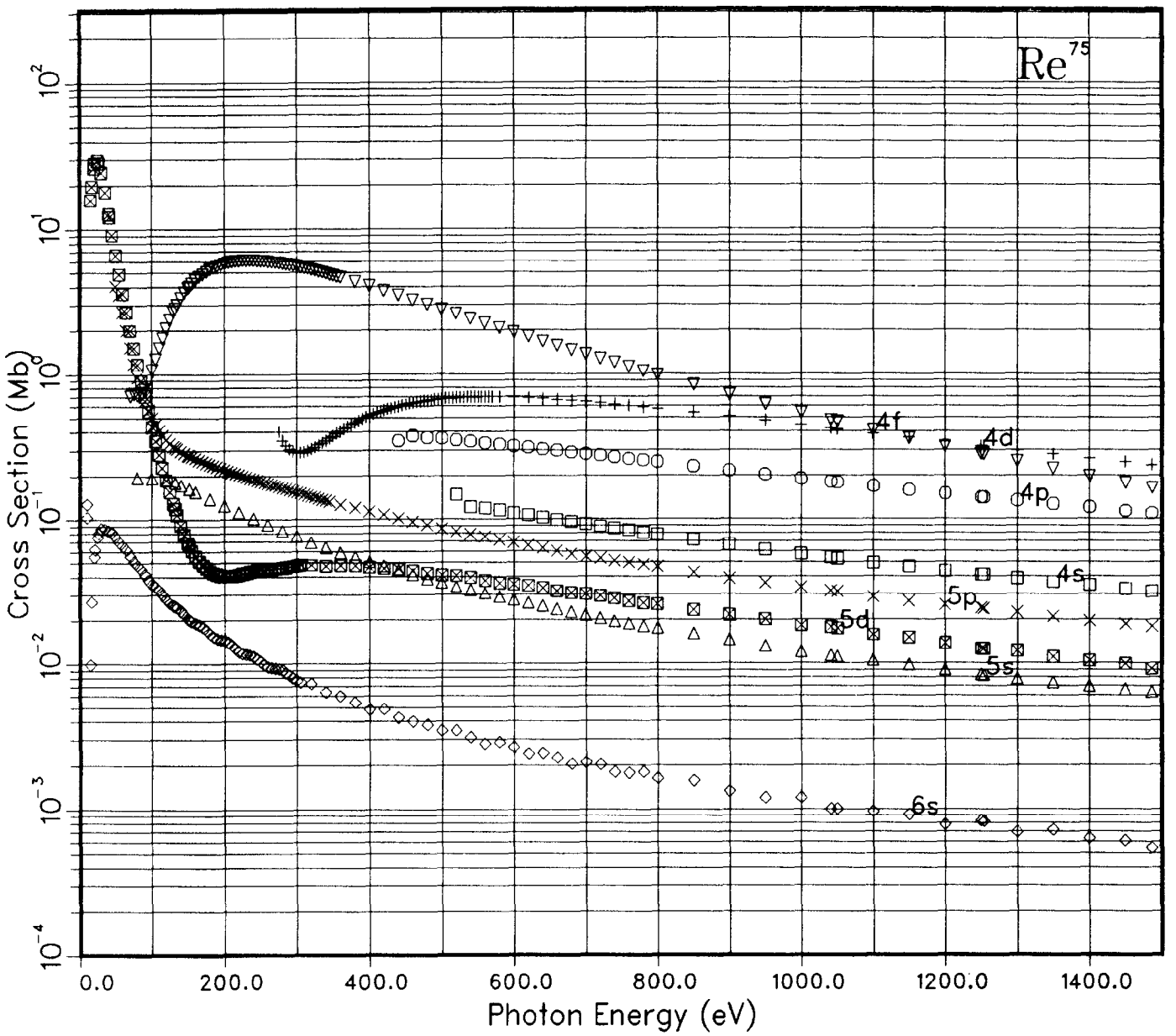


W binding energies(eV) are:

1s(2) 64022.6	2s(2) 10575.0	2p(6) 10153.7
3s(2) 2429.24	3p(6) 2230.83	4s(2) 494.766
3d(10) 1857.86	4p(6) 410.855	5s(2) 70.9133
4d(10) 256.790	5p(6) 46.0829	6s(2) 6.60659
4f(14) 53.8799	5d(4) 9.30446	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

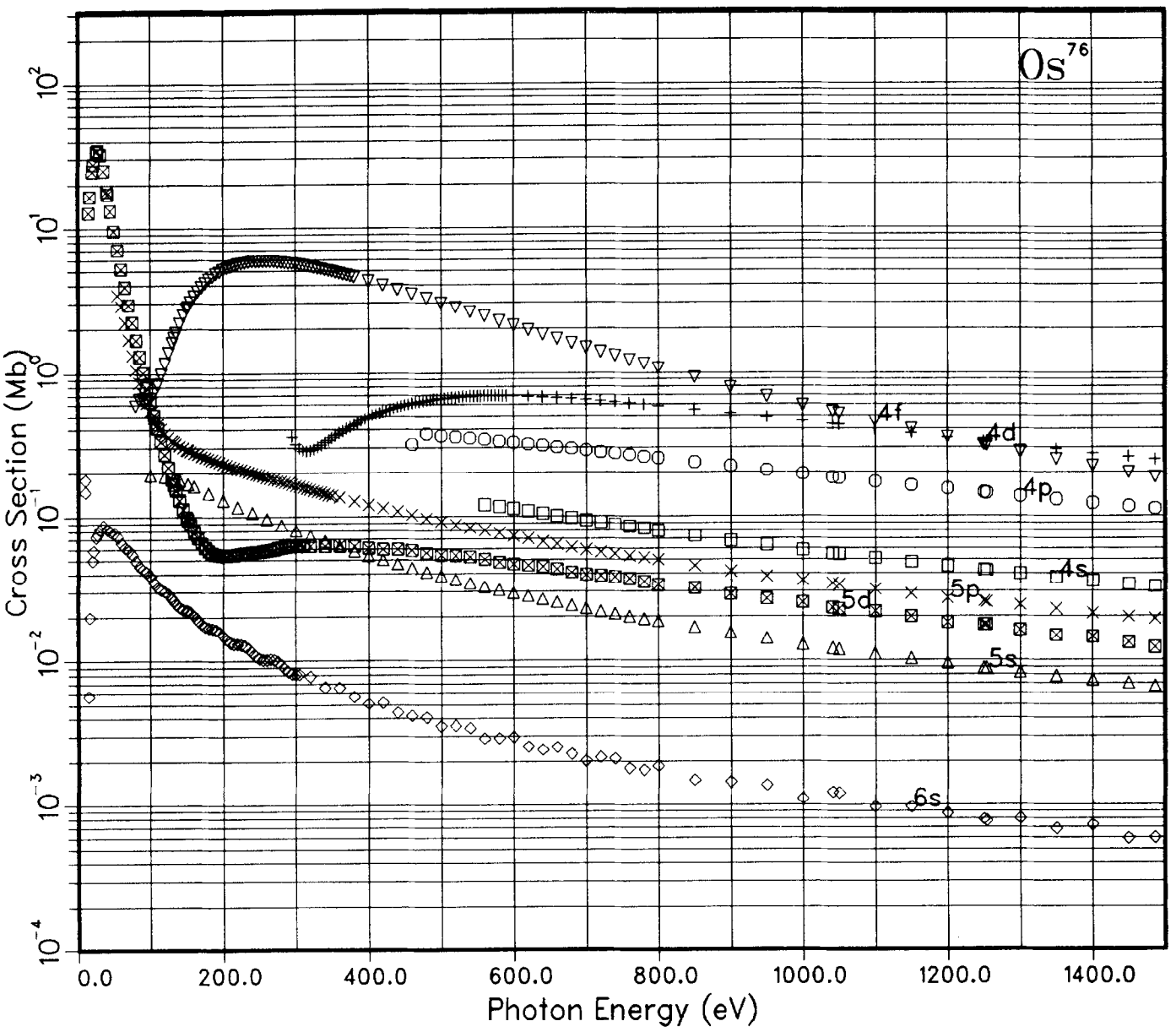


Re binding energies(eV) are:

1s(2) 65840.4	2s(2) 10909.9	2p(6) 10481.6
3s(2) 2519.72	3p(6) 2317.30	4s(2) 519.500
3d(10) 1936.75	4p(6) 433.333	5s(2) 75.8003
4d(10) 274.829	5p(6) 49.7698	6s(2) 6.83651
4f(14) 64.8251	5d(5) 10.6187	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

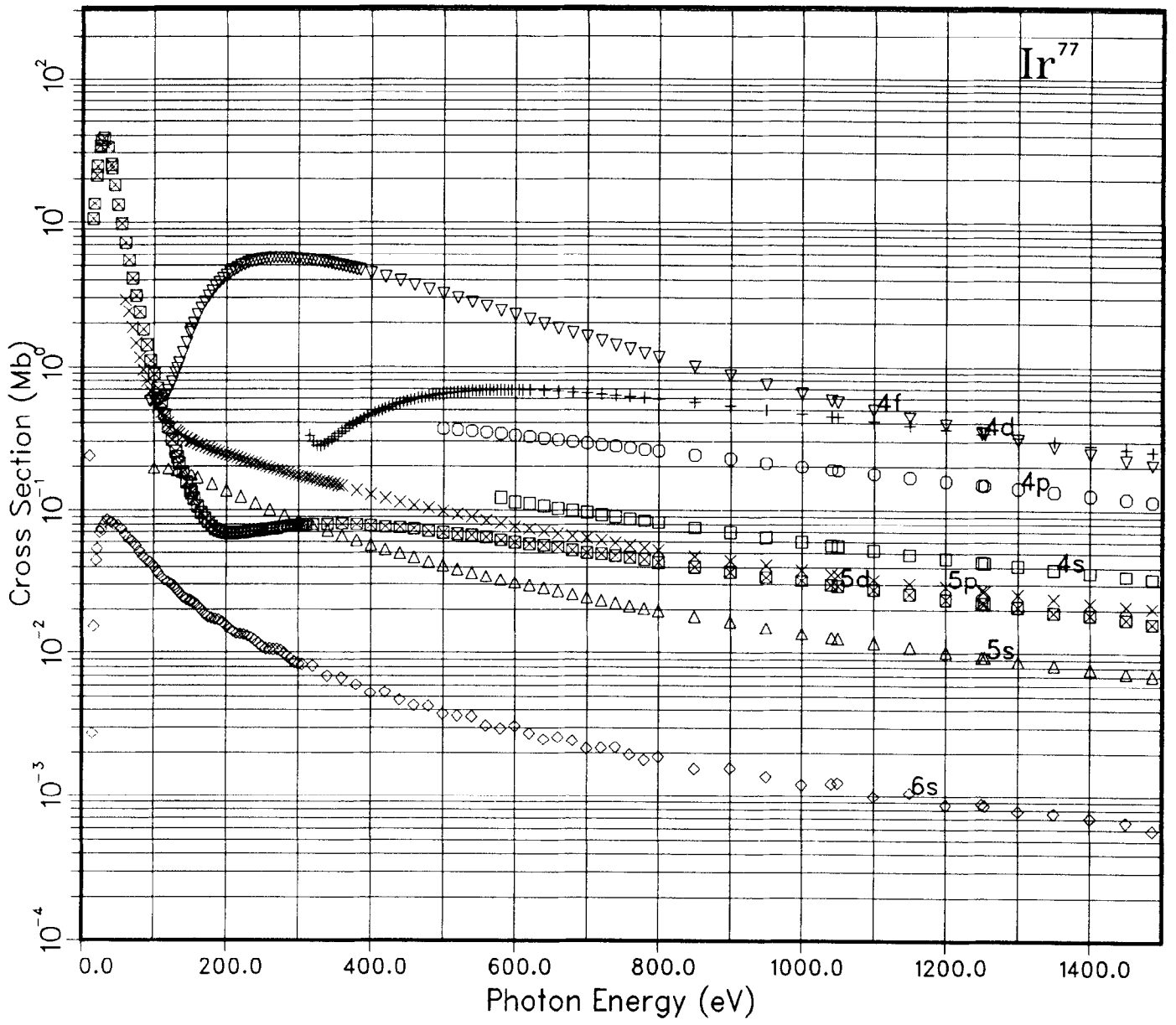


Os binding energies(eV) are:

1s(2) 67684.1	2s(2) 11250.2	2p(6) 10815.0
3s(2) 2612.06	3p(6) 2405.63	4s(2) 544.857
3d(10) 2017.45	4p(6) 456.412	5s(2) 80.6790
4d(10) 293.434	5p(6) 53.4459	6s(2) 7.04059
4f(14) 76.3336	5d(6) 11.9343	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

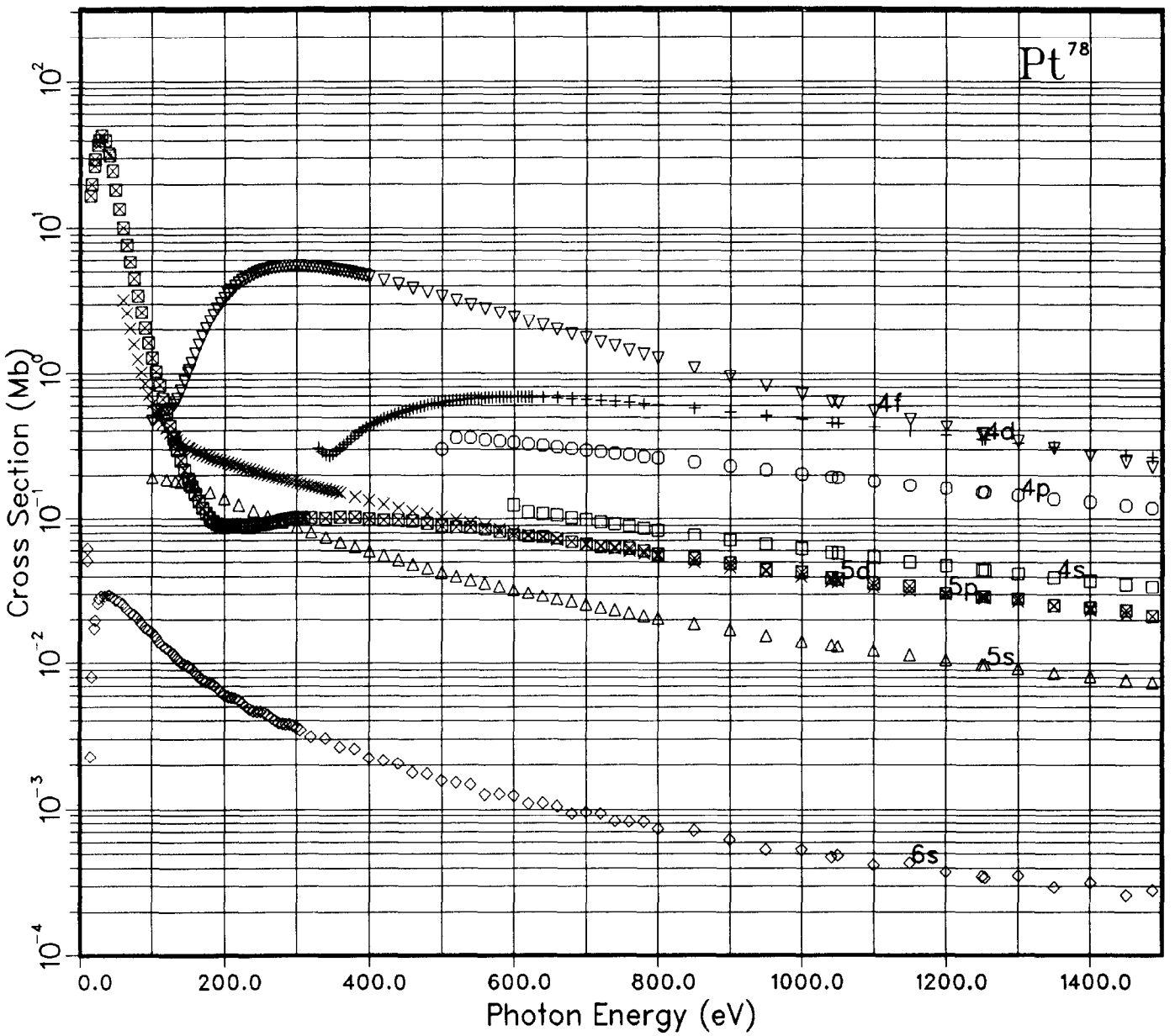


Ir binding energies(eV) are:

1s(2) 69553.6	2s(2) 11596.1	2p(6) 11153.8
3s(2) 2706.27	3p(6) 2495.79	4s(2) 570.813
3d(10) 2099.97	4p(6) 480.071	5s(2) 85.5646
4d(10) 312.580	5p(6) 57.1219	6s(2) 7.22562
4f(14) 88.3822	5d(7) 13.2581	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

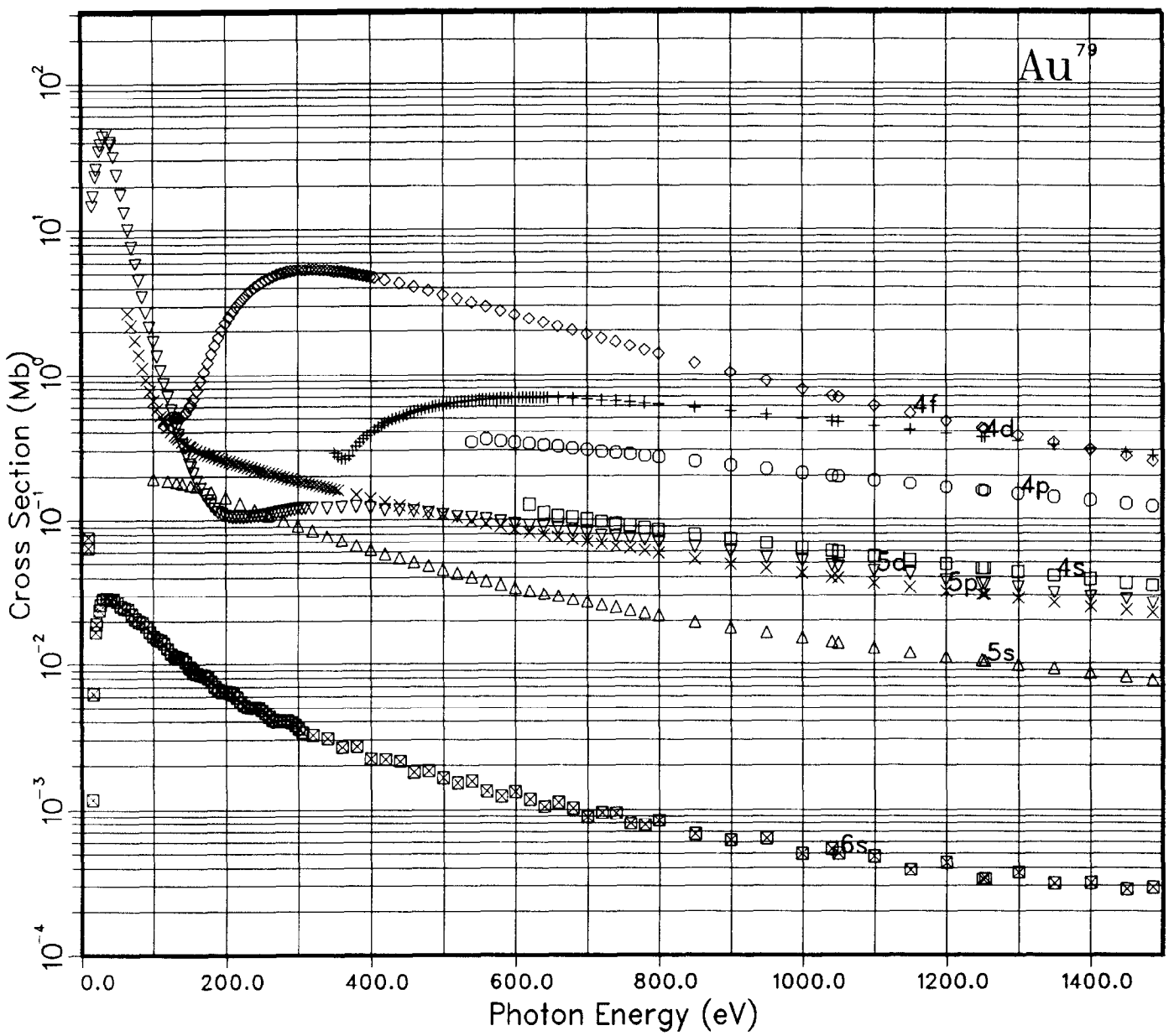


Pt binding energies(eV) are:

1s(2) 71444.7	2s(2) 11942.9	2p(6) 11493.4
3s(2) 2797.86	3p(6) 2583.32	4s(2) 592.917
3d(10) 2179.80	4p(6) 499.857	5s(2) 86.3945
4d(10) 327.821	5p(6) 56.8961	6s(1) 6.38619
4f(14) 96.5384	5d(9) 11.3955	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

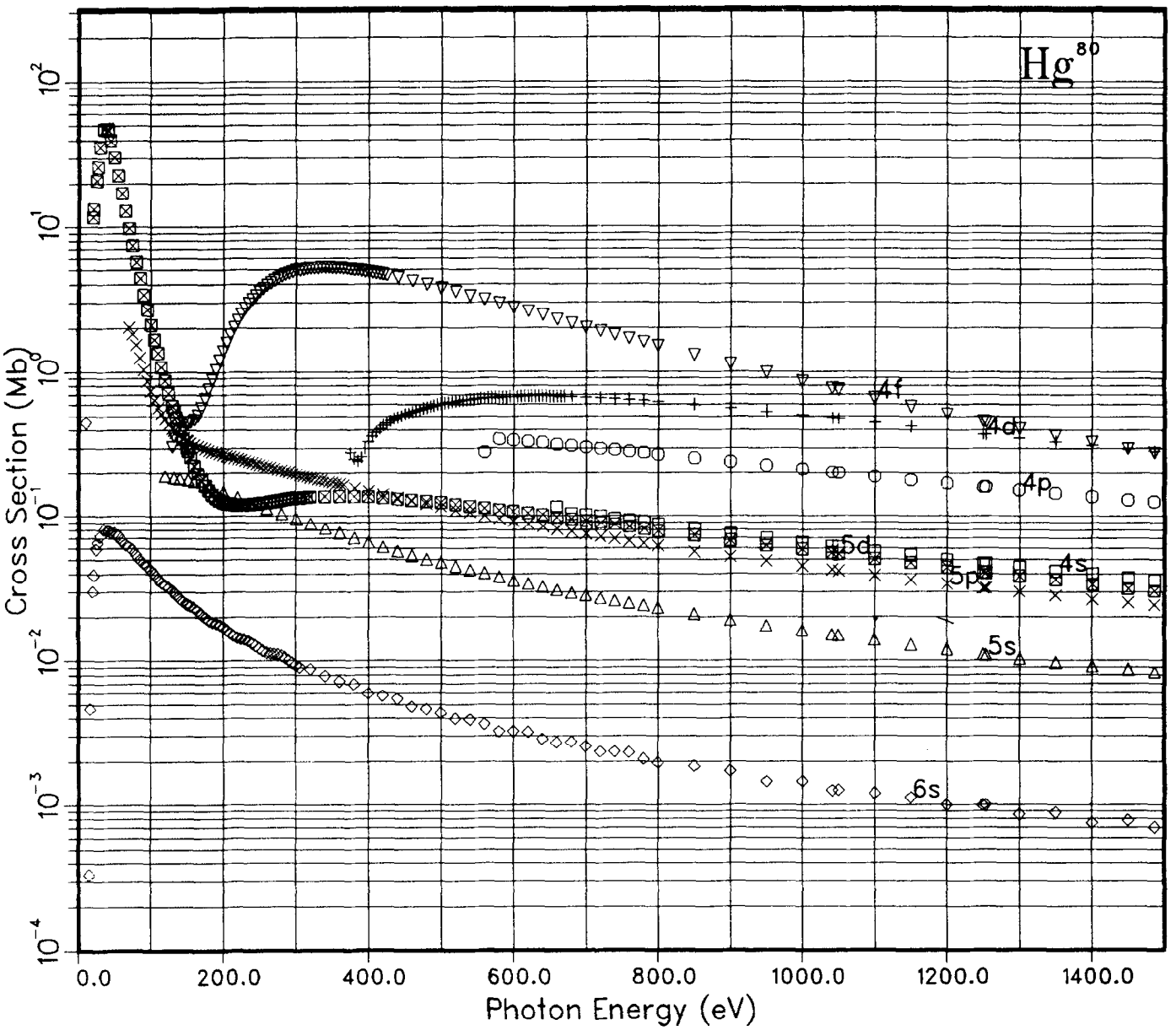


Au binding energies(eV) are:

1s(2) 73365.4	2s(2) 12299.4	2p(6) 11842.9
3s(2) 2895.49	3p(6) 2676.88	4s(2) 619.785
3d(10) 2265.63	4p(6) 524.392	5s(2) 91.0841
4d(10) 347.781	5p(6) 60.3681	4f(14) 109.396
5d(10) 12.5152	6s(1) 6.49775	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

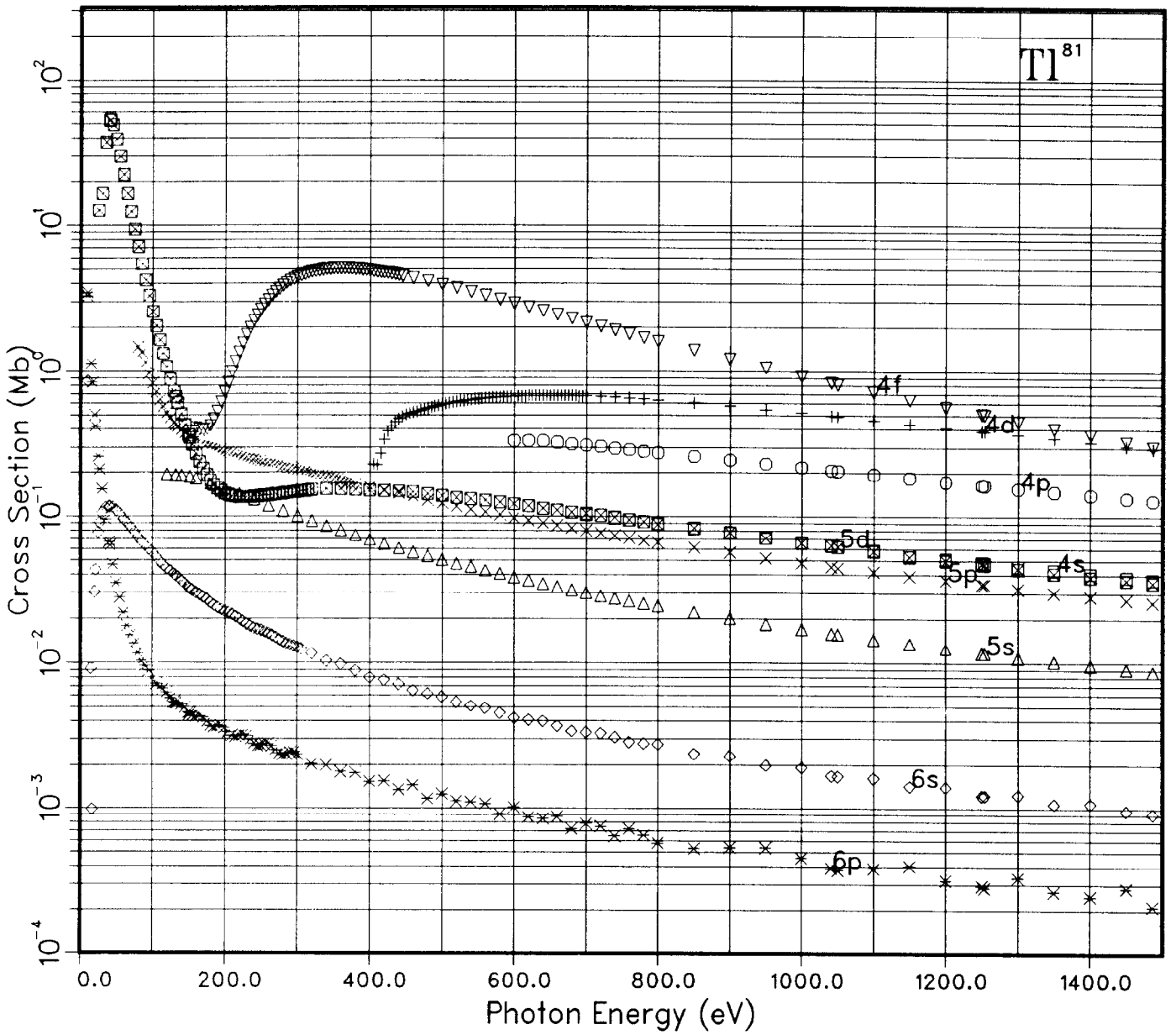


Hg binding energies(eV) are:

1s(2) 75316.7	2s(2) 12666.4	2p(6) 12202.9
3s(2) 2999.88	3p(6) 2777.18	4s(2) 652.122
3d(10) 2358.18	4p(6) 554.378	5s(2) 100.288
4d(10) 373.163	5p(6) 68.1910	6s(2) 7.69091
4f(14) 127.669	5d(10) 17.2797	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

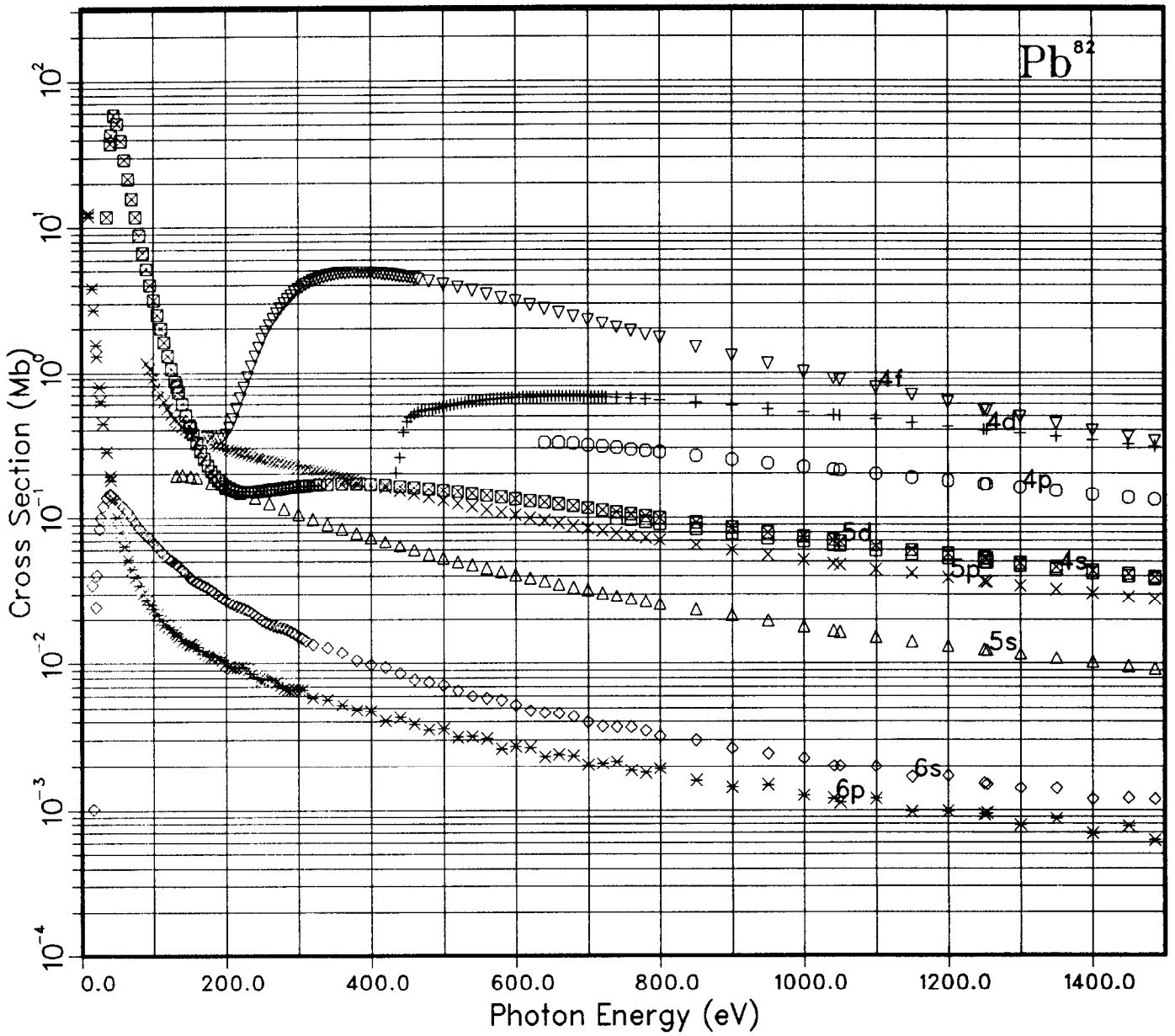


Tl binding energies(eV) are:

1s(2) 77296.3	2s(2) 13041.1	2p(6) 12570.5
3s(2) 3108.33	3p(6) 2881.52	4s(2) 687.237
3d(10) 2454.74	4p(6) 587.125	5s(2) 111.560
4d(10) 401.282	5p(6) 78.0492	6s(2) 9.93437
4f(14) 148.667	5d(10) 24.0060	6p(1) 4.61618

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

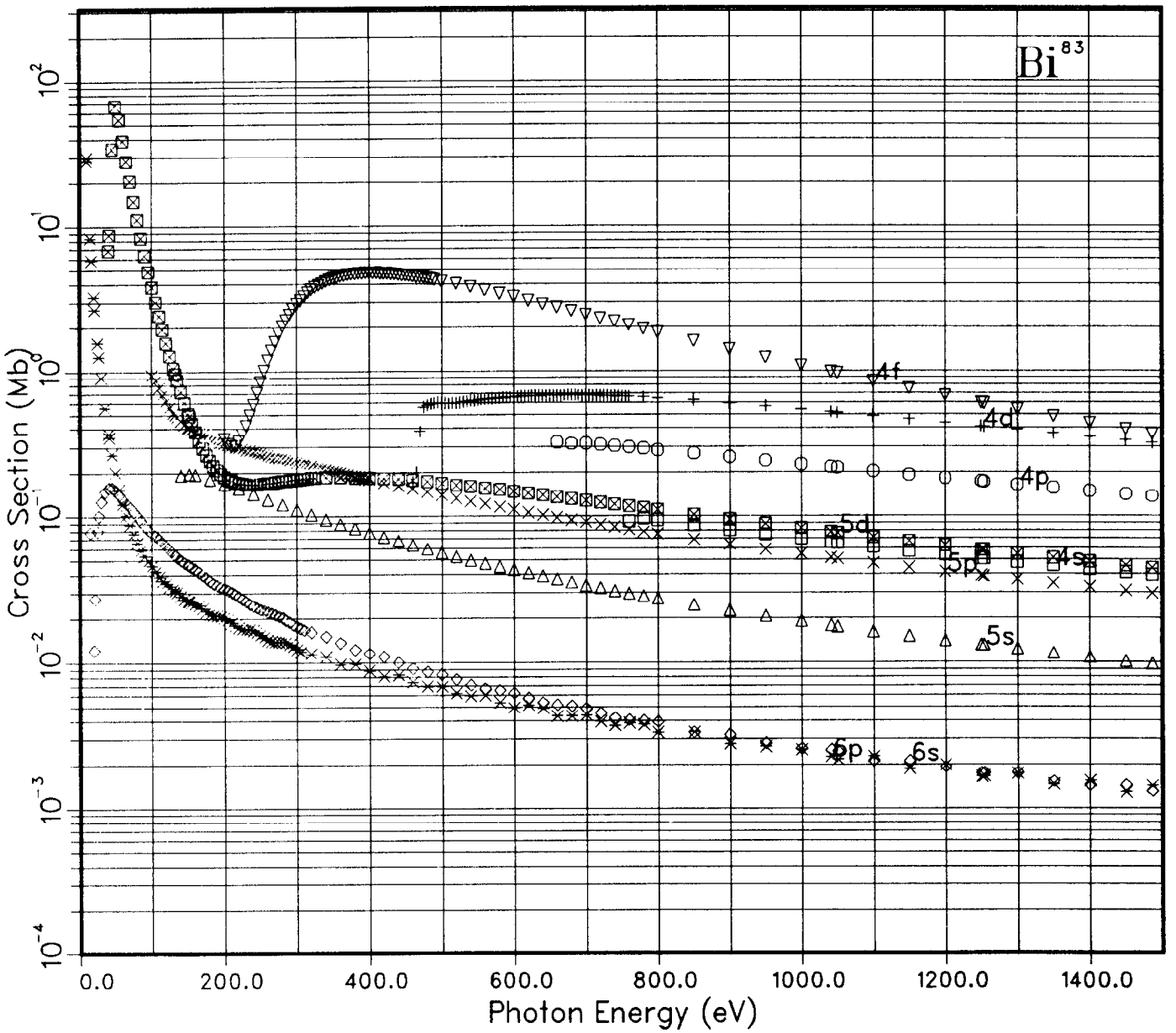


Pb binding energies(eV) are:

1s(2) 79301.9	2s(2) 13421.5	2p(6) 12943.7
3s(2) 3218.80	3p(6) 2987.86	4s(2) 723.080
3d(10) 2553.28	4p(6) 620.583	5s(2) 122.857
4d(10) 430.081	5p(6) 87.9060	6s(2) 12.0921
4f(14) 170.344	5d(10) 30.7337	6p(2) 5.77532

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

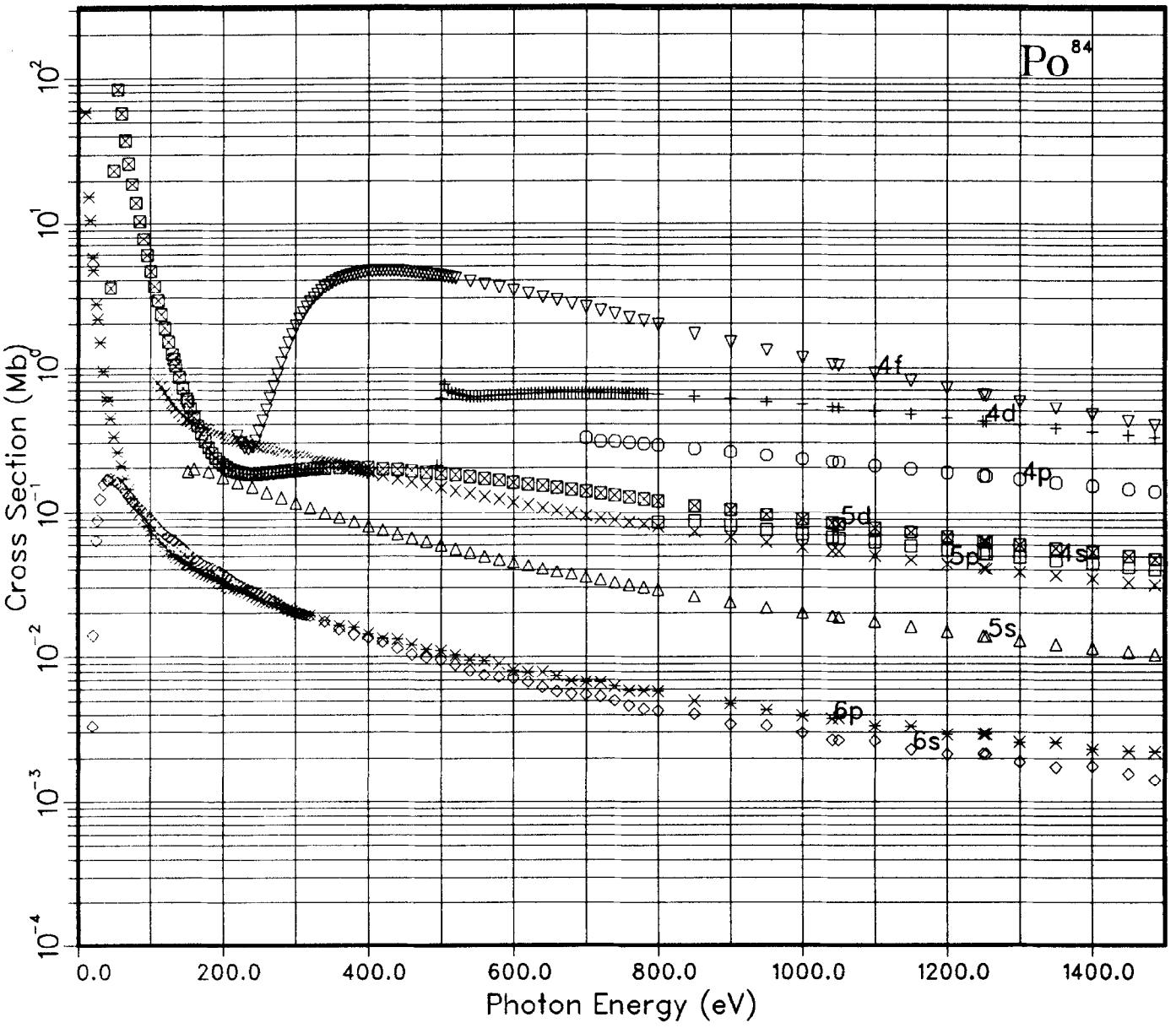


Bi binding energies(eV) are:

1s(2) 81333.7	2s(2) 13807.7	2p(6) 13322.8
3s(2) 3331.43	3p(6) 3096.34	4s(2) 759.786
3d(10) 2653.93	4p(6) 654.892	5s(2) 134.338
4d(10) 459.709	5p(6) 97.9315	6s(2) 14.1791
4f(14) 192.845	5d(10) 37.6423	6p(3) 6.98209

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

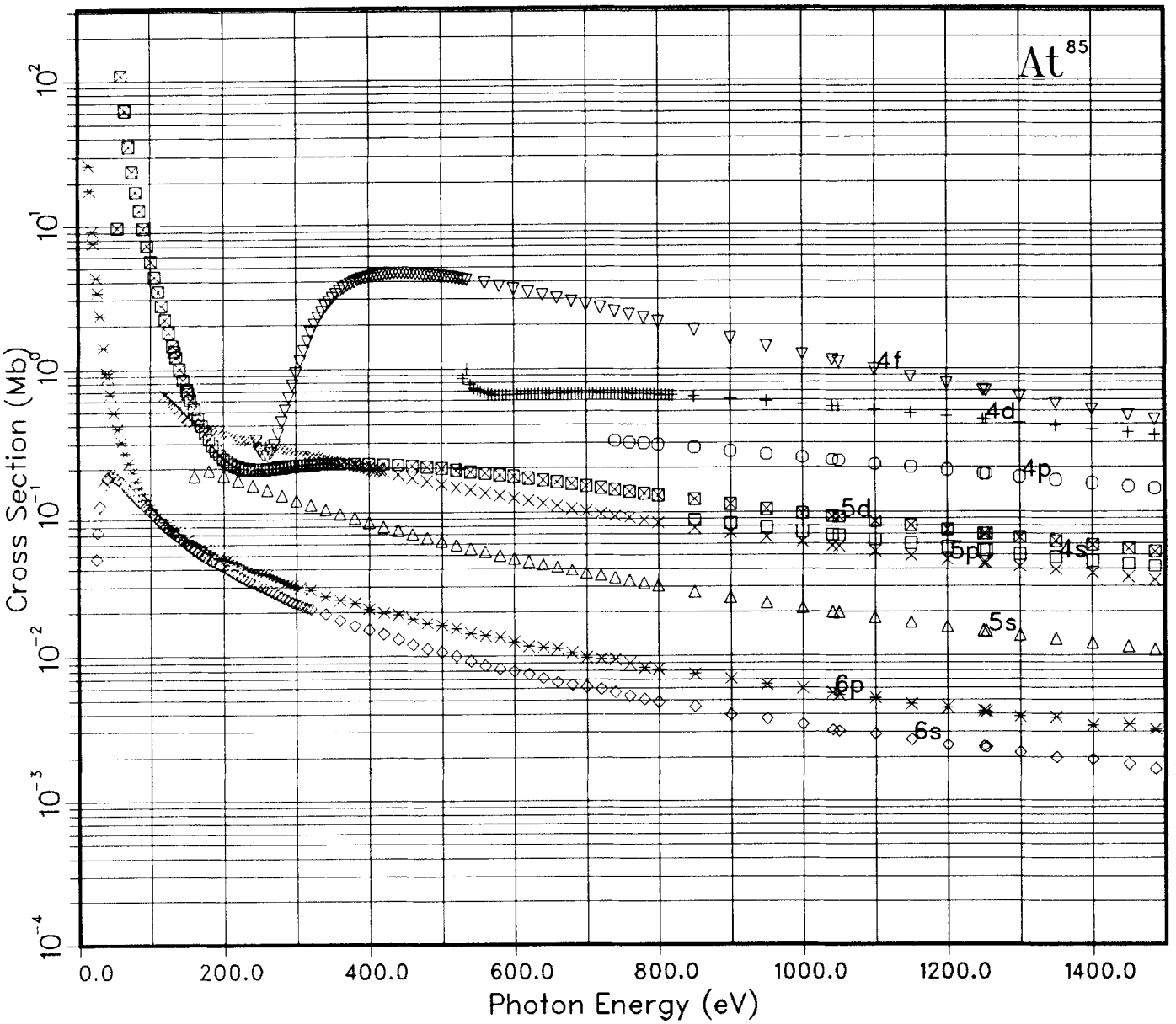


Po binding energies(eV) are:

1s(2) 83391.6	2s(2) 14199.8	2p(6) 13707.7
3s(2) 3446.26	3p(6) 3207.03	4s(2) 797.405
3d(10) 2756.76	4p(6) 690.096	5s(2) 146.065
4d(10) 490.210	5p(6) 108.188	6s(2) 16.2335
4f(14) 216.216	5d(10) 44.7945	6p(4) 8.20790

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

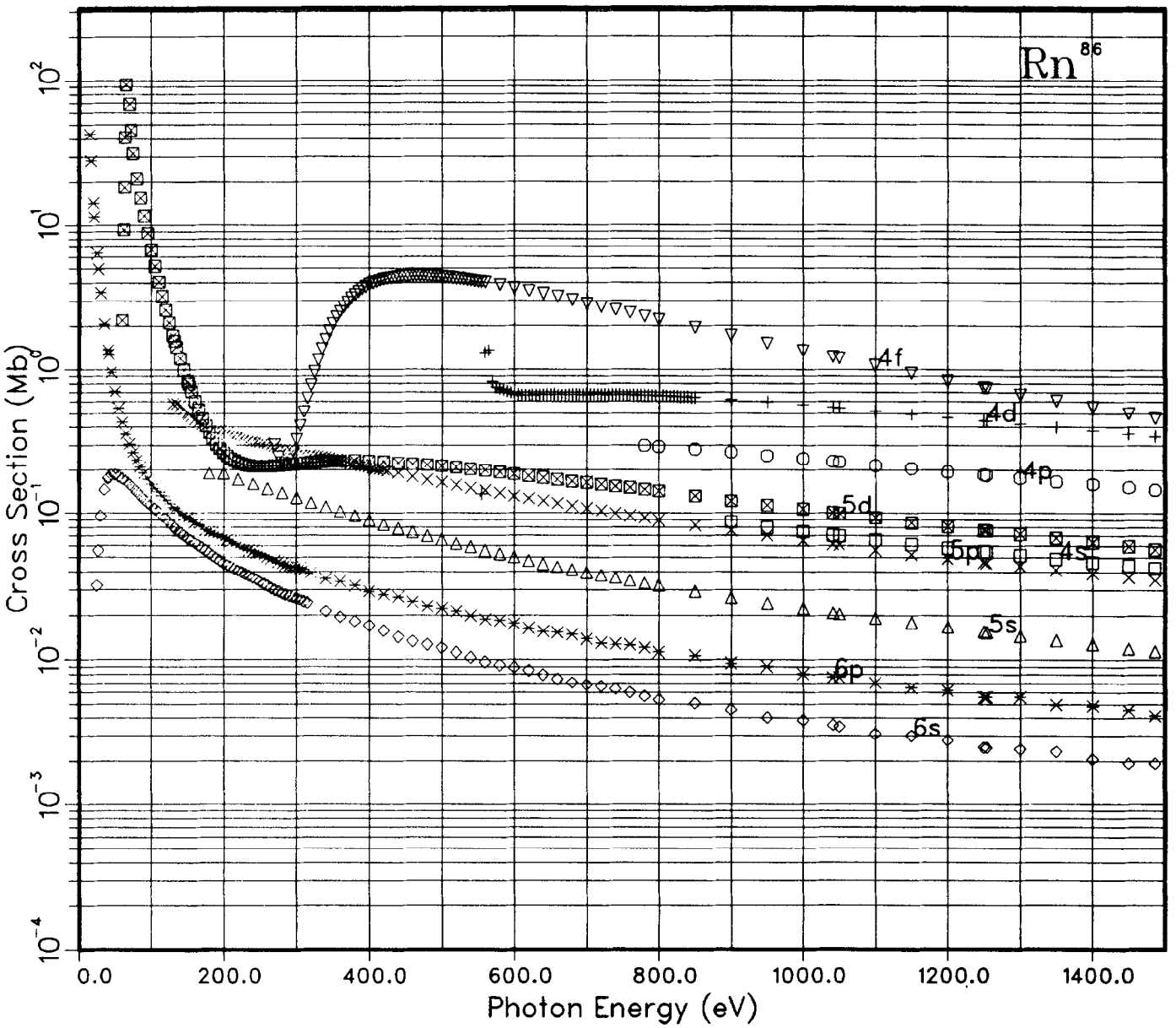


At binding energies(eV) are:

1s(2) 85475.8	2s(2) 14597.8	2p(6) 14098.5
3s(2) 3563.29	3p(6) 3319.89	4s(2) 835.937
3d(10) 2861.75	4p(6) 726.200	5s(2) 158.051
4d(10) 521.587	5p(6) 118.694	6s(2) 18.2742
4f(14) 240.459	5d(10) 52.2092	6p(5) 9.44731

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

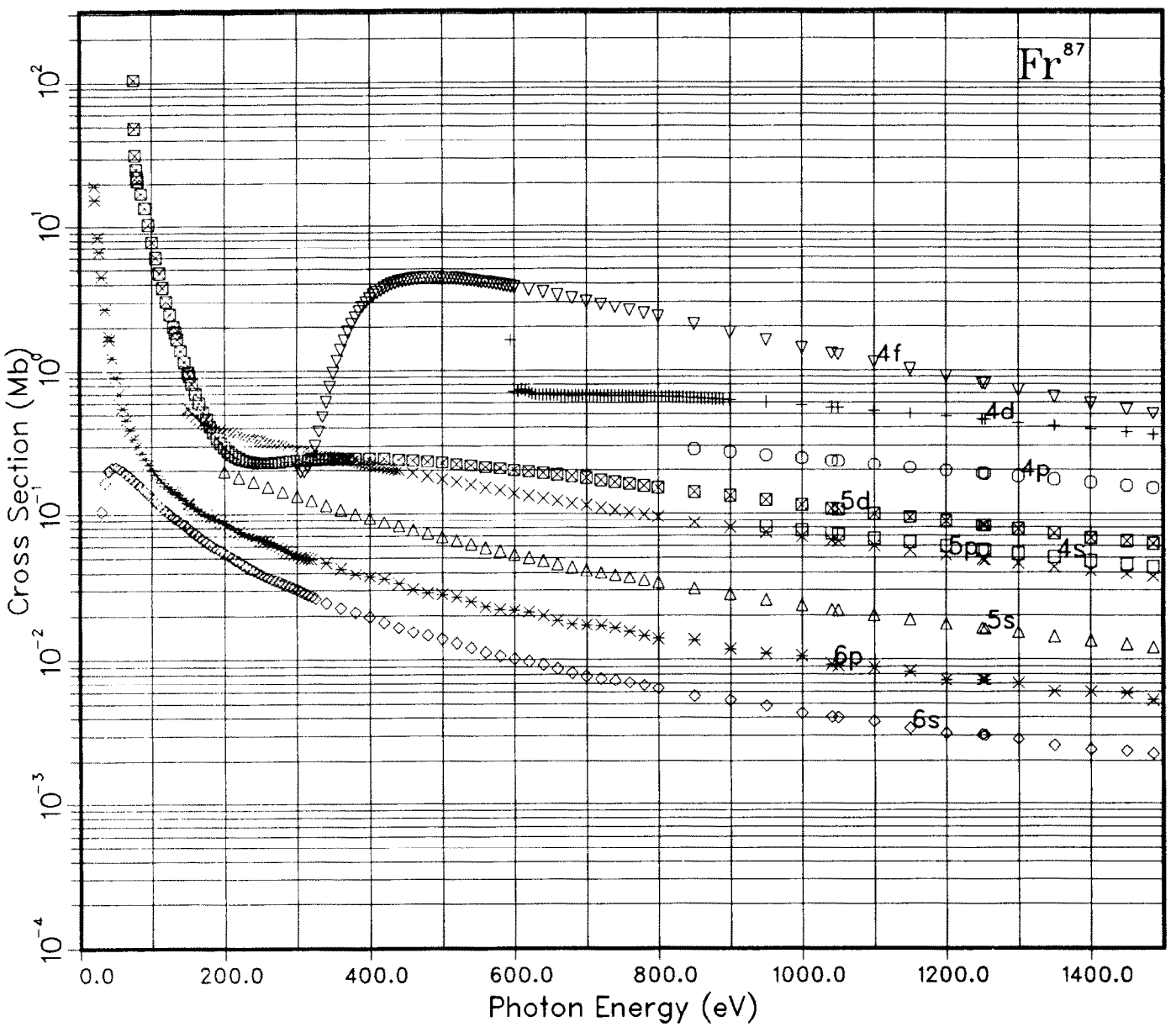


Rn binding energies(eV) are:

1s(2) 87586.0	2s(2) 15001.7	2p(6) 14495.2
3s(2) 3682.53	3p(6) 3434.94	4s(2) 875.376
3d(10) 2968.90	4p(6) 763.200	5s(2) 170.299
4d(10) 553.840	5p(6) 129.456	6s(2) 20.3082
4f(14) 265.575	5d(10) 59.8878	6p(6) 10.6990

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

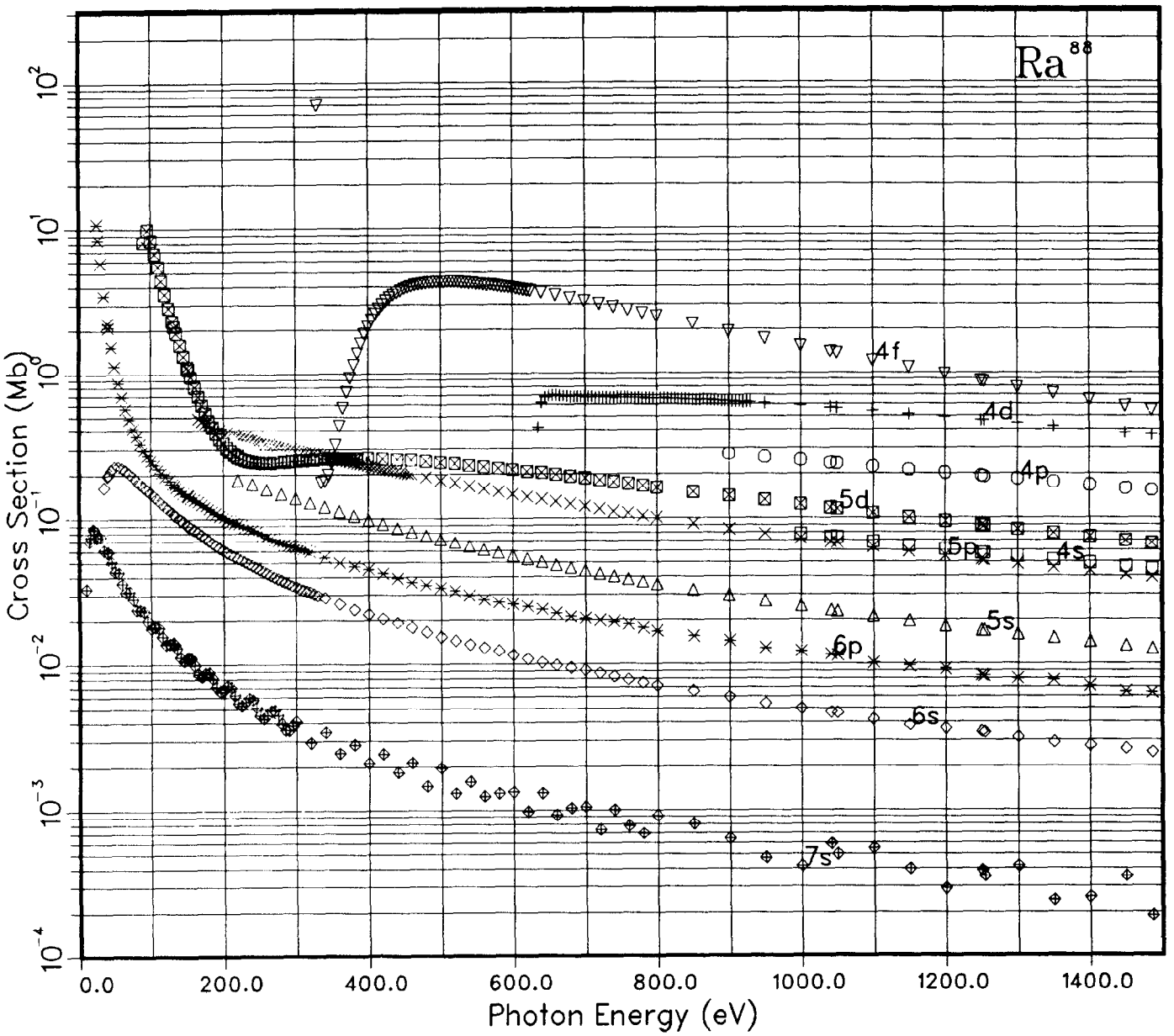


Fr binding energies(eV) are:

1s(2) 89727.7	2s(2) 15416.5	2p(6) 14902.7
3s(2) 3808.97	3p(6) 3557.19	4s(2) 920.714
3d(10) 3083.22	4p(6) 806.085	5s(2) 187.768
4d(10) 591.960	5p(6) 145.424	6s(2) 26.5502
4f(14) 296.554	5d(10) 72.7514	6p(6) 15.7451
7s(1) 3.40941		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

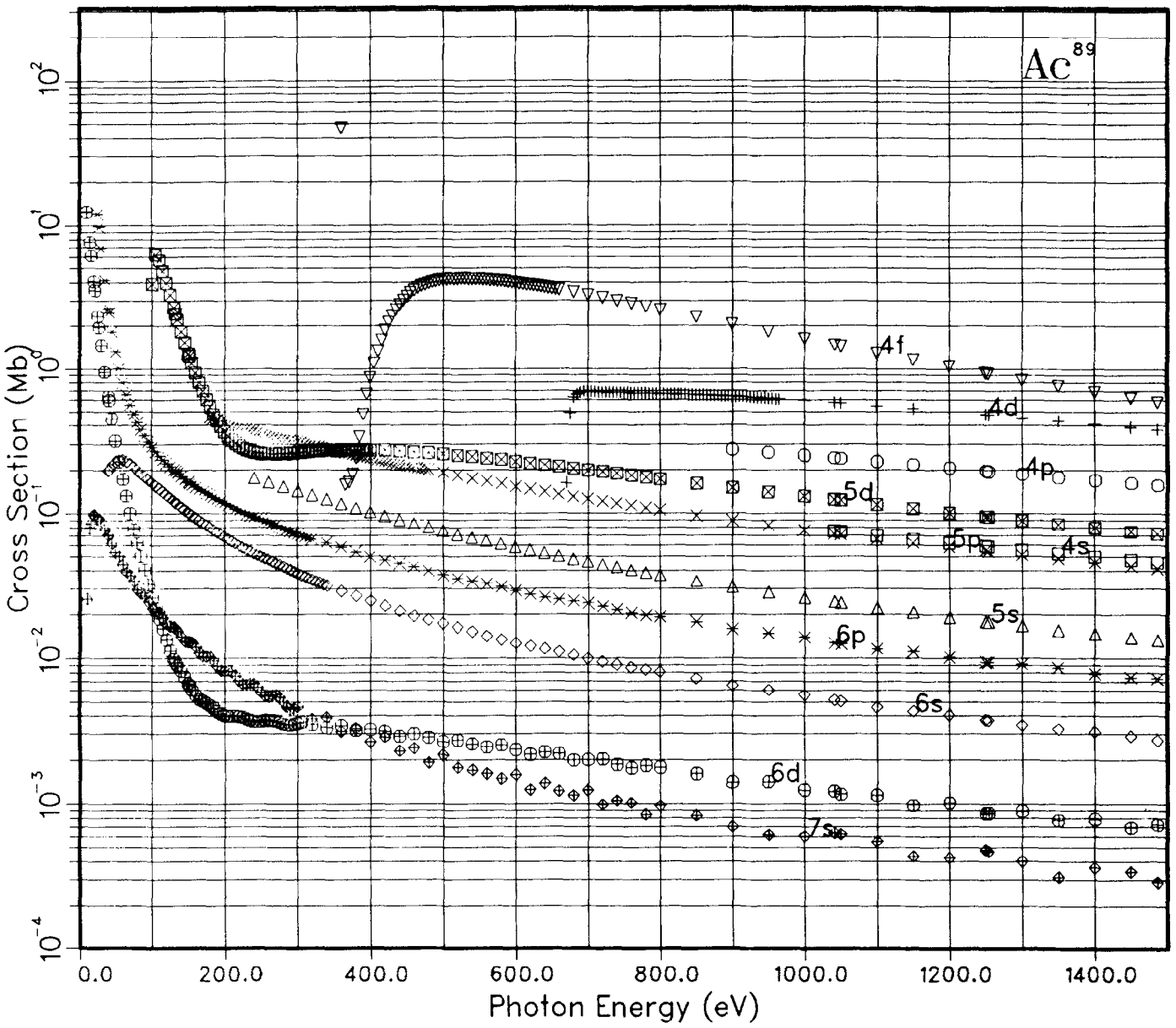


Ra binding energies(eV) are:

1s(2) 91895.9	2s(2) 15837.4	2p(6) 15316.4
3s(2) 3937.81	3p(6) 3681.84	4s(2) 967.149
3d(10) 3199.92	4p(6) 850.057	5s(2) 205.653
4d(10) 631.145	5p(6) 161.795	6s(2) 32.6887
4f(14) 328.597	5d(10) 86.0067	6p(6) 20.7680
7s(2) 4.24204		

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

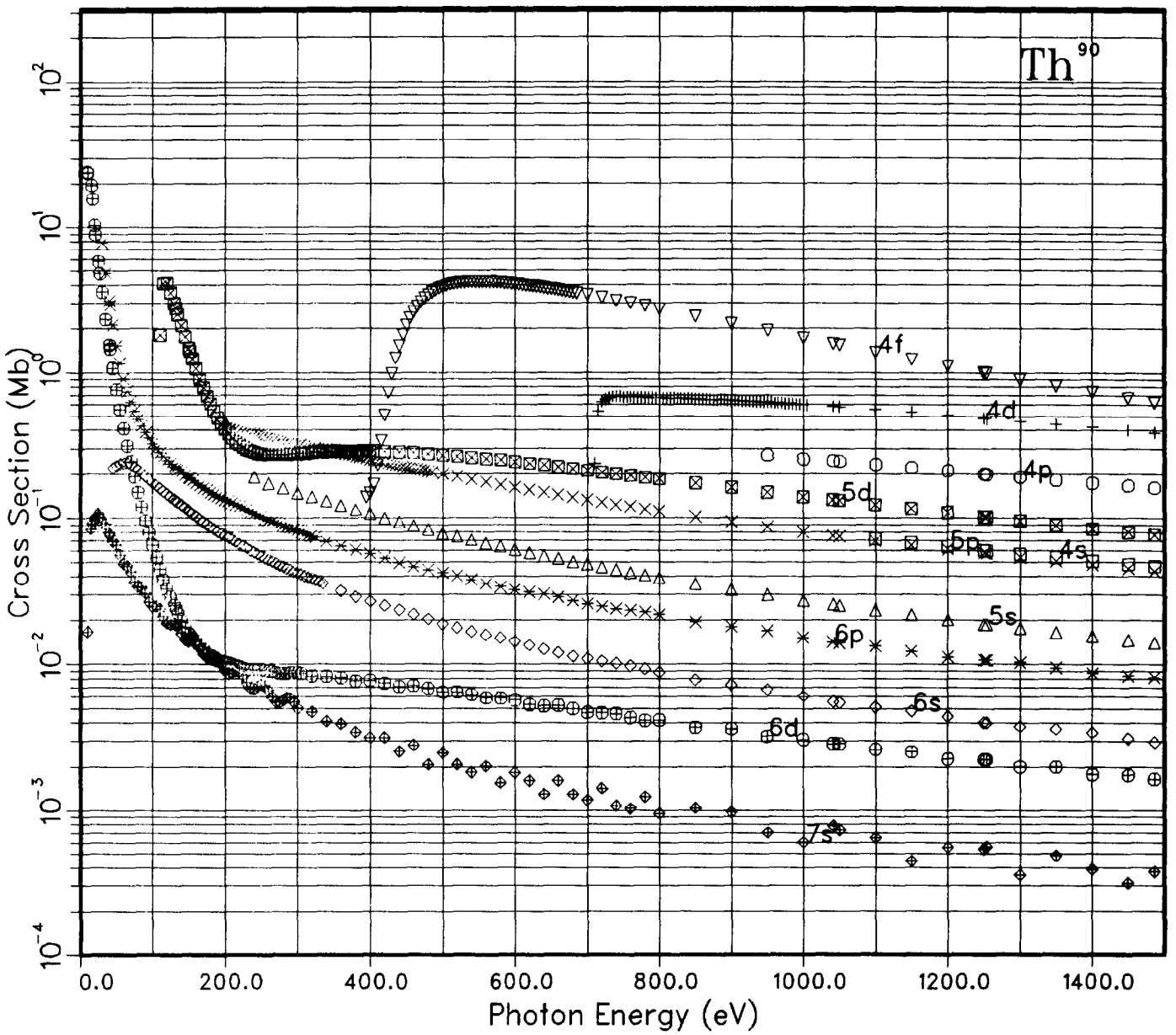


Ac binding energies(eV) are:

1s(2) 94088.2	2s(2) 16261.8	2p(6) 15733.5
3s(2) 4066.52	3p(6) 3806.32	4s(2) 1012.14
3d(10) 3316.42	4p(6) 892.574	5s(2) 221.466
4d(10) 668.863	5p(6) 176.088	6s(2) 36.6736
4f(14) 359.165	5d(10) 97.1873	6p(6) 23.8237
7s(2) 4.63386	6d(1) 5.84335	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

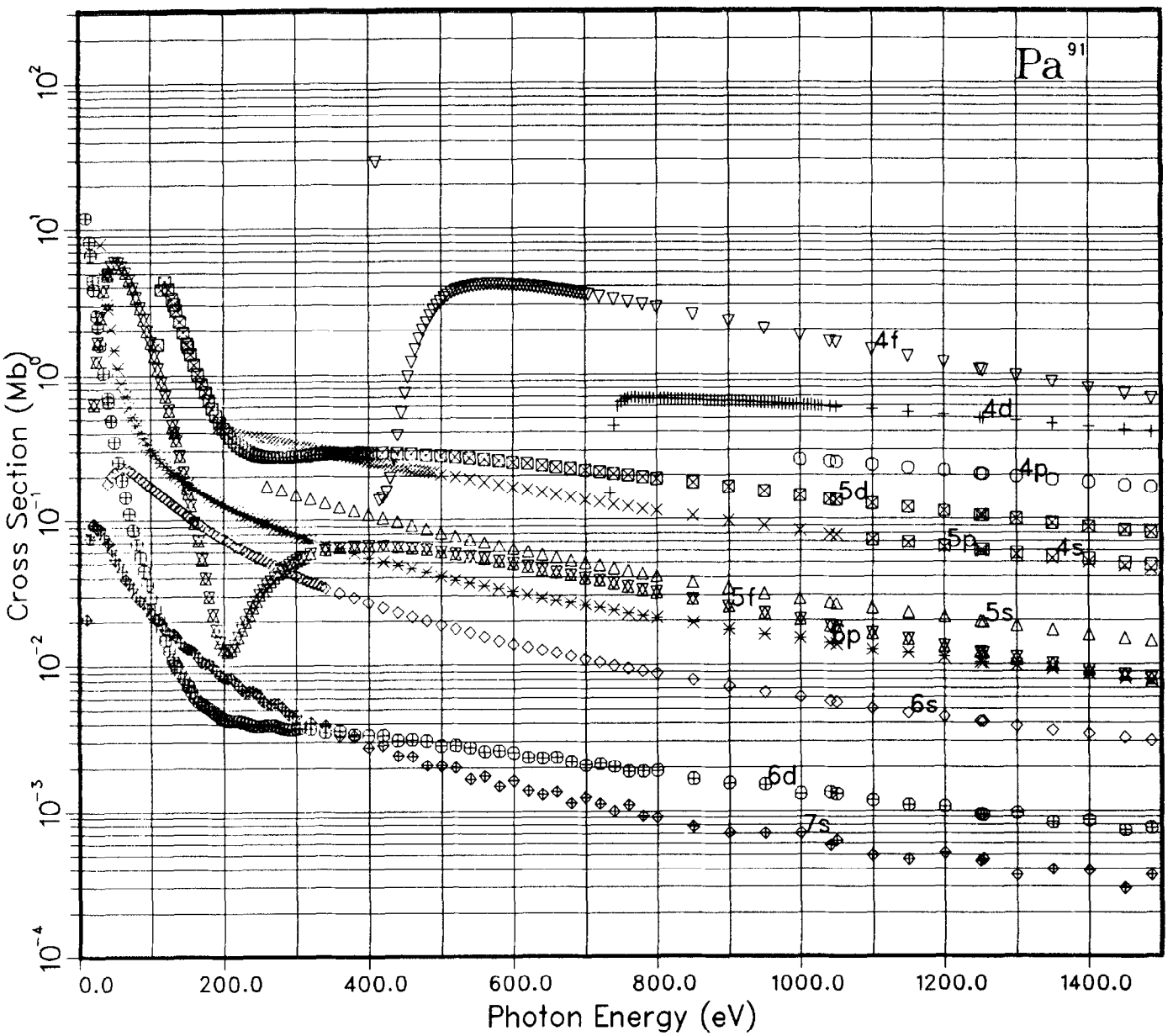


Th binding energies(eV) are:

1s(2) 96306.2	2s(2) 16691.9	2p(6) 16156.5
3s(2) 4197.17	3p(6) 3932.74	4s(2) 1057.81
3d(10) 3434.86	4p(6) 935.752	5s(2) 237.332
4d(10) 707.219	5p(6) 190.425	6s(2) 40.4939
4f(14) 390.372	5d(10) 108.421	6p(6) 26.7447
7s(2) 4.95222	6d(2) 7.02018	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

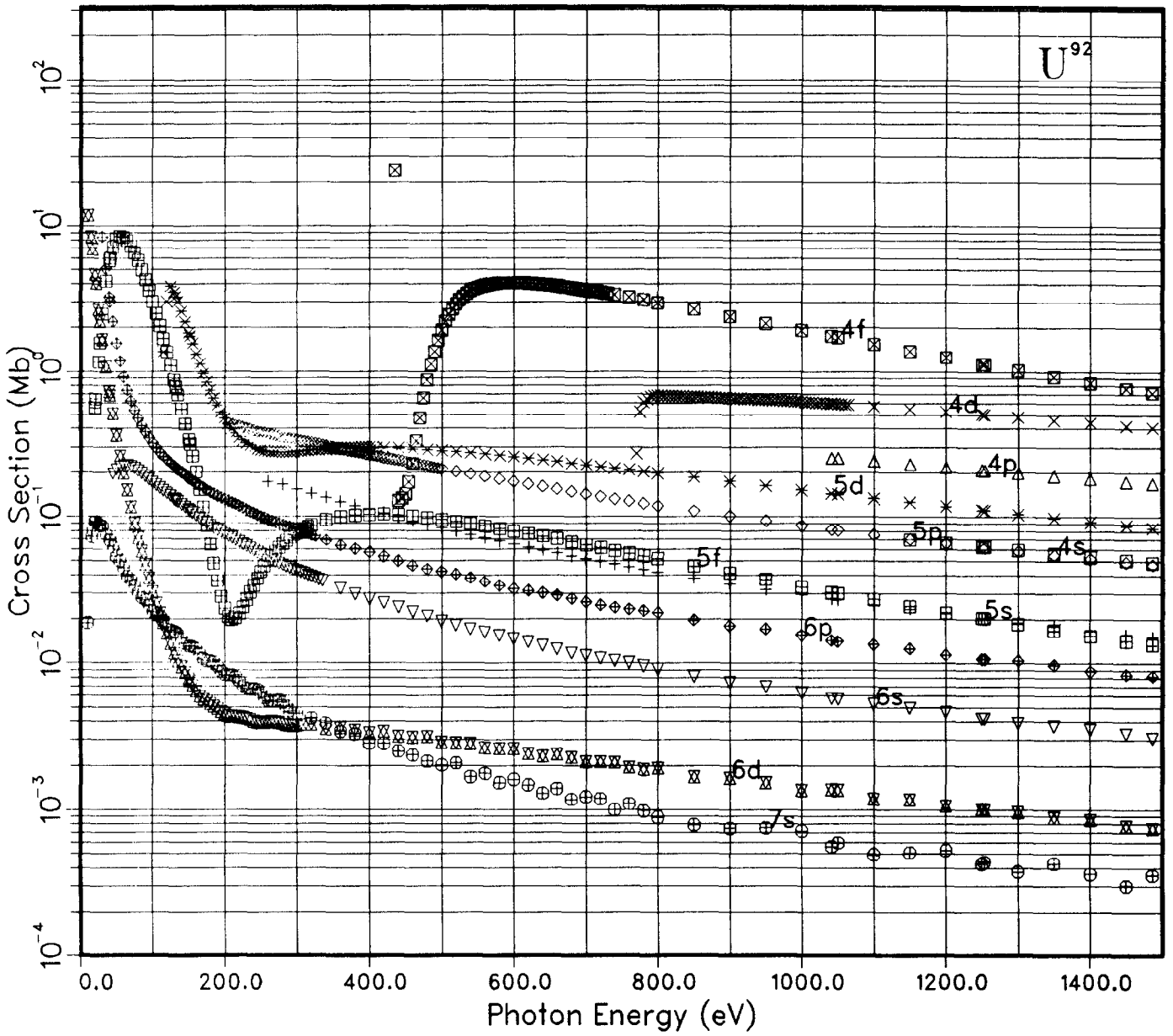


Pa binding energies(eV) are:

1s(2) 98538.4	2s(2) 17115.3	2p(6) 16572.7
3s(2) 4316.62	3p(6) 4047.97	4s(2) 1091.39
3d(10) 3542.11	4p(6) 966.831	5s(2) 241.723
4d(10) 733.454	5p(6) 193.519	6s(2) 39.1933
4f(14) 409.346	5d(10) 109.090	6p(6) 25.4114
7s(2) 4.75087	6d(1) 6.05150	5f(2) 14.5179

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

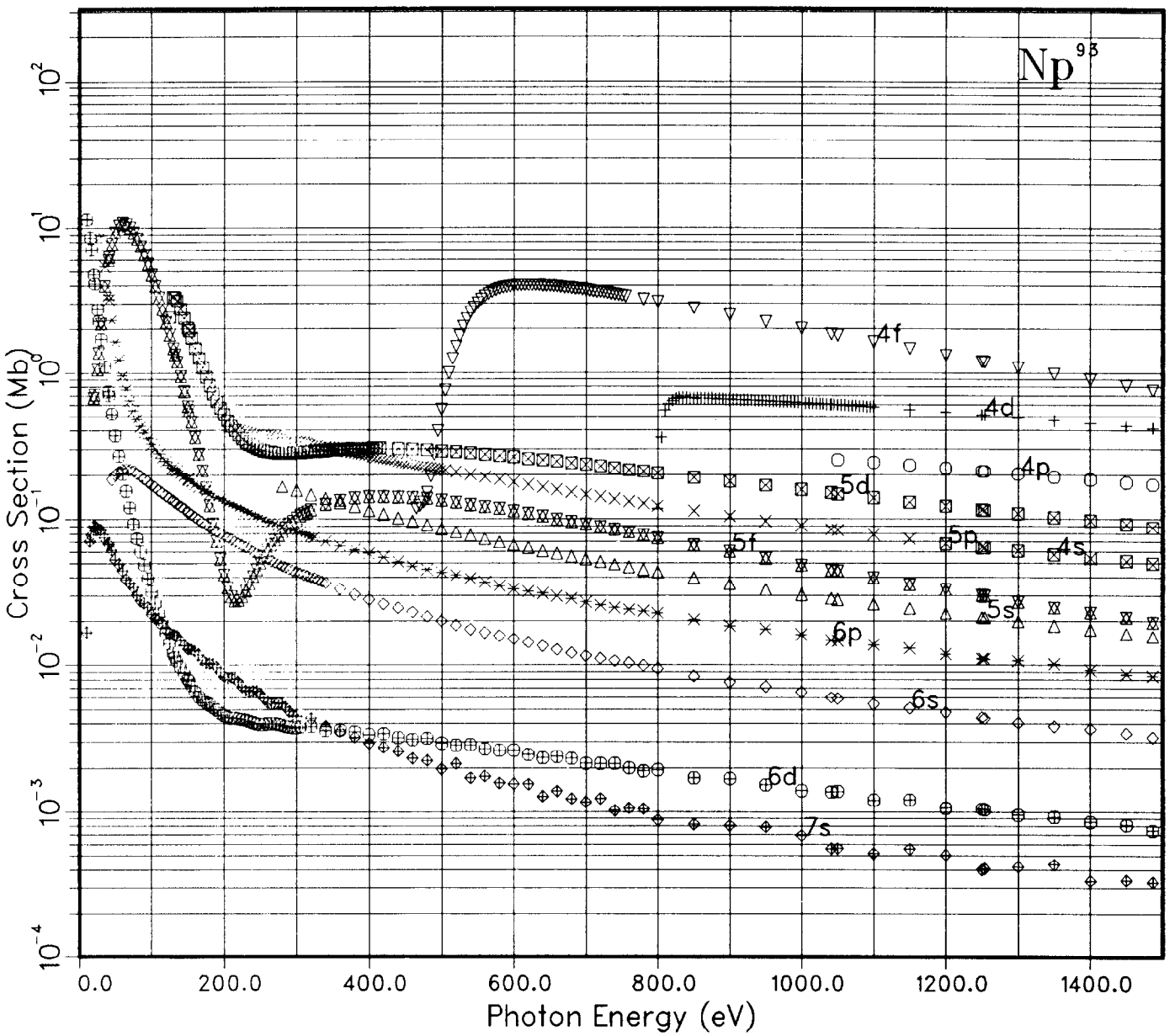


U binding energies(eV) are:

1s(2) 100802.	2s(2) 17549.8	2p(6) 17000.1
3s(2) 4443.89	3p(6) 4170.99	4s(2) 1131.37
3d(10) 3657.13	4p(6) 1004.30	5s(2) 251.562
4d(10) 766.063	5p(6) 201.954	6s(2) 40.3130
4f(14) 434.731	5d(10) 114.798	6p(6) 26.0944
7s(2) 4.80256	6d(1) 6.11137	5f(3) 16.0947

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

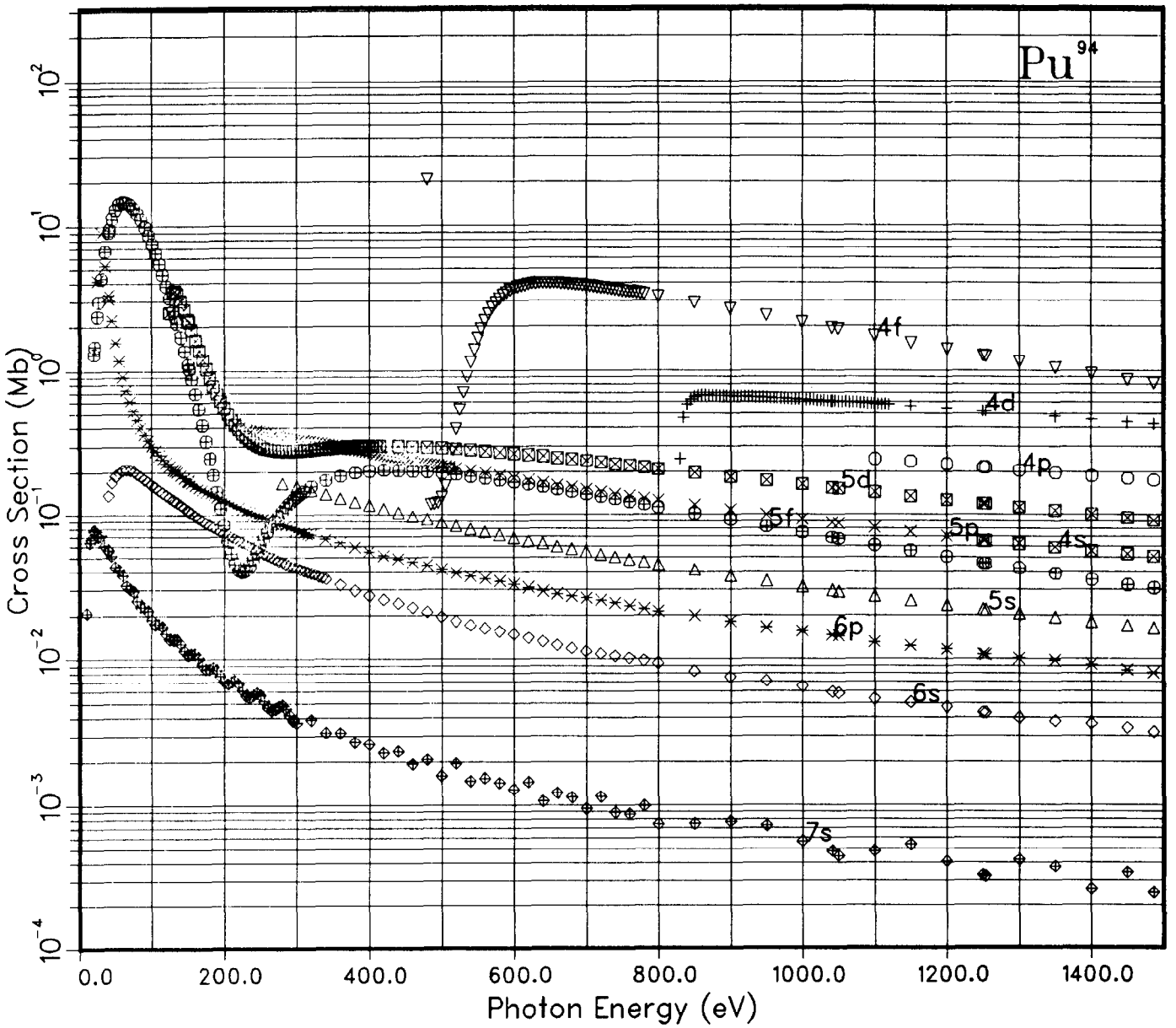


Np binding energies(eV) are:

1s(2) 103091.	2s(2) 17989.6	2p(6) 17432.7
3s(2) 4572.71	3p(6) 4295.55	4s(2) 1171.66
3d(10) 3773.64	4p(6) 1042.08	5s(2) 261.272
4d(10) 798.970	5p(6) 210.265	6s(2) 41.3660
4f(14) 460.385	5d(10) 120.393	6p(6) 26.7270
7s(2) 4.85018	6d(1) 6.15082	5f(4) 17.6226

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

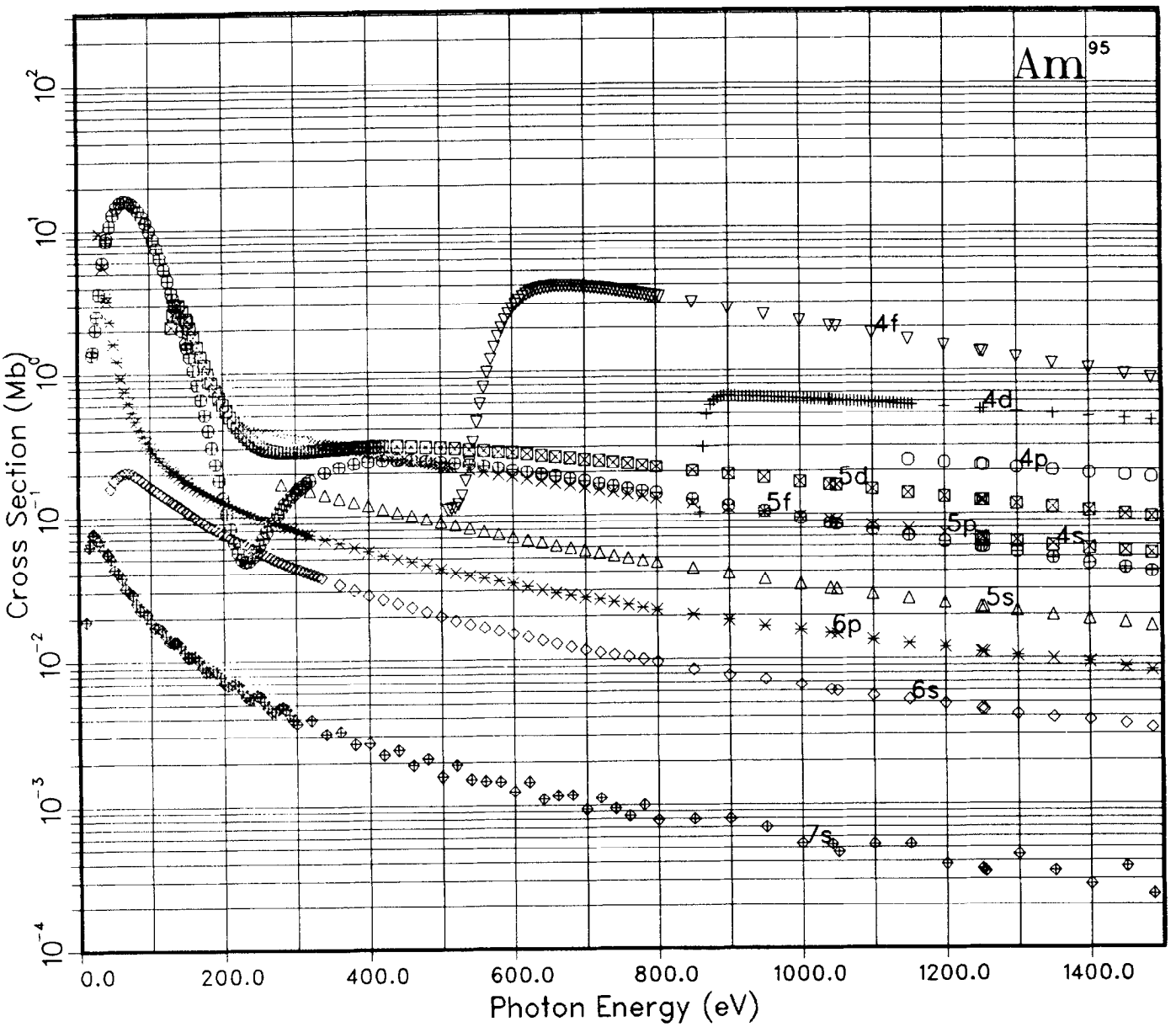


Pu binding energies(eV) are:

1s(2) 105401.	2s(2) 18428.4	2p(6) 17864.4
3s(2) 4696.45	3p(6) 4415.03	4s(2) 1205.80
3d(10) 3885.08	4p(6) 1073.70	5s(2) 264.858
4d(10) 825.683	5p(6) 212.547	6s(2) 39.5008
4f(14) 479.788	5d(10) 120.238	6p(6) 24.9148
7s(2) 4.56856	5f(6) 14.5954	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

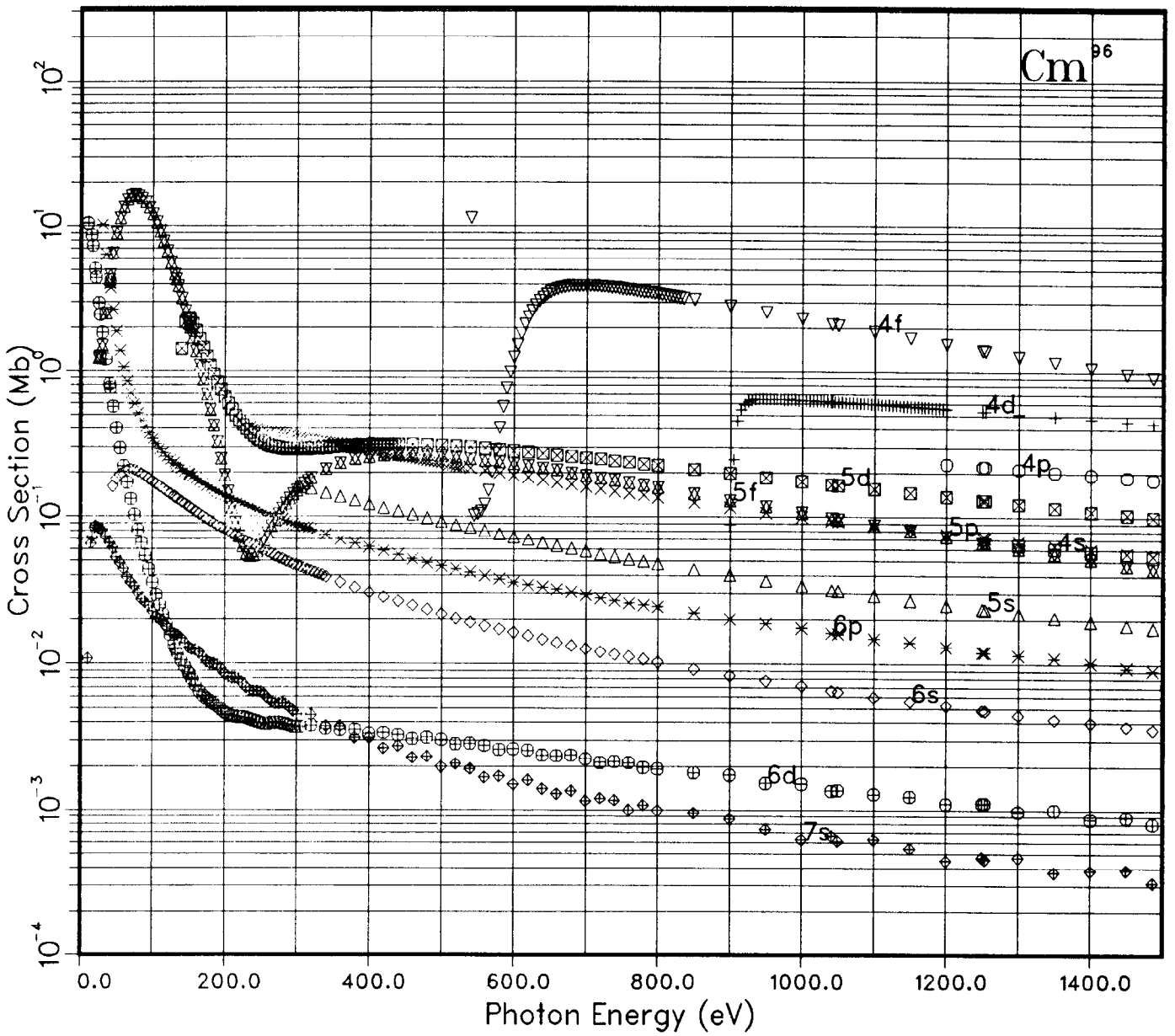


Am binding energies(eV) are:

1s(2) 107741.	2s(2) 18878.7	2p(6) 18307.5
3s(2) 4828.25	3p(6) 4542.55	4s(2) 1246.62
3d(10) 4004.53	4p(6) 1111.98	5s(2) 274.233
4d(10) 859.060	5p(6) 220.526	6s(2) 40.3783
4f(14) 505.884	5d(10) 125.513	6p(6) 25.4060
7s(2) 4.60665	5f(7) 15.8539	

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

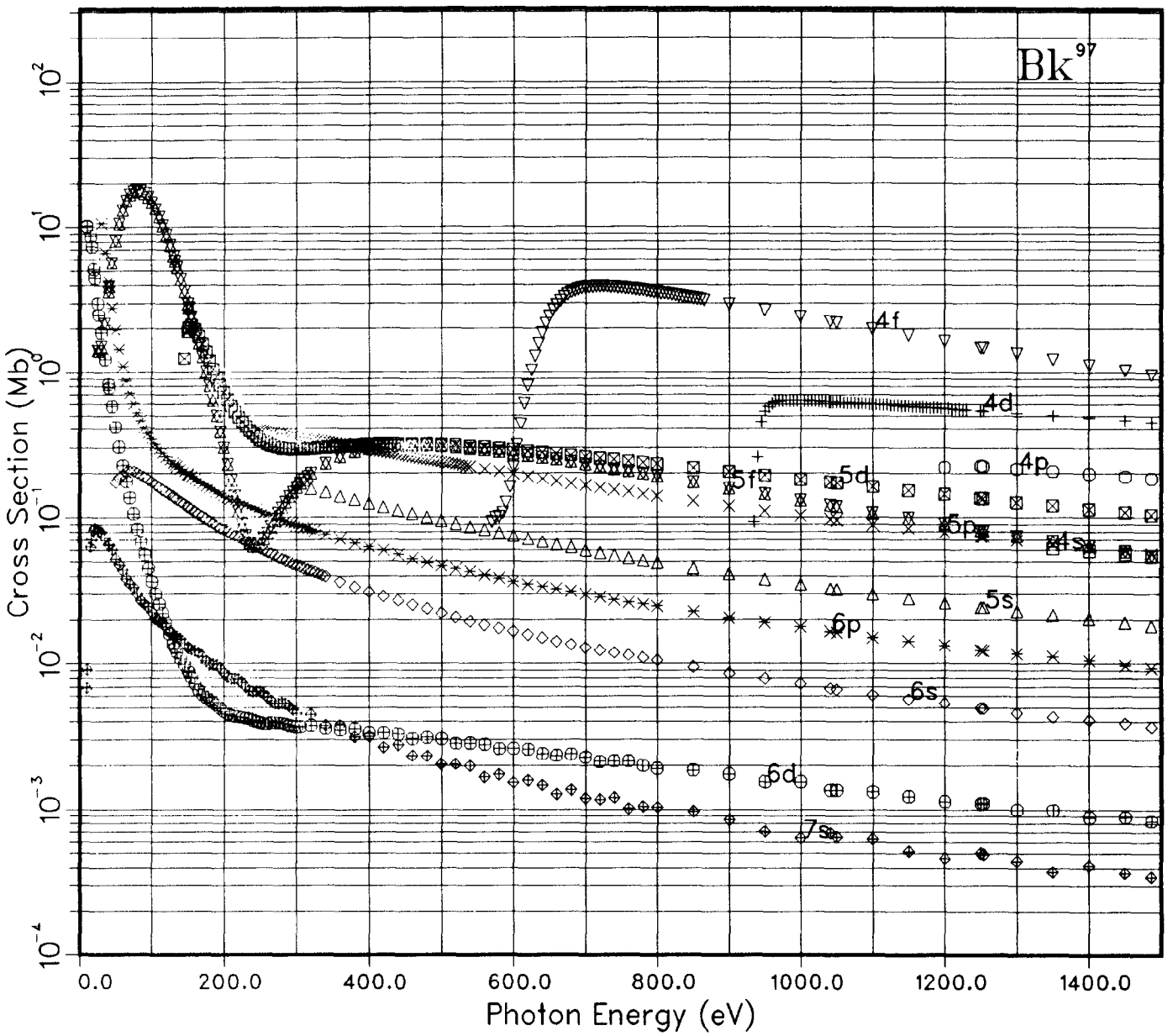


Cm binding energies(eV) are:

1s(2) 110114.	2s(2) 19340.9	2p(6) 18762.4
3s(2) 4968.67	3p(6) 4678.68	4s(2) 1294.68
3d(10) 4132.52	4p(6) 1157.49	5s(2) 289.899
4d(10) 899.640	5p(6) 234.704	6s(2) 44.2339
4f(14) 539.214	5d(10) 136.728	6p(6) 28.3991
7s(2) 4.97943	6d(1) 6.17531	5f(7) 21.9775

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

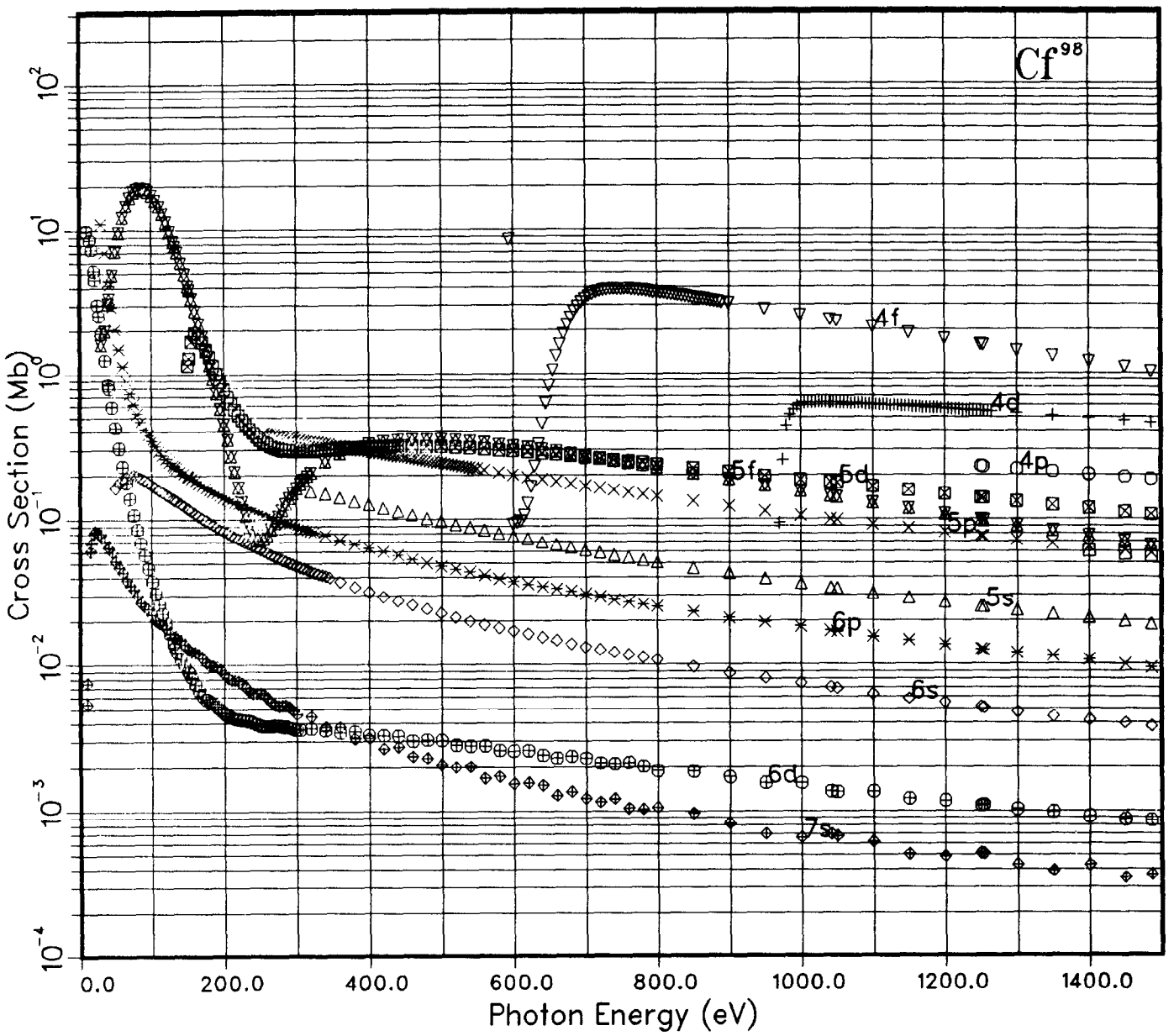


Bk binding energies(eV) are:

1s(2) 112506.	2s(2) 19802.0	2p(6) 19216.3
3s(2) 5103.89	3p(6) 4809.58	4s(2) 1336.45
3d(10) 4255.30	4p(6) 1196.71	5s(2) 299.340
4d(10) 933.911	5p(6) 242.746	6s(2) 45.1210
4f(14) 566.163	5d(10) 142.073	6p(6) 28.9011
7s(2) 5.02024	6d(1) 6.16170	5f(8) 23.3720

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

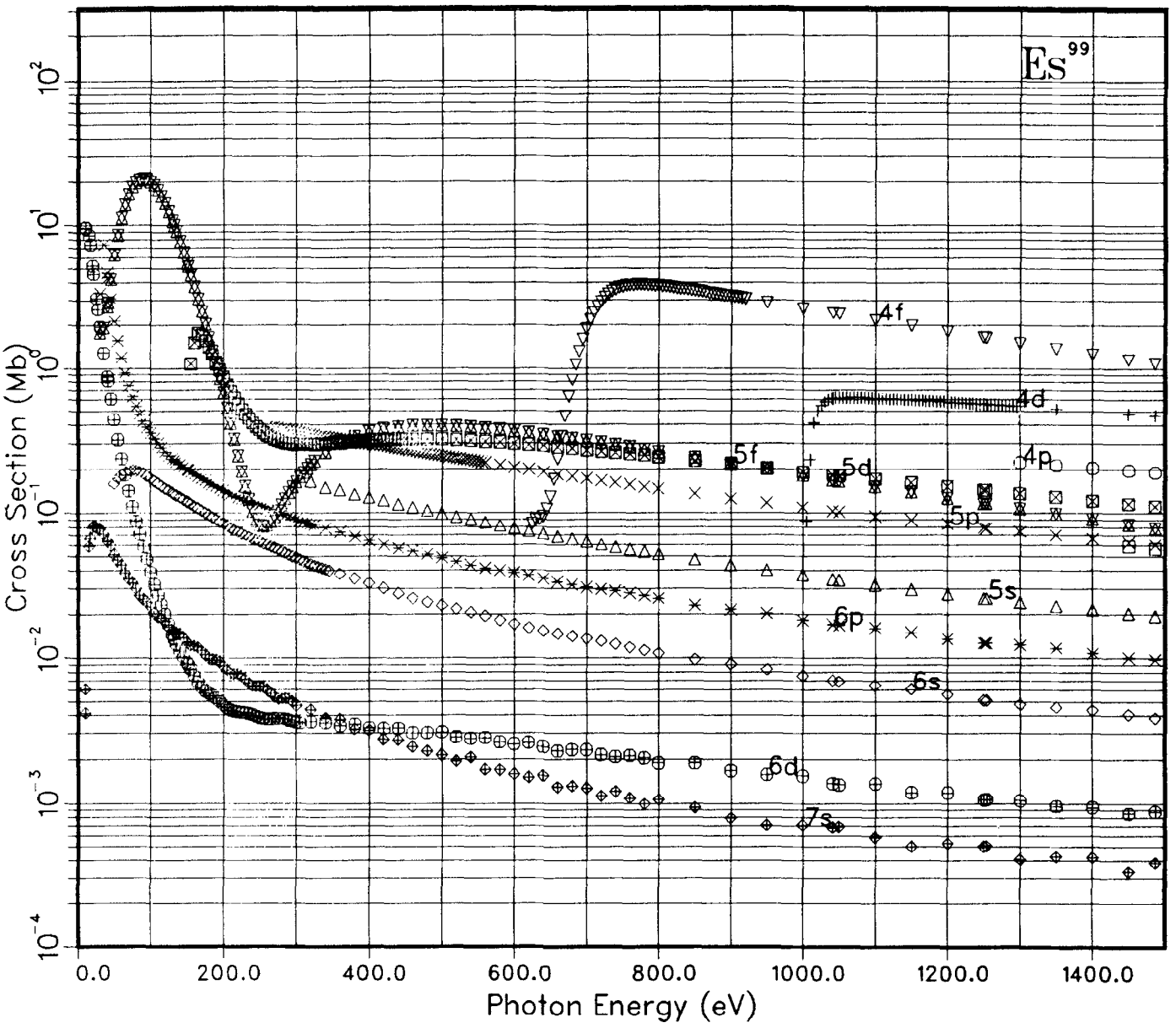


Cf binding energies(eV) are:

1s(2) 114924.	2s(2) 20268.5	2p(6) 19675.7
3s(2) 5240.76	3p(6) 4942.13	4s(2) 1378.64
3d(10) 4379.69	4p(6) 1236.33	5s(2) 308.750
4d(10) 968.573	5p(6) 250.756	6s(2) 45.9795
4f(14) 593.484	5d(10) 147.386	6p(6) 29.3814
7s(2) 5.05970	6d(1) 6.13858	5f(9) 24.7421

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

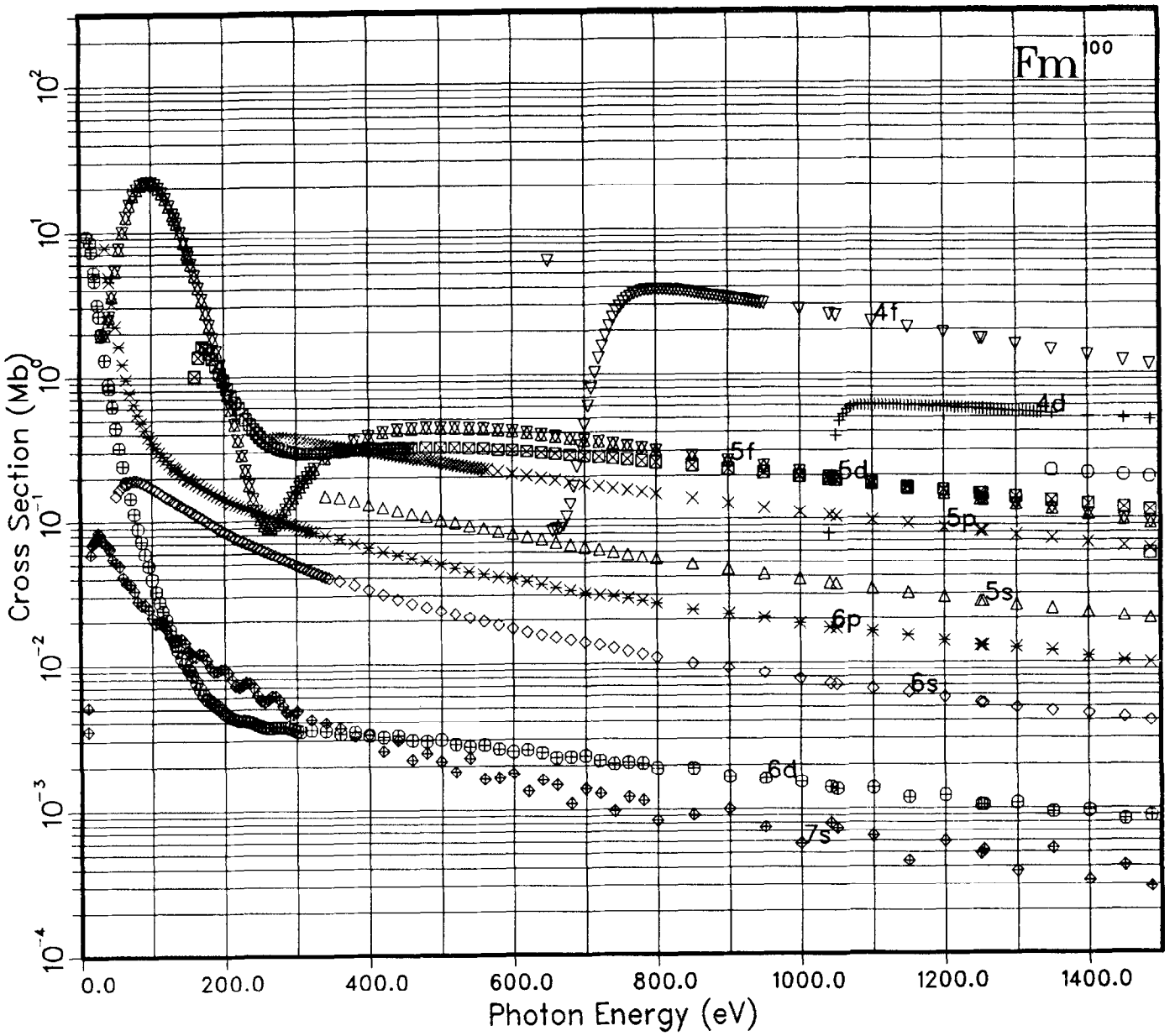


Es binding energies(eV) are:

1s(2) 117368.	2s(2) 20740.3	2p(6) 20140.3
3s(2) 5379.27	3p(6) 5076.32	4s(2) 1421.24
3d(10) 4505.69	4p(6) 1276.35	5s(2) 318.143
4d(10) 1003.62	5p(6) 258.747	6s(2) 46.8162
4f(14) 621.166	5d(10) 152.673	6p(6) 29.8439
7s(2) 5.09915	6d(1) 6.10864	5f(10) 26.0944

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

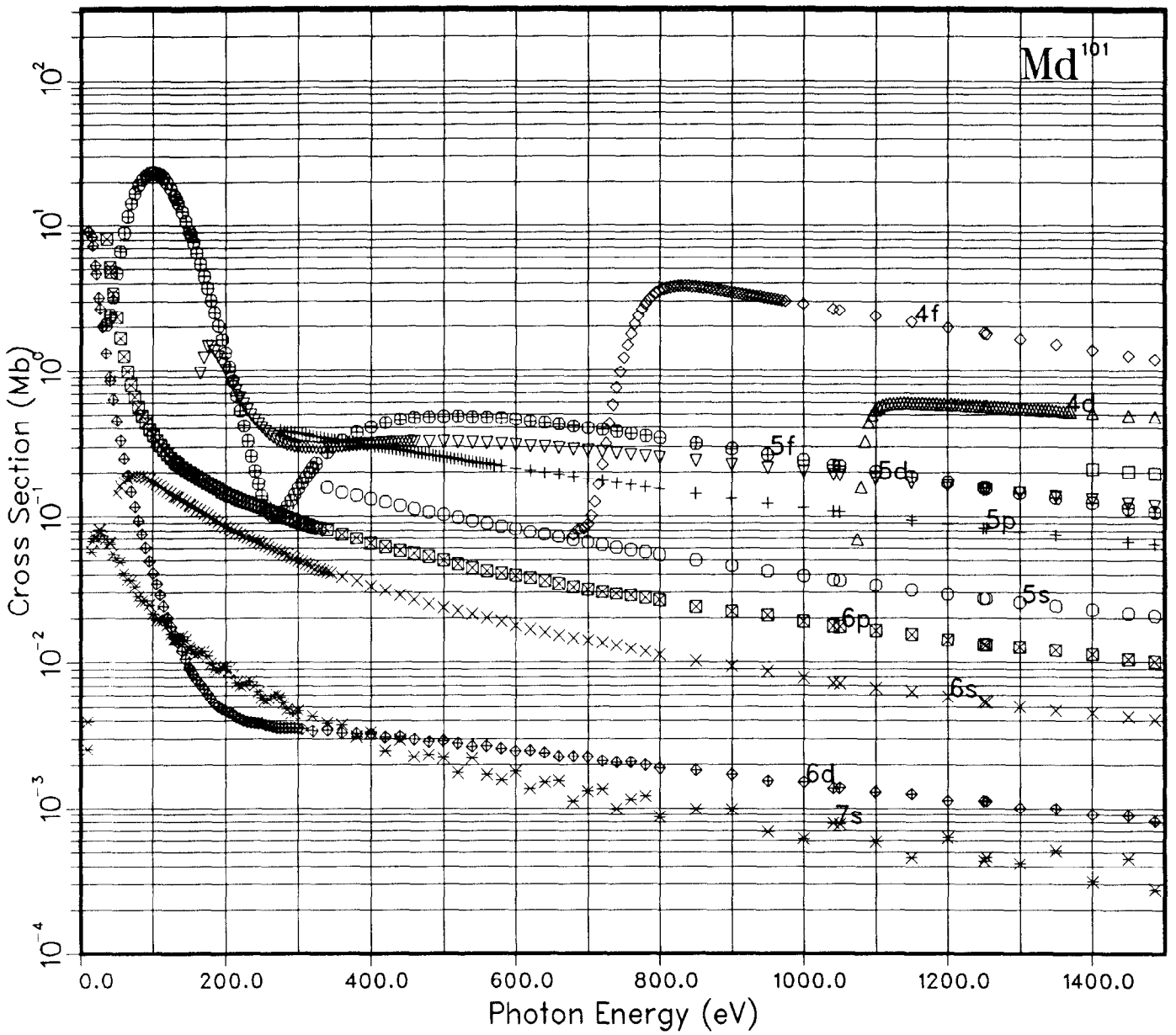


Fm binding energies(eV) are:

1s(2) 119838.	2s(2) 21217.5	2p(6) 20610.3
3s(2) 5519.43	3p(6) 5212.12	4s(2) 1464.27
3d(10) 4633.30	4p(6) 1316.80	5s(2) 327.514
4d(10) 1039.07	5p(6) 266.712	6s(2) 47.6284
4f(14) 649.228	5d(10) 157.932	6p(6) 30.2875
7s(2) 5.13725	6d(1) 6.07055	5f(11) 27.4182

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

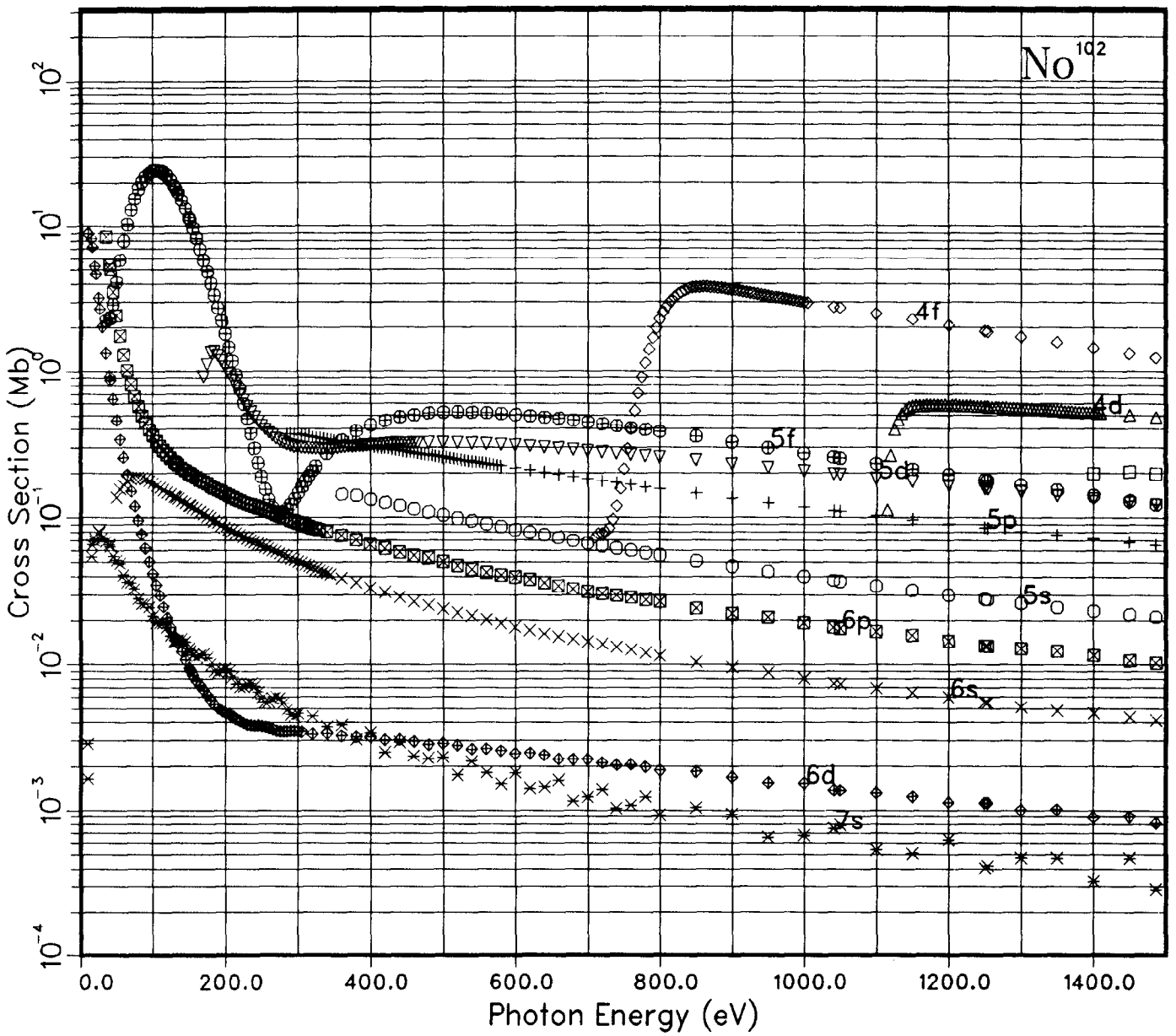


Md binding energies(eV) are:

1s(2) 122333.	2s(2) 21700.1	2p(6) 21085.7
3s(2) 5661.24	3p(6) 5349.59	4s(2) 1507.73
3d(10) 4762.54	4p(6) 1357.66	5s(2) 336.883
4d(10) 1074.92	5p(6) 274.673	6s(2) 48.4229
4f(14) 677.673	5d(10) 163.178	6p(6) 30.7146
7s(2) 5.17398	6d(1) 6.02701	5f(12) 28.7256

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leqslant Z \leqslant 103$

See page 6 for Explanation of Graphs

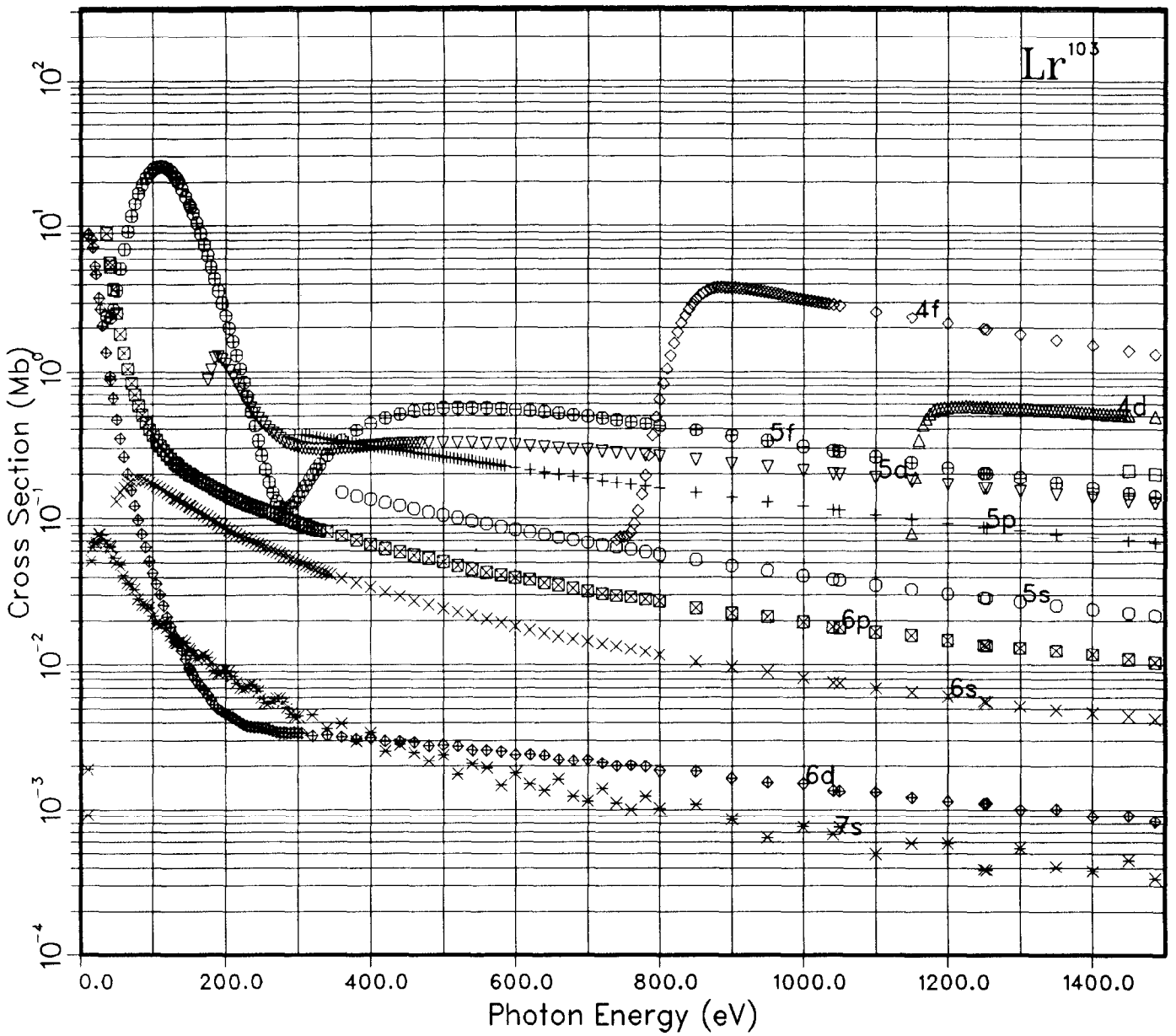


No binding energies(eV) are:

1s(2) 124854.	2s(2) 22188.1	2p(6) 21566.4
3s(2) 5804.73	3p(6) 5488.71	4s(2) 1551.64
3d(10) 4893.42	4p(6) 1398.96	5s(2) 346.253
4d(10) 1111.18	5p(6) 282.629	6s(2) 49.2011
4f(14) 706.506	5d(10) 168.414	6p(6) 31.1323
7s(2) 5.21071	6d(1) 5.97804	5f(13) 30.0167

GRAPH I. Atomic Subshell Photoionization Cross Sections for 0–1500 eV, $1 \leq Z \leq 103$

See page 6 for Explanation of Graphs

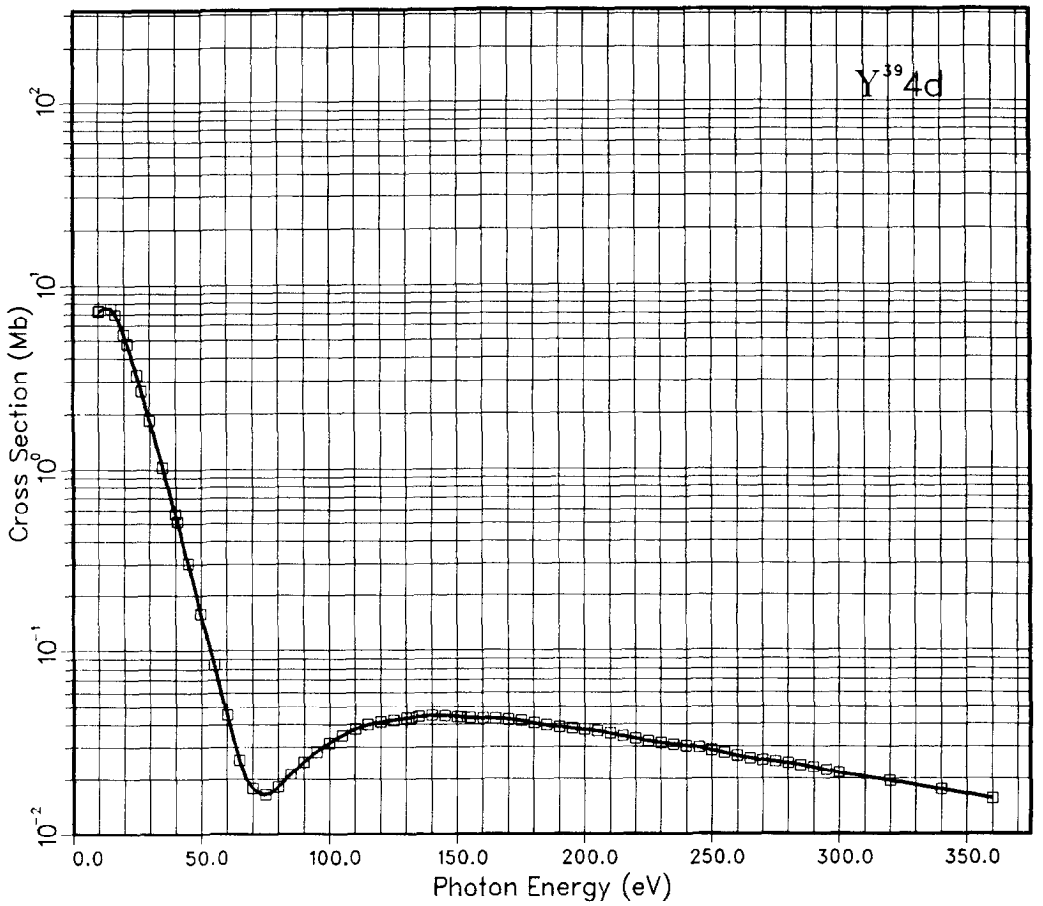


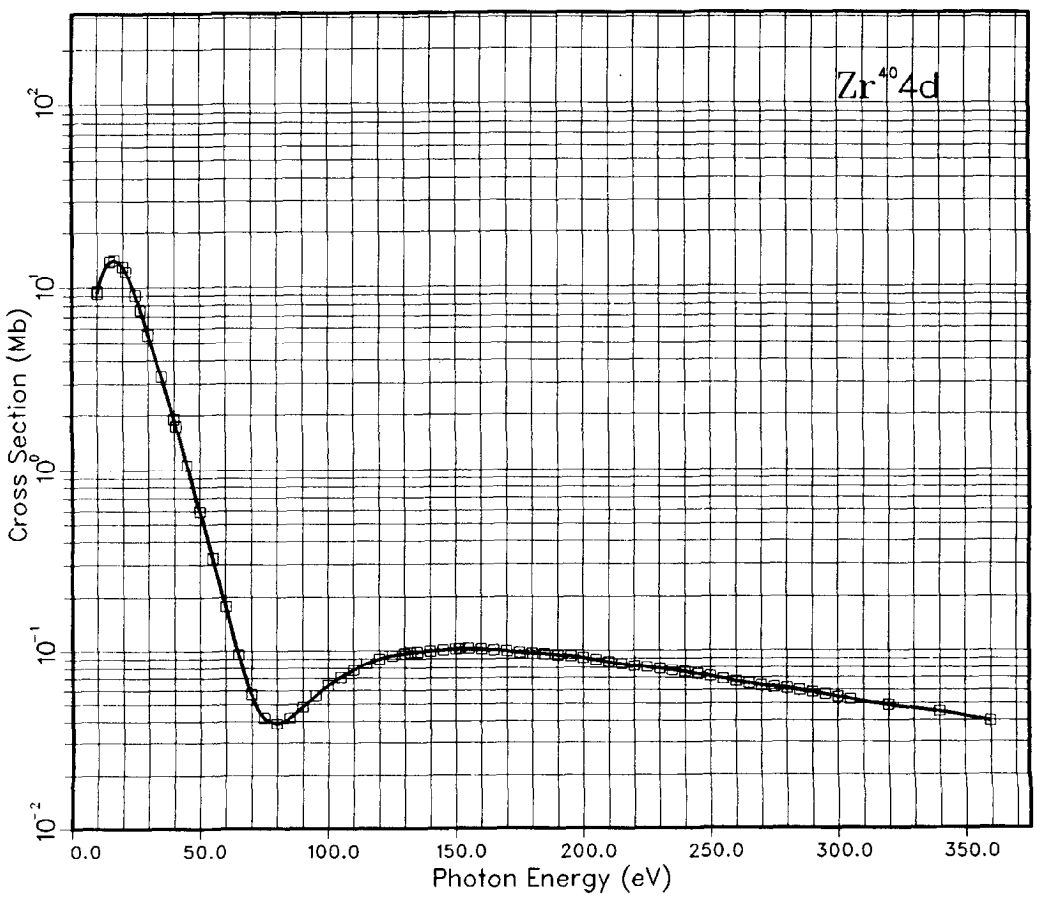
Lr binding energies(eV) are:

1s(2) 127401.	2s(2) 22681.4	2p(6) 22052.6
3s(2) 5949.90	3p(6) 5629.49	4s(2) 1595.98
3d(10) 5025.92	4p(6) 1440.69	5s(2) 355.627
4d(10) 1147.87	5p(6) 290.585	6s(2) 49.9671
4f(14) 735.737	5d(10) 173.642	6p(6) 31.5364
7s(2) 5.24745	6d(1) 5.92498	5f(14) 31.2929

GRAPH II. Photoionization Cross Sections for the $4d$ ($39 \leq Z \leq 71$) and $5d$ ($64 \leq Z \leq 100$) Subshells near the Cooper Minimum

See page 6 for Explanation of Graphs





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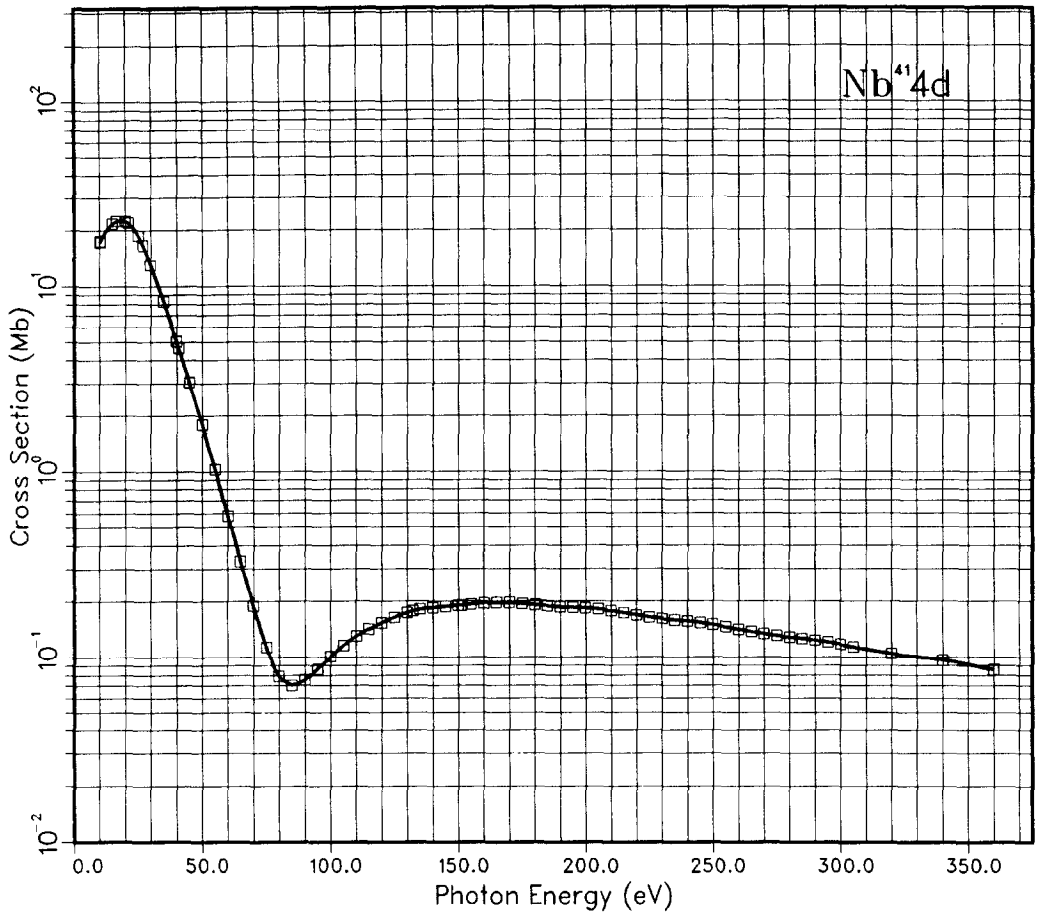

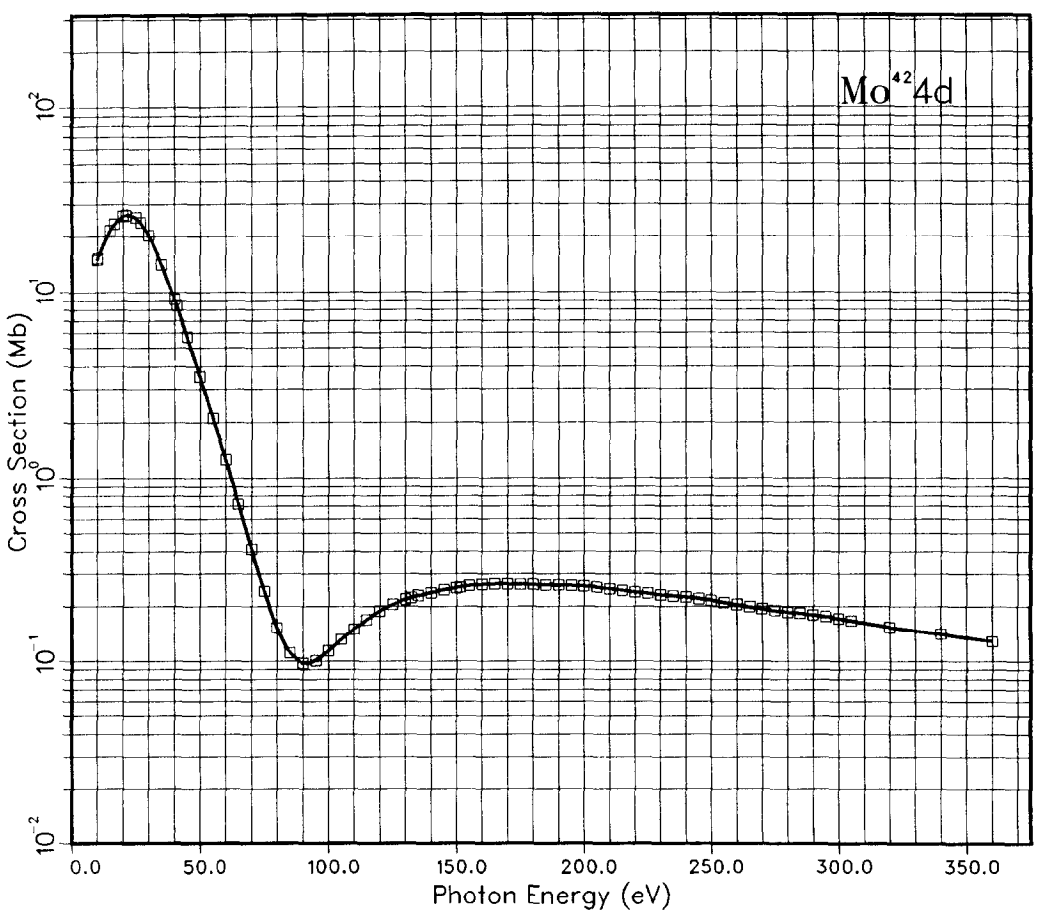

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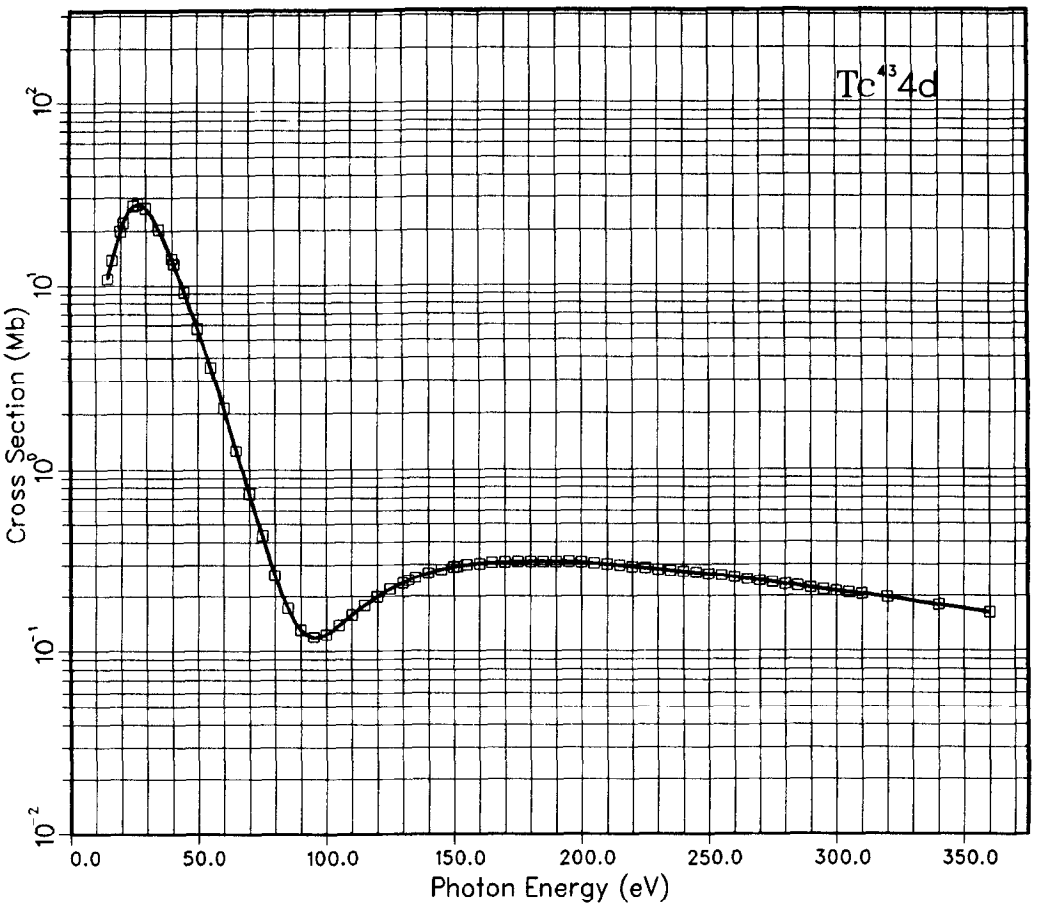

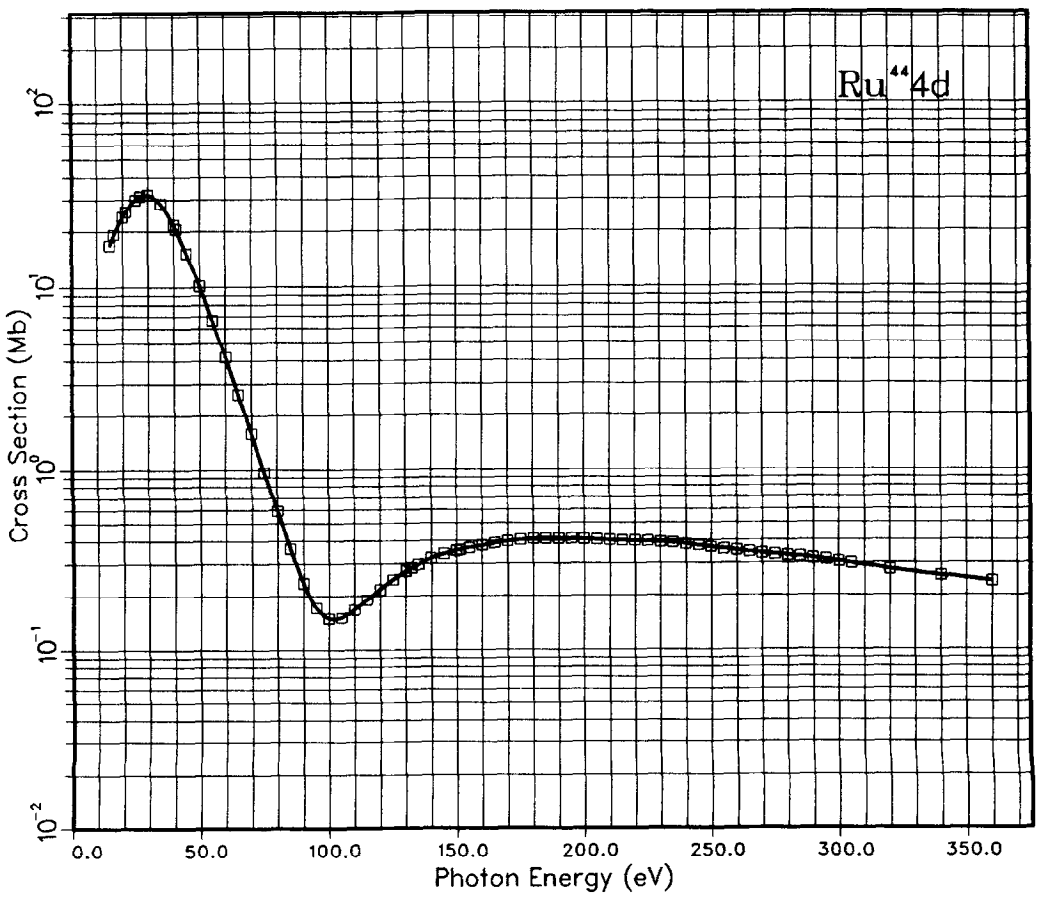

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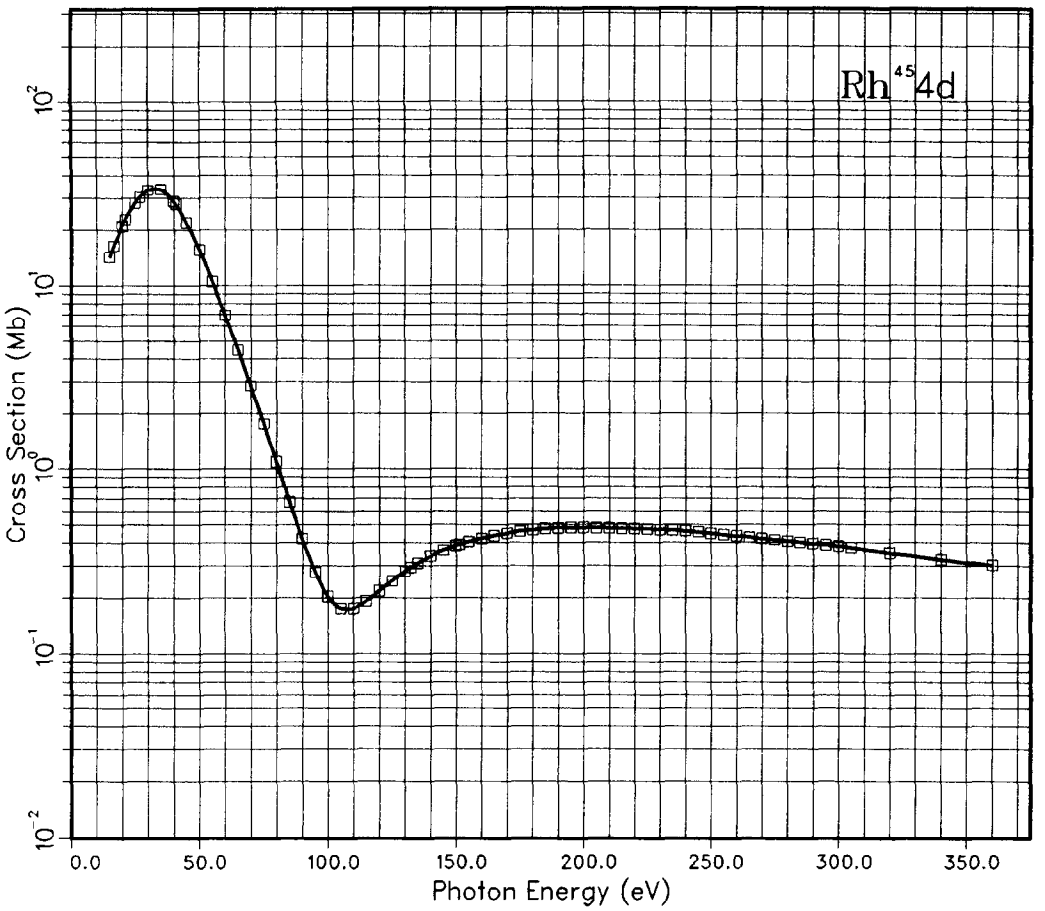

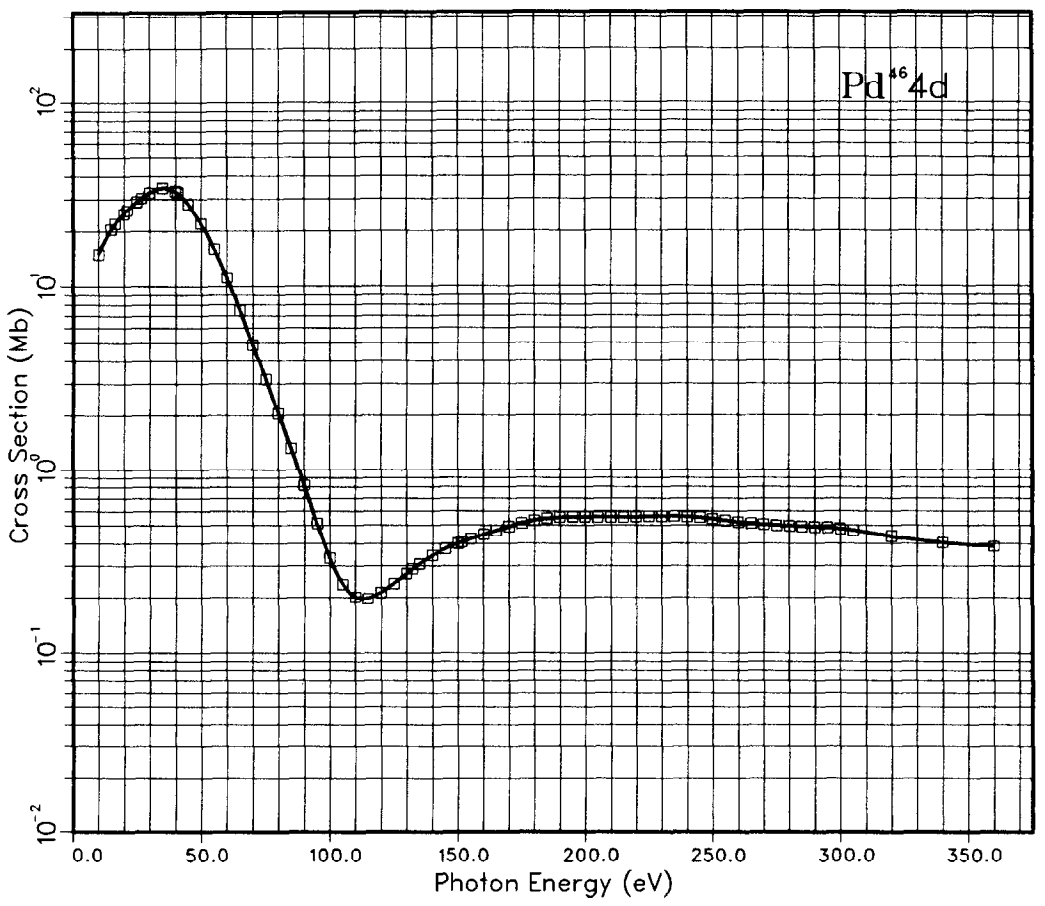

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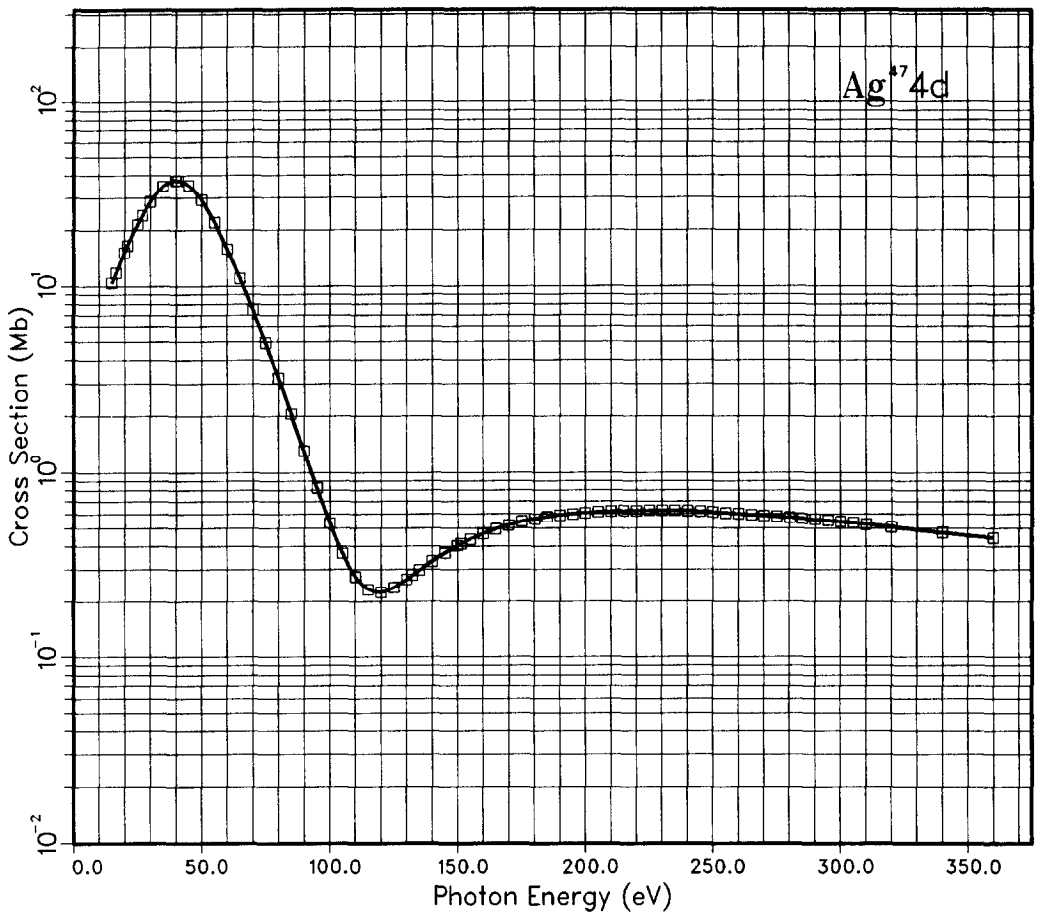

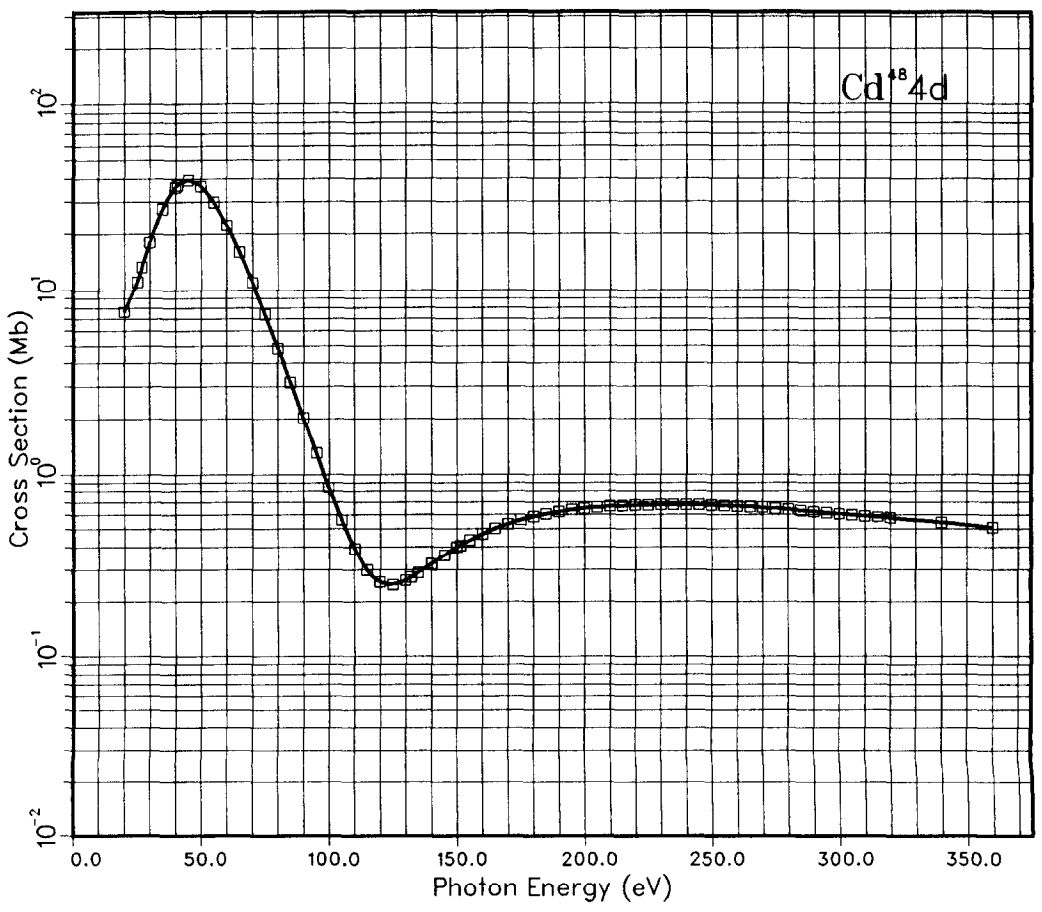

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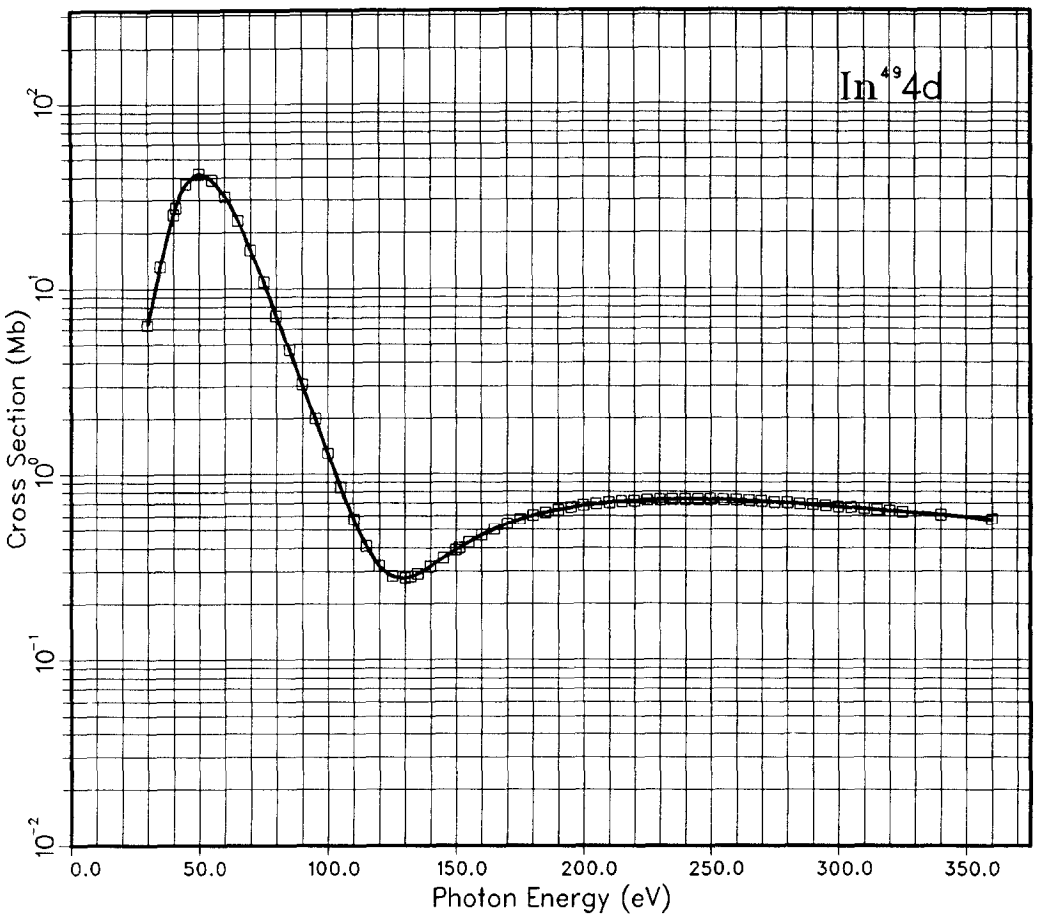

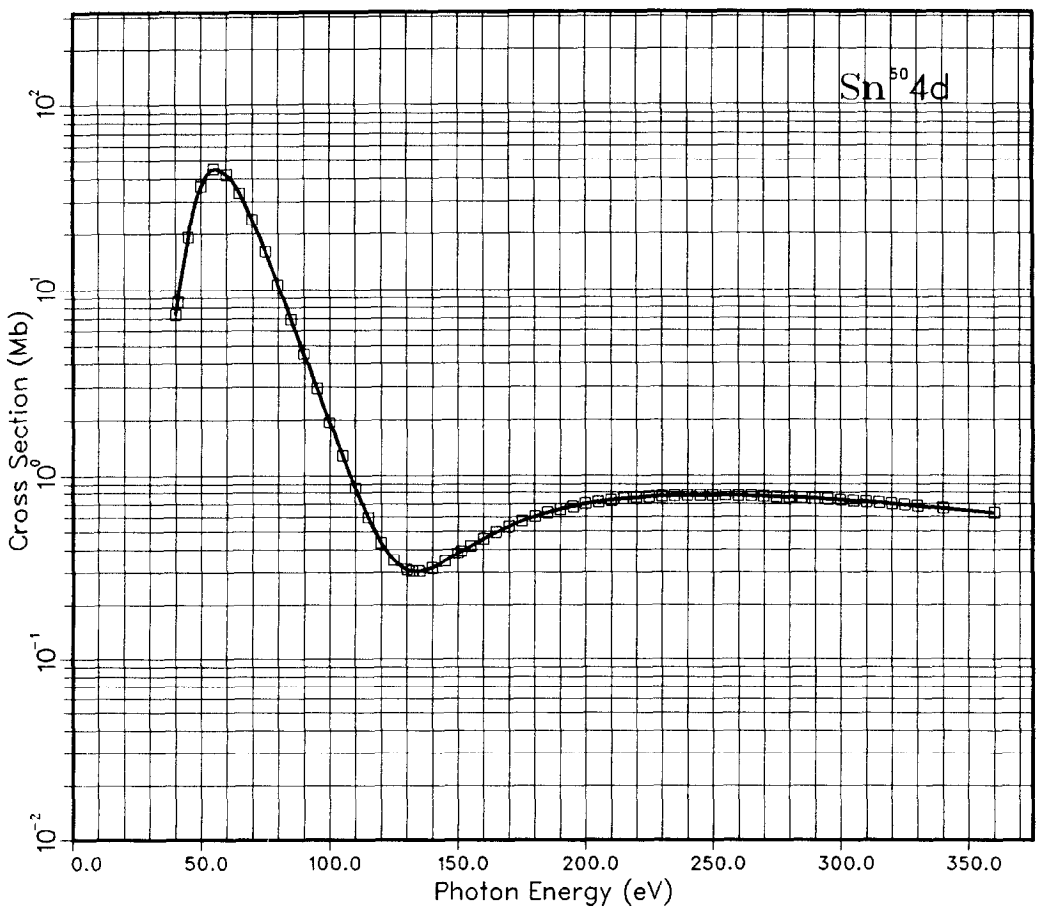

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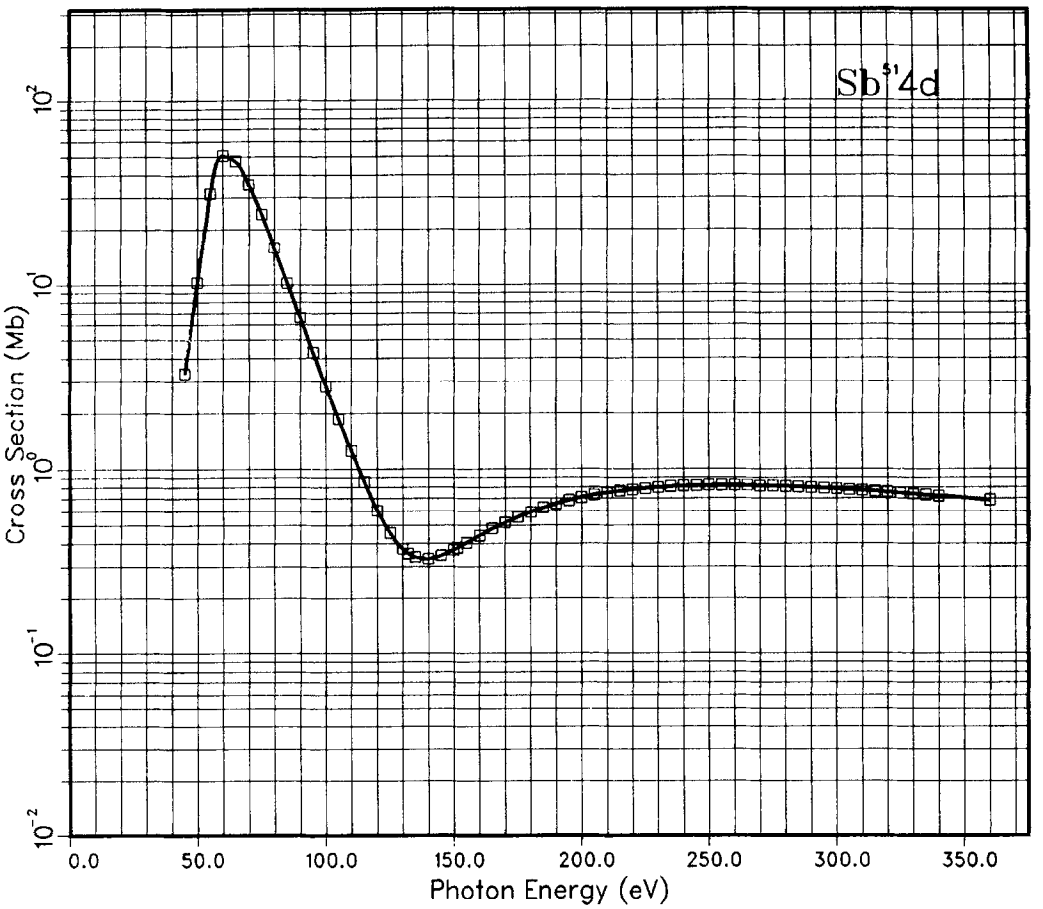

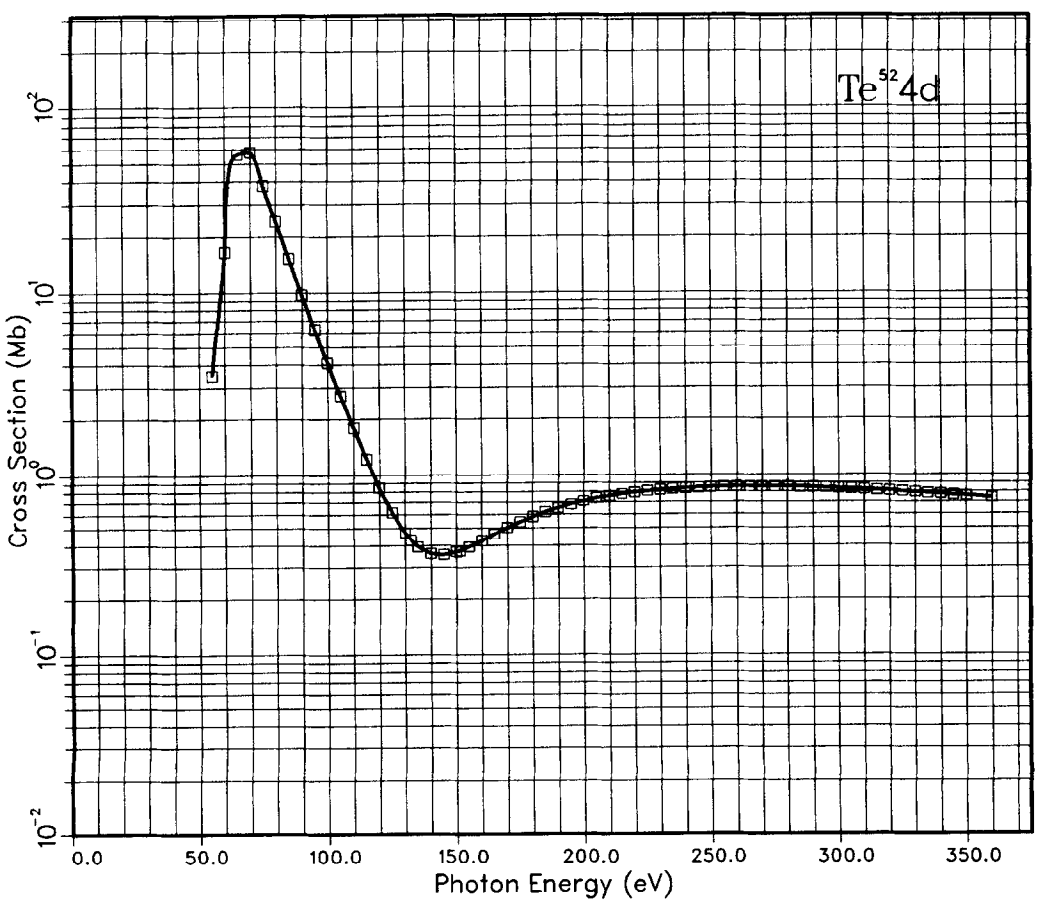

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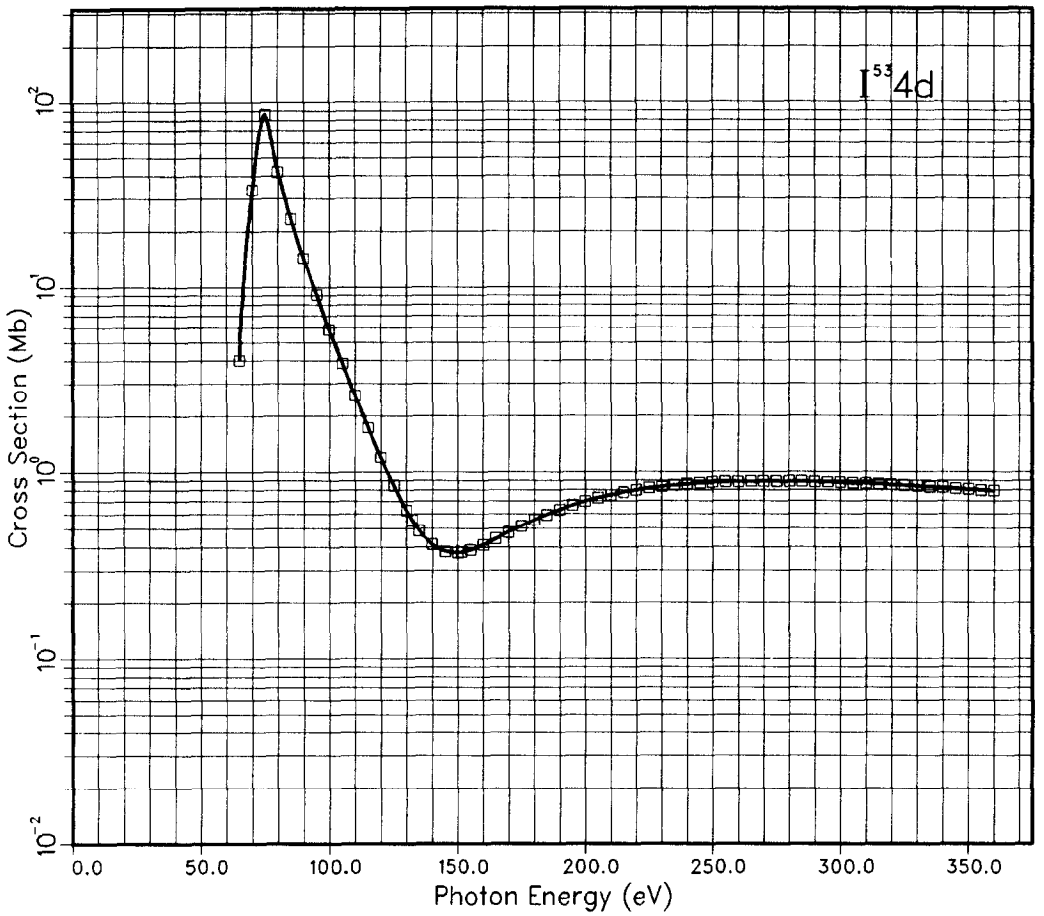

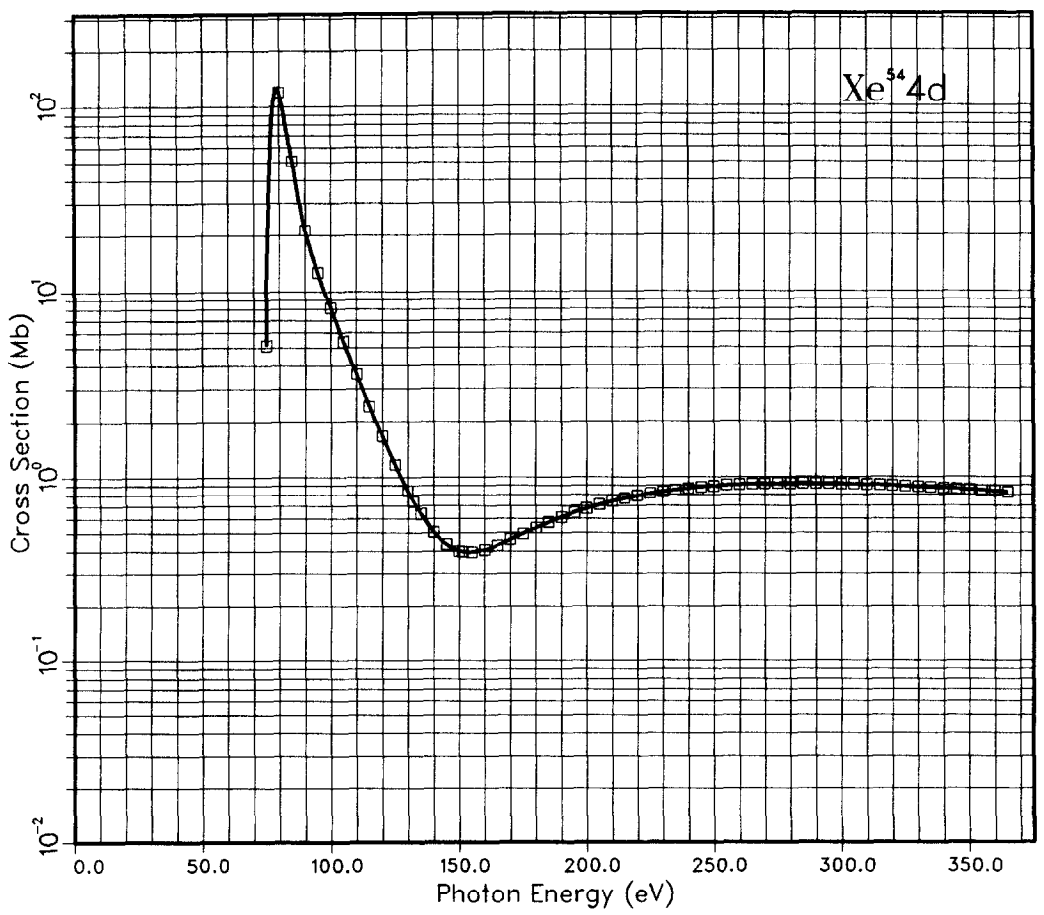

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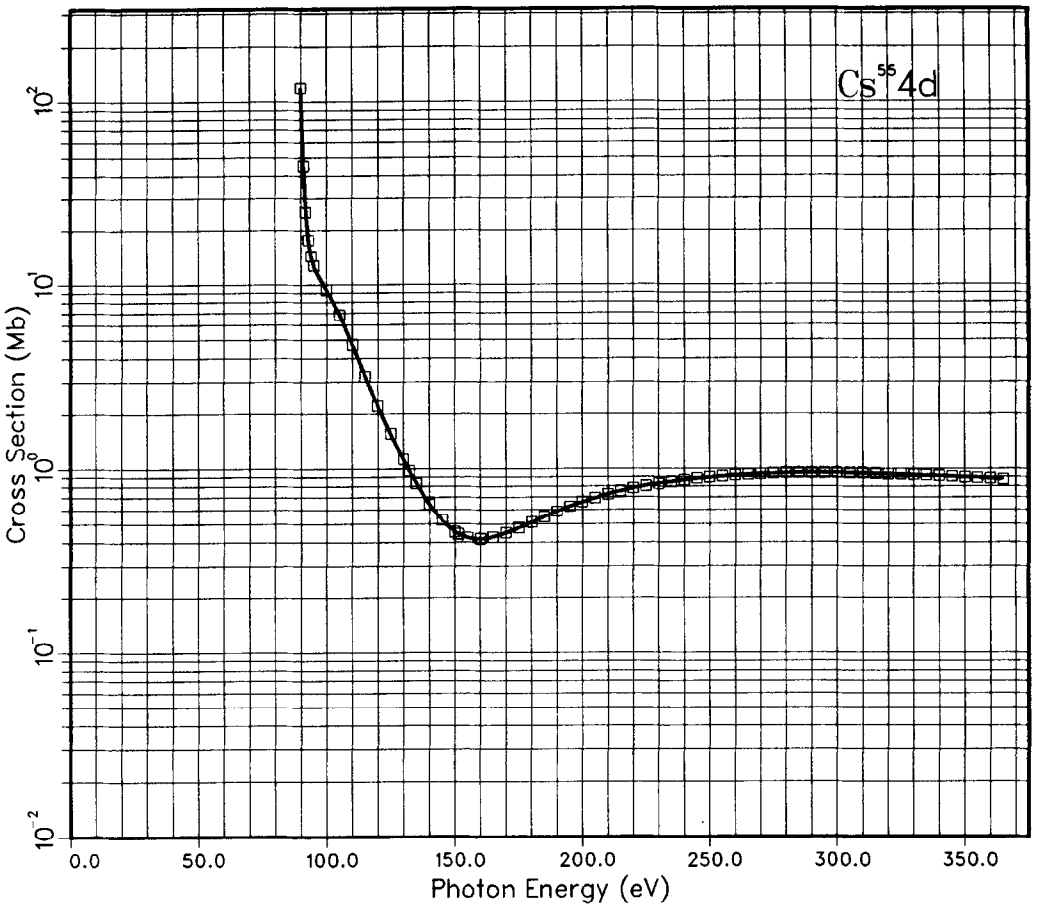

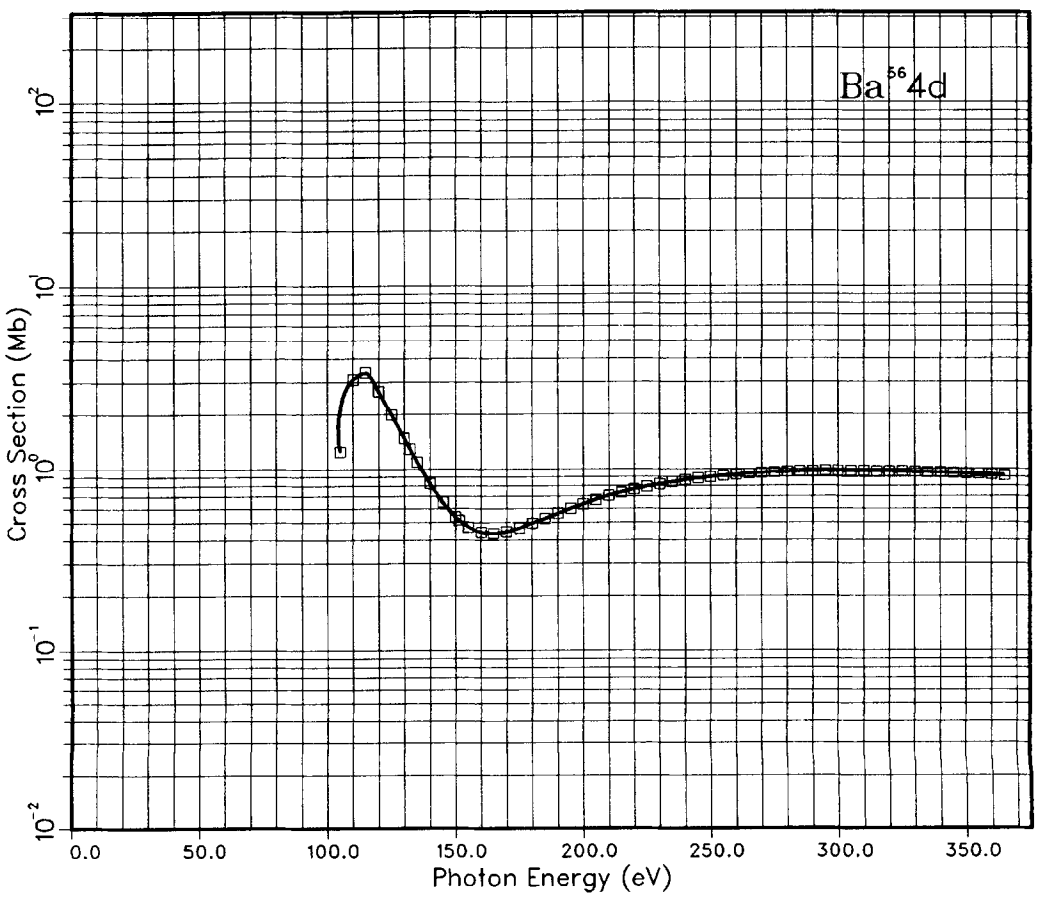

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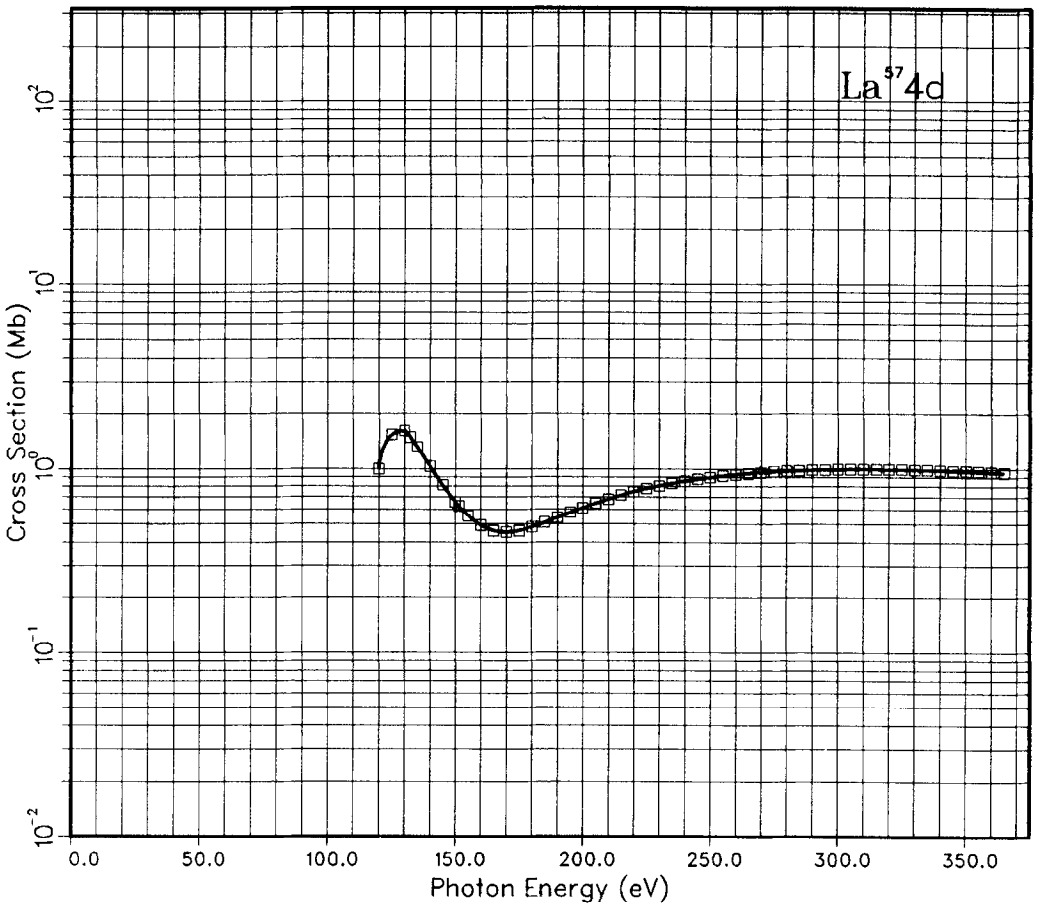

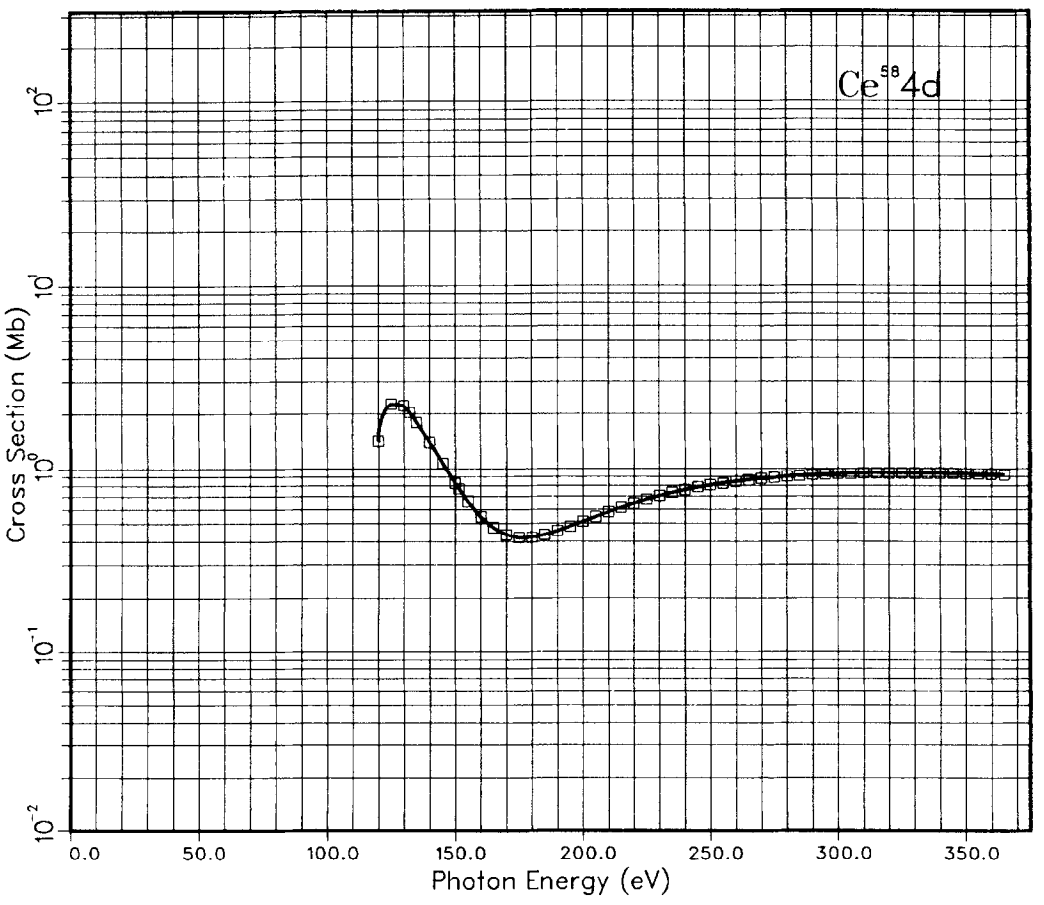

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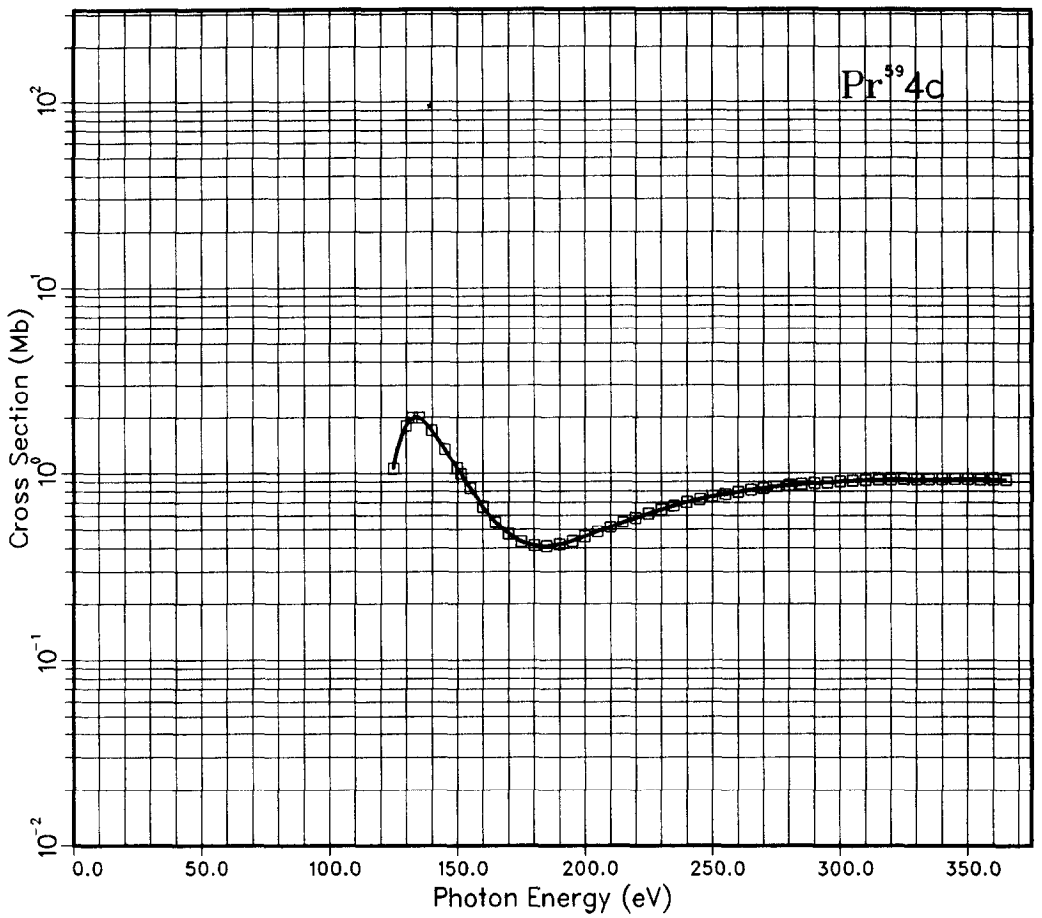

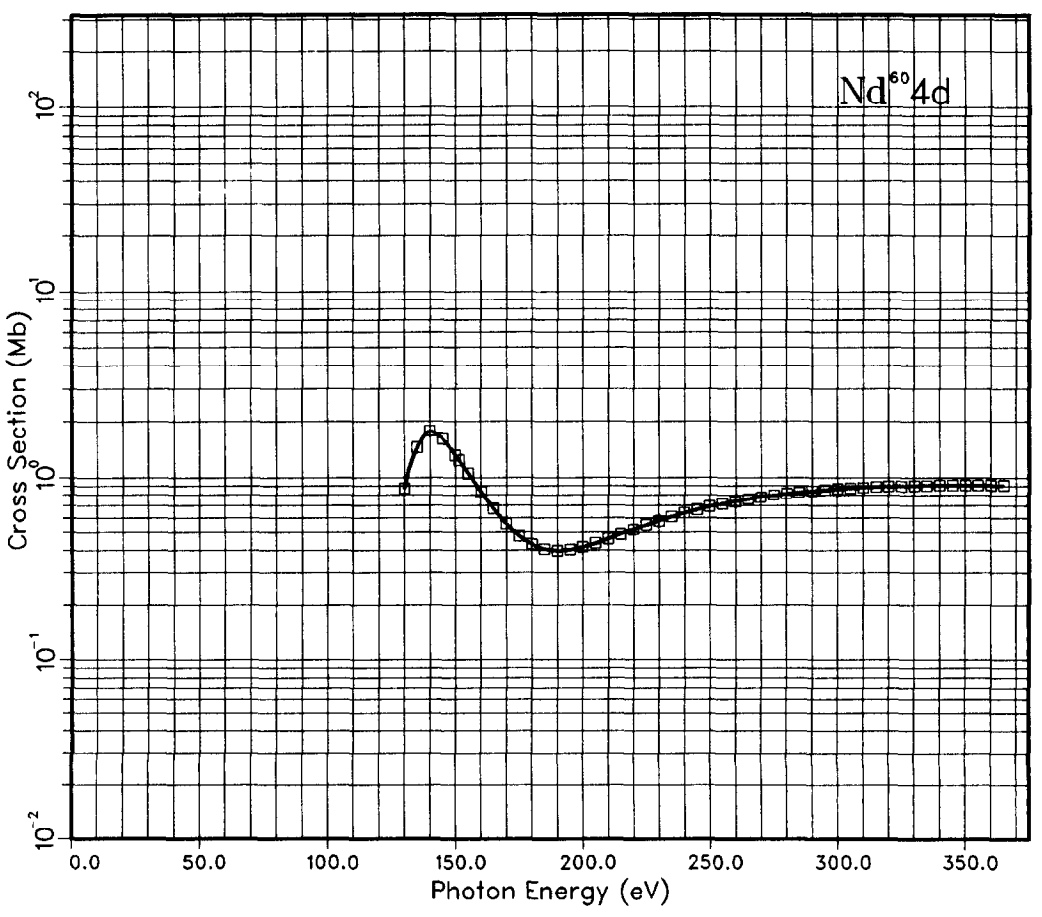

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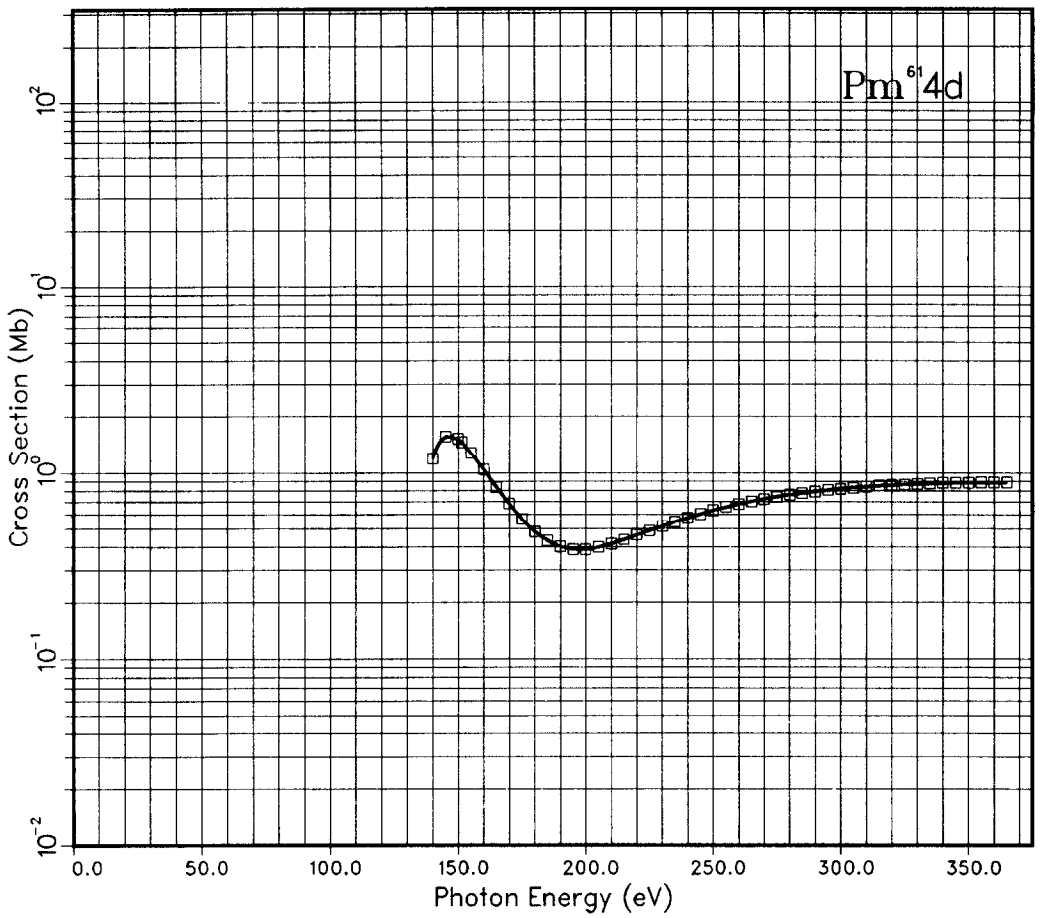

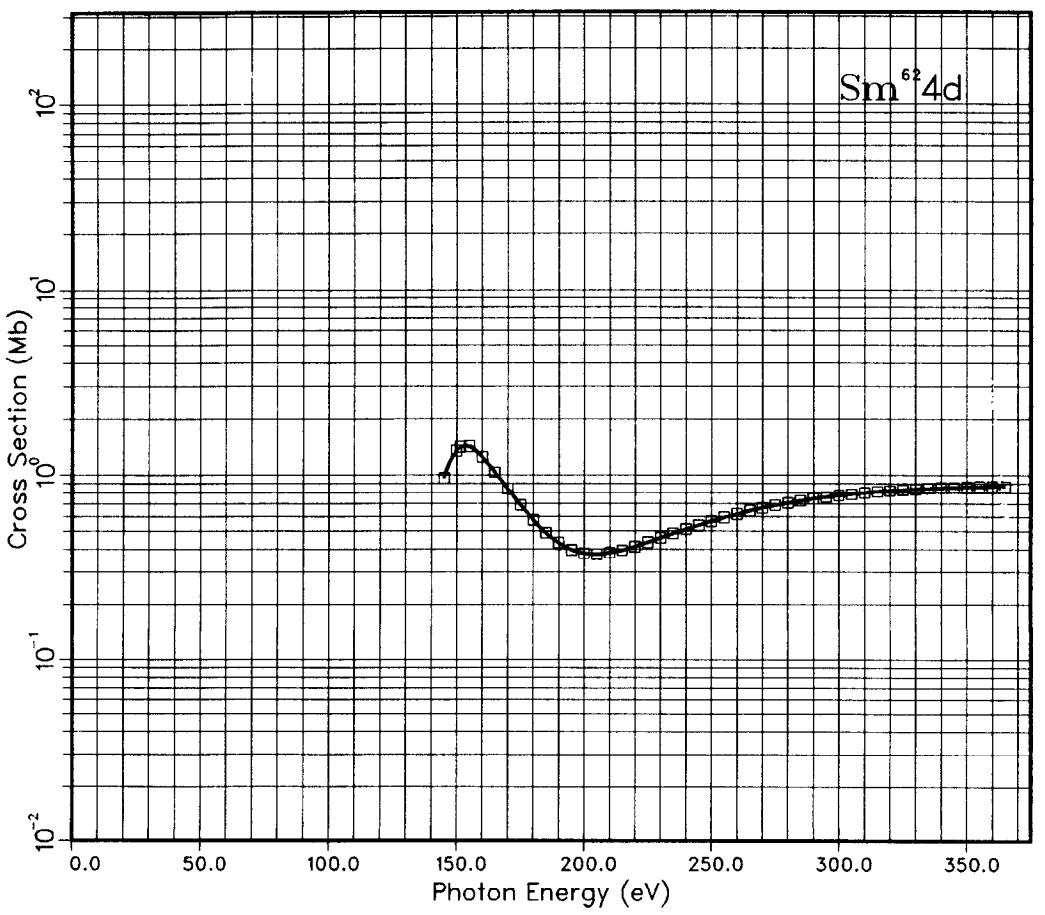

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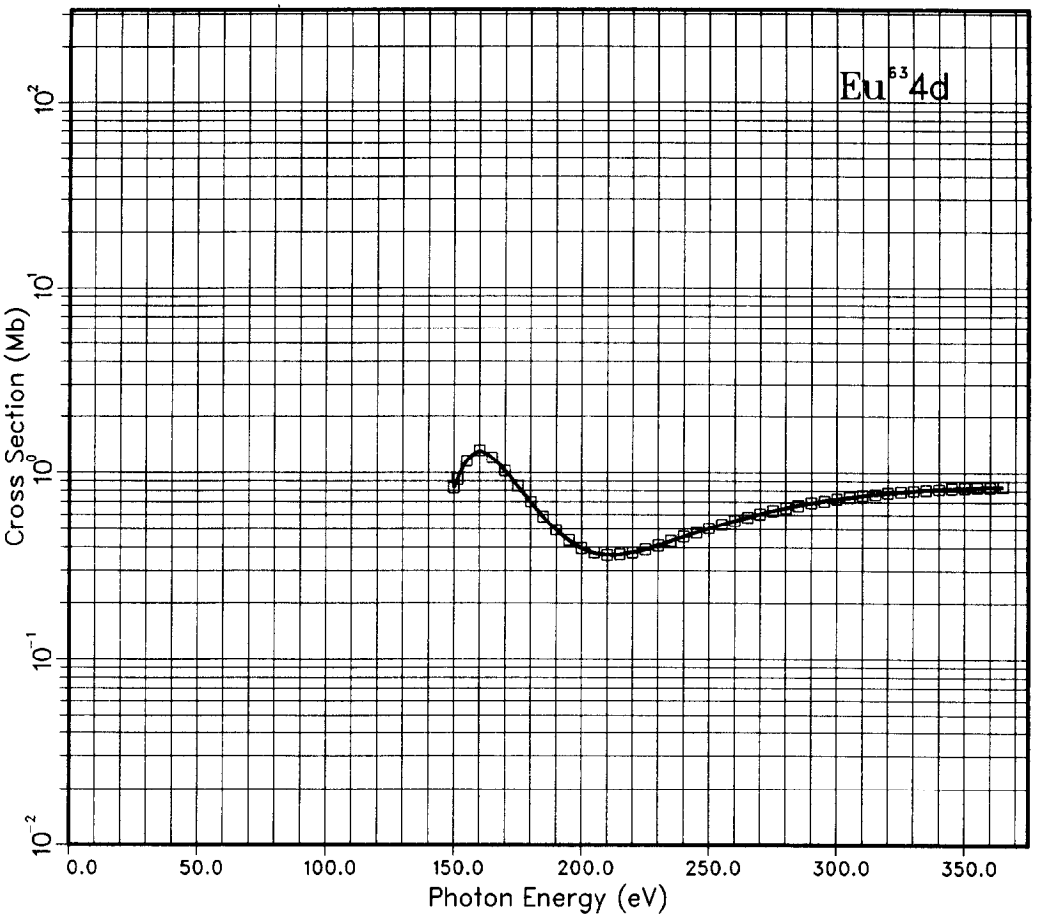

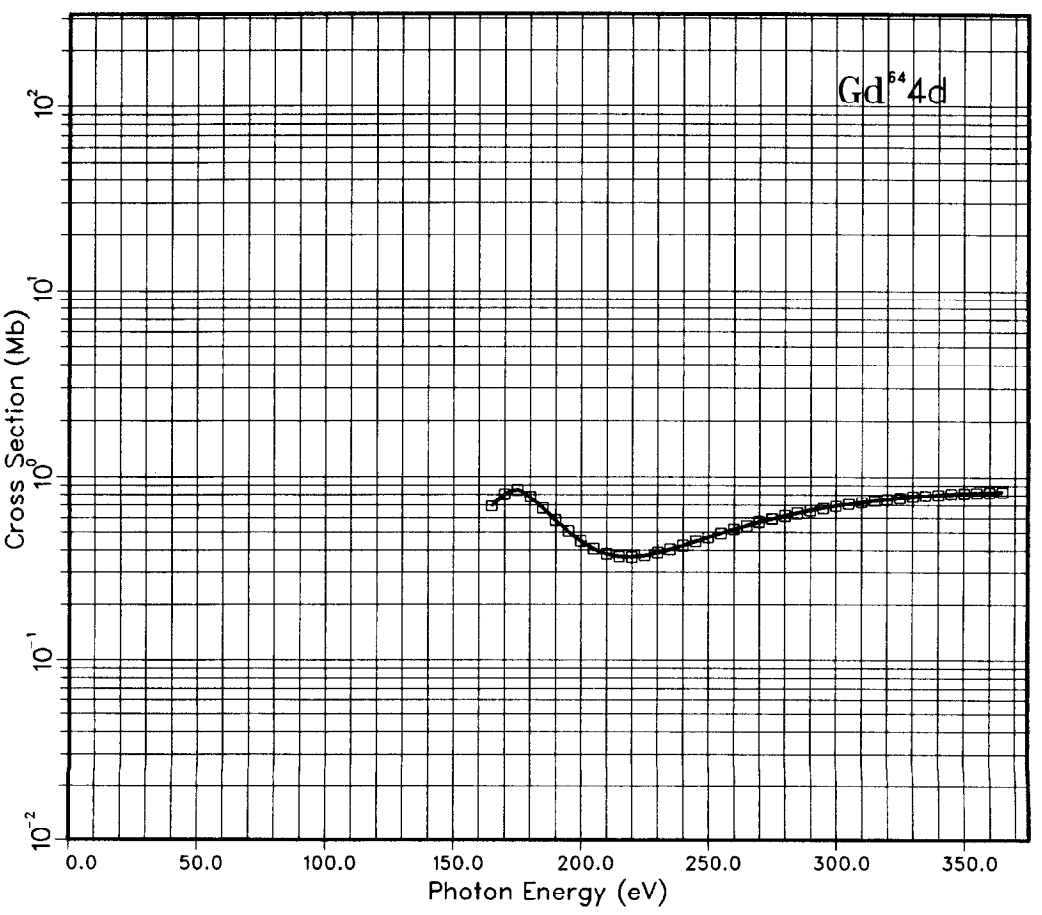

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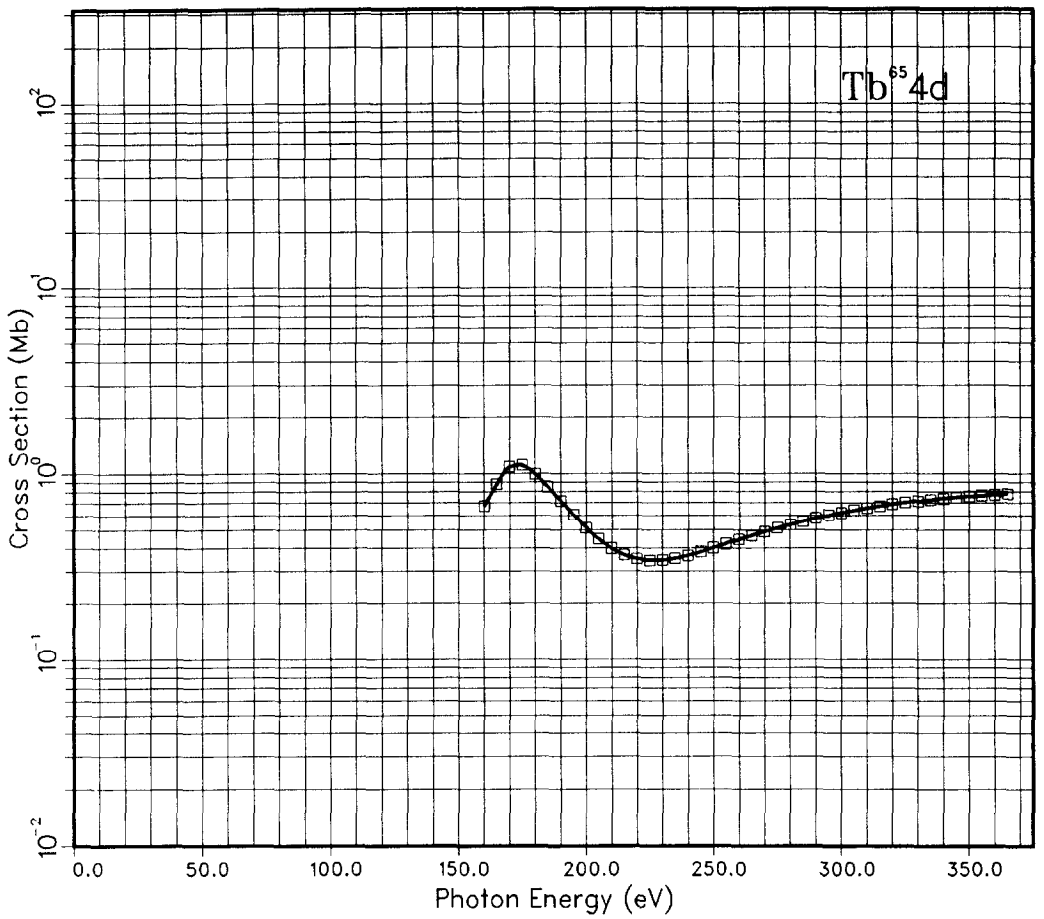

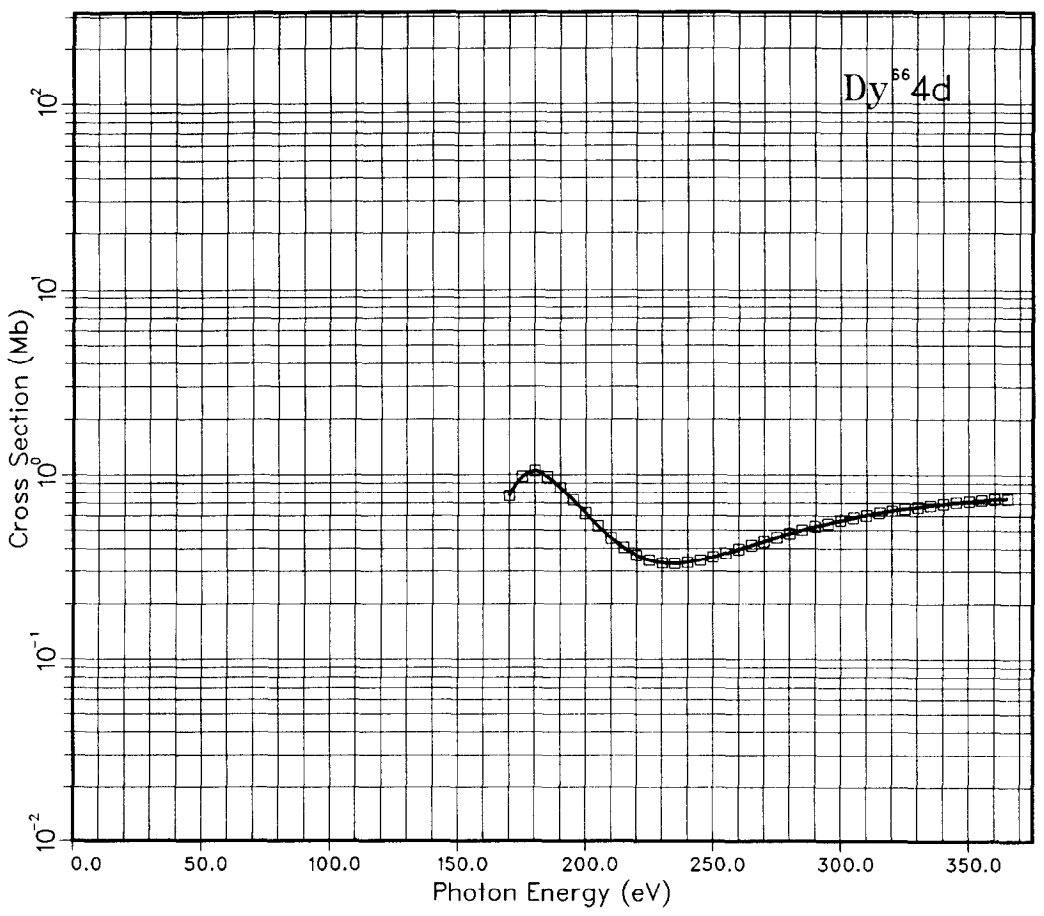

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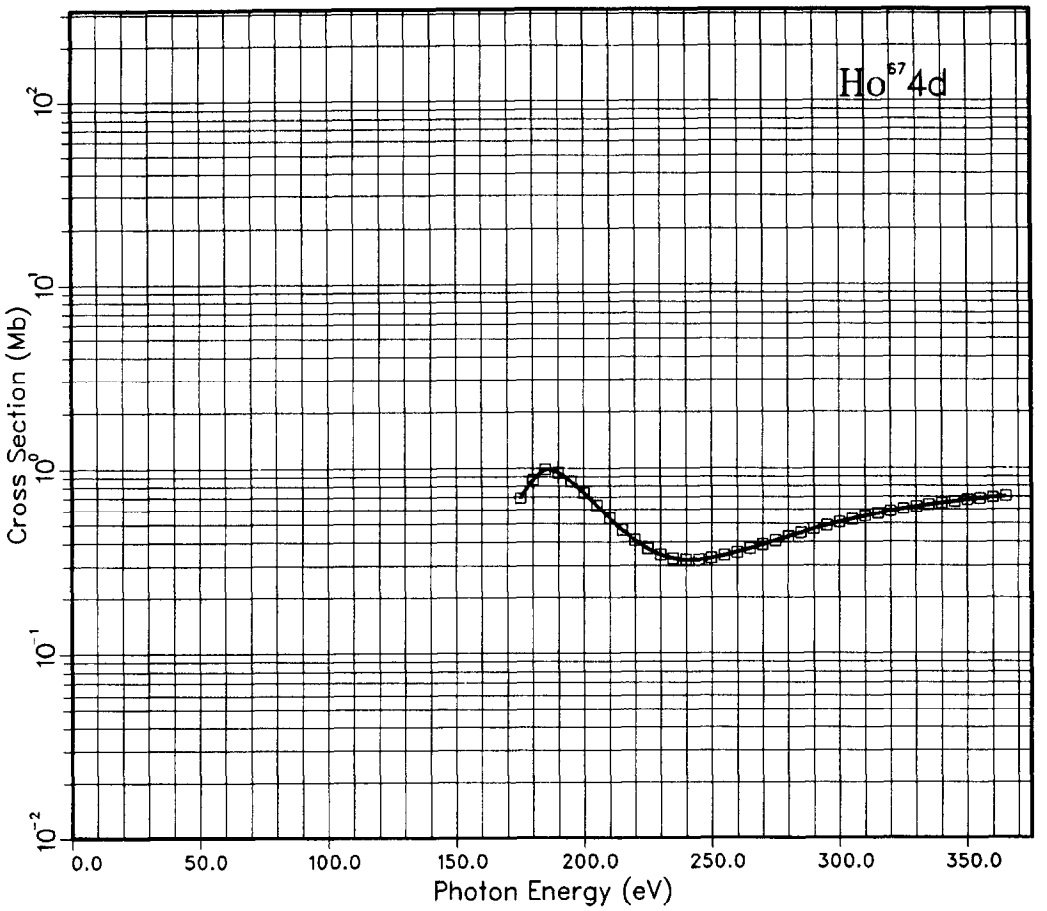

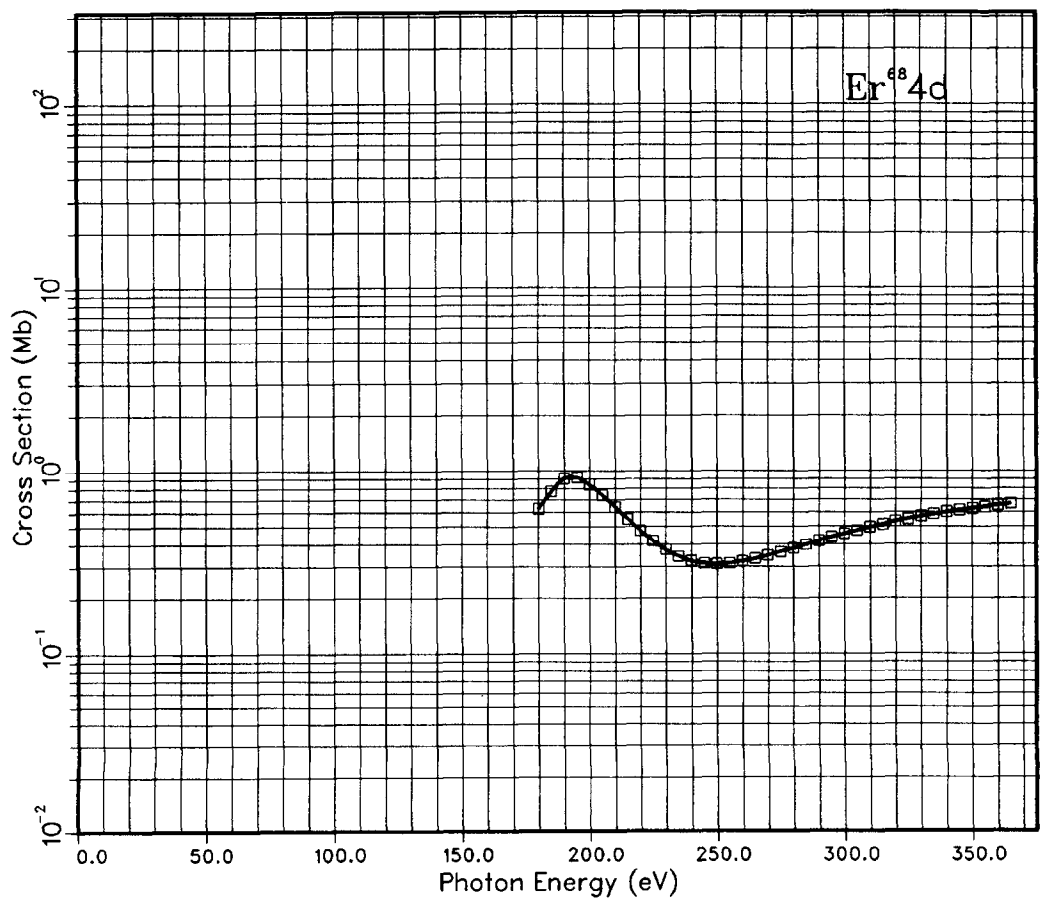

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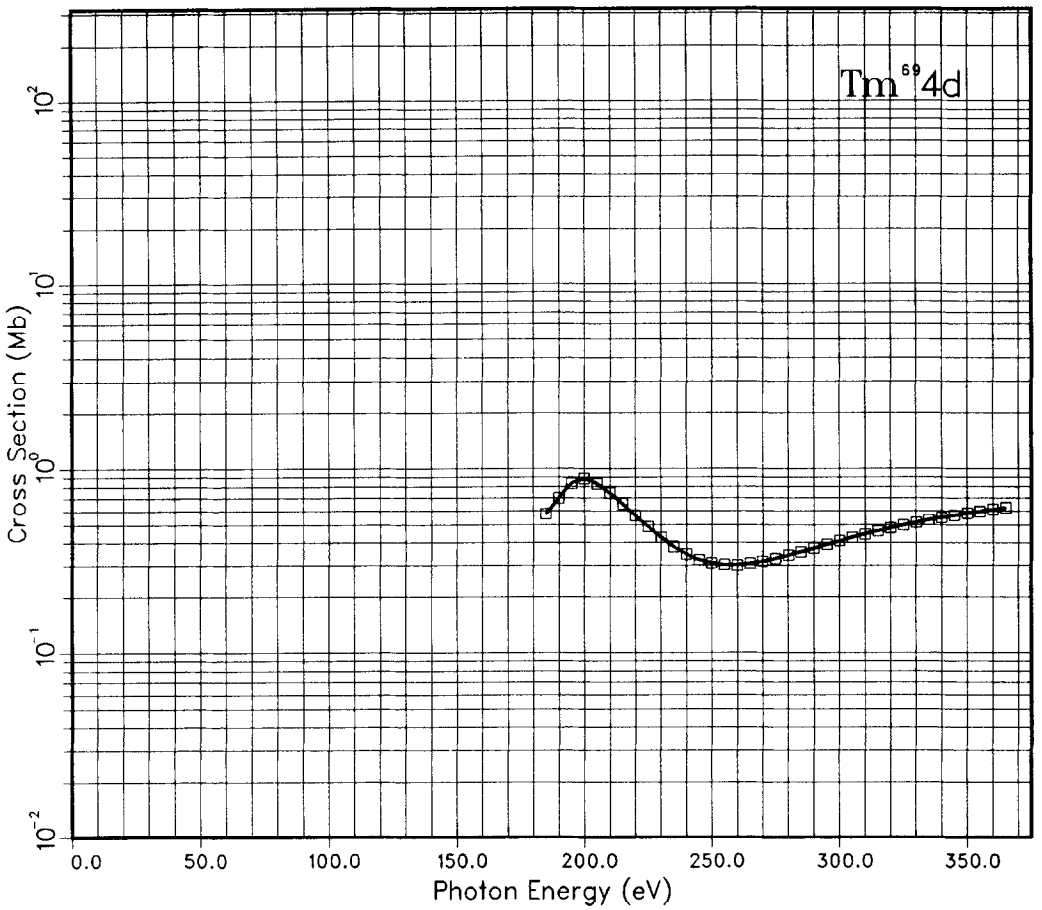

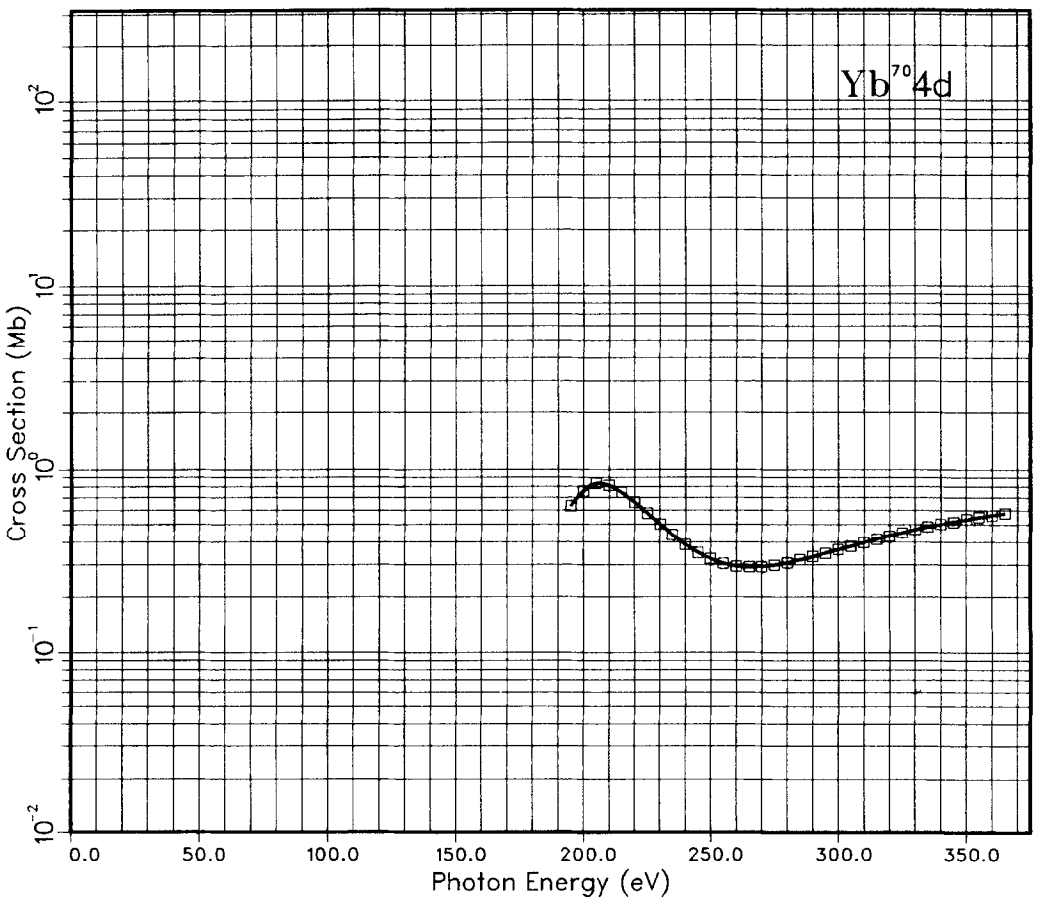

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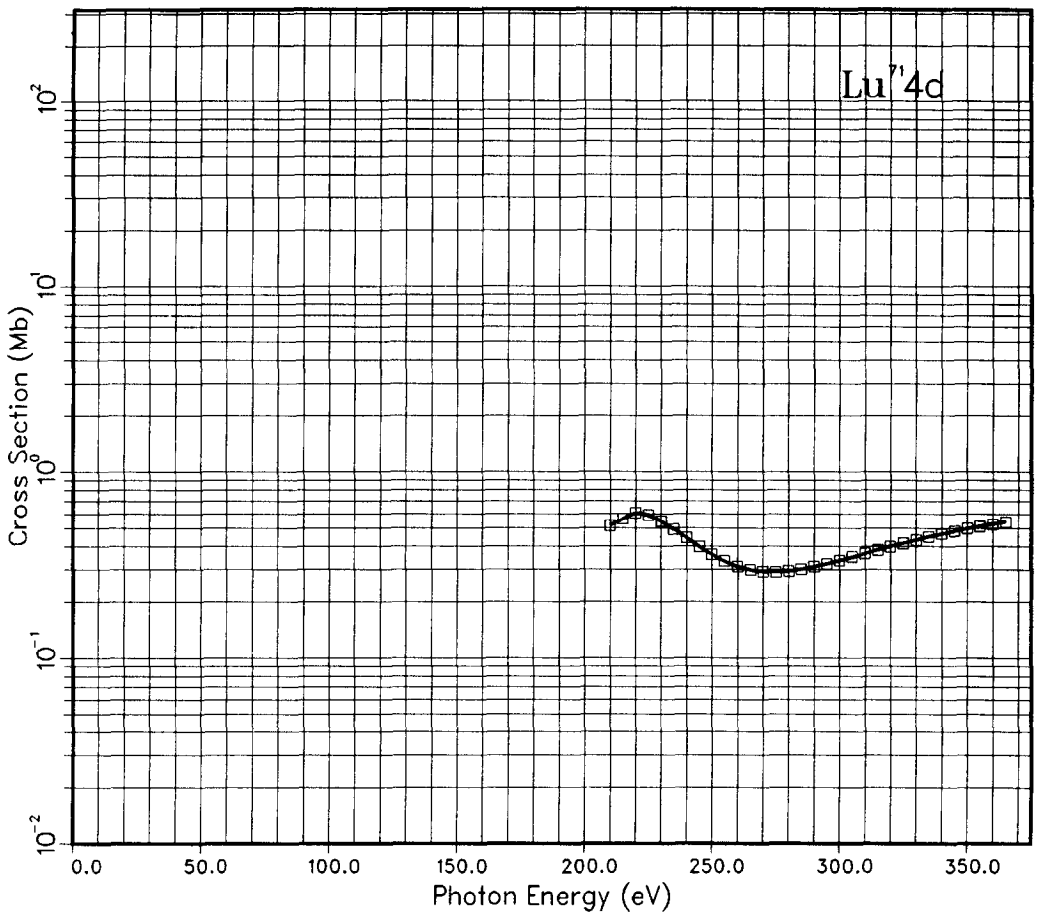

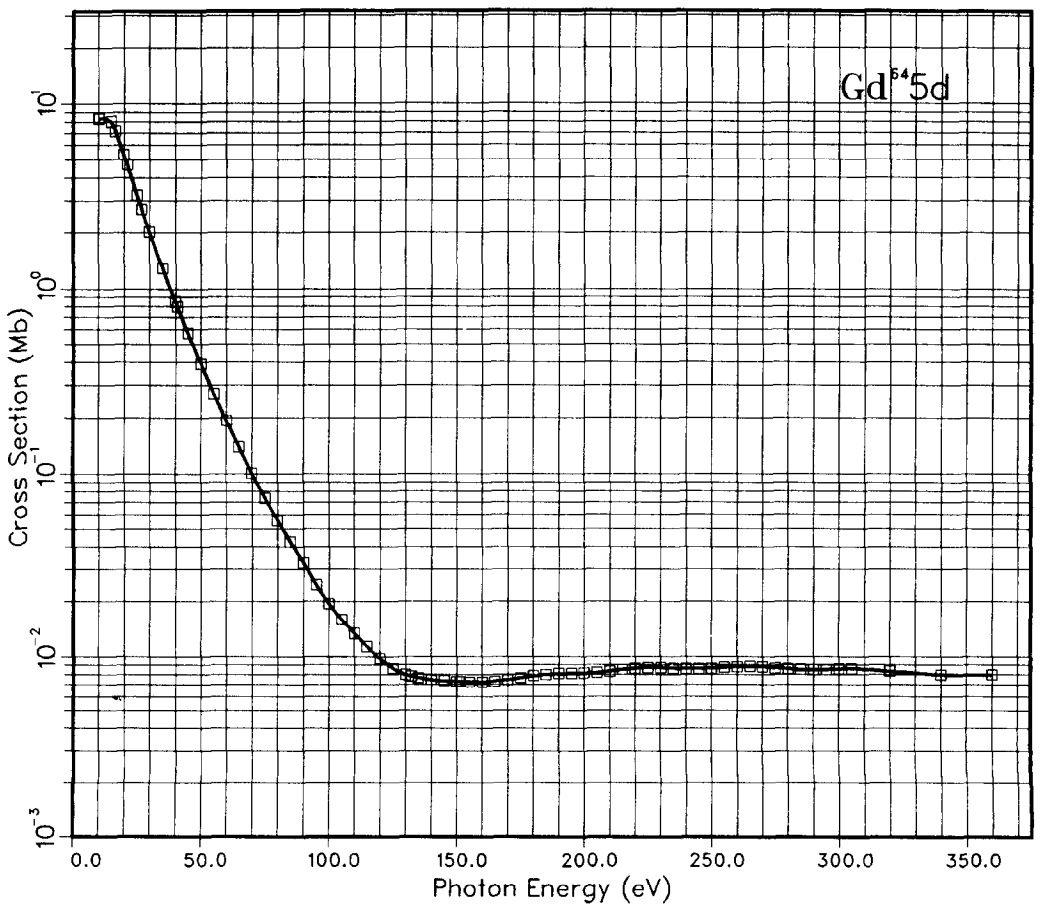

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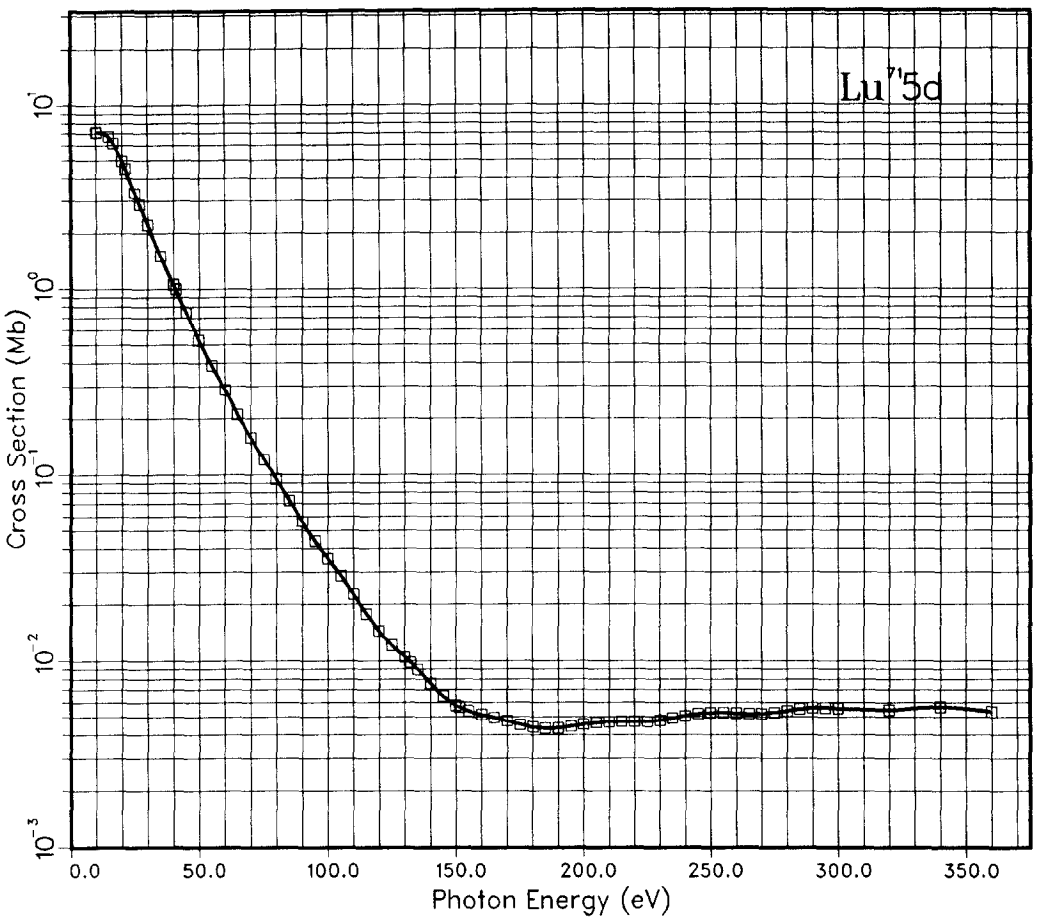

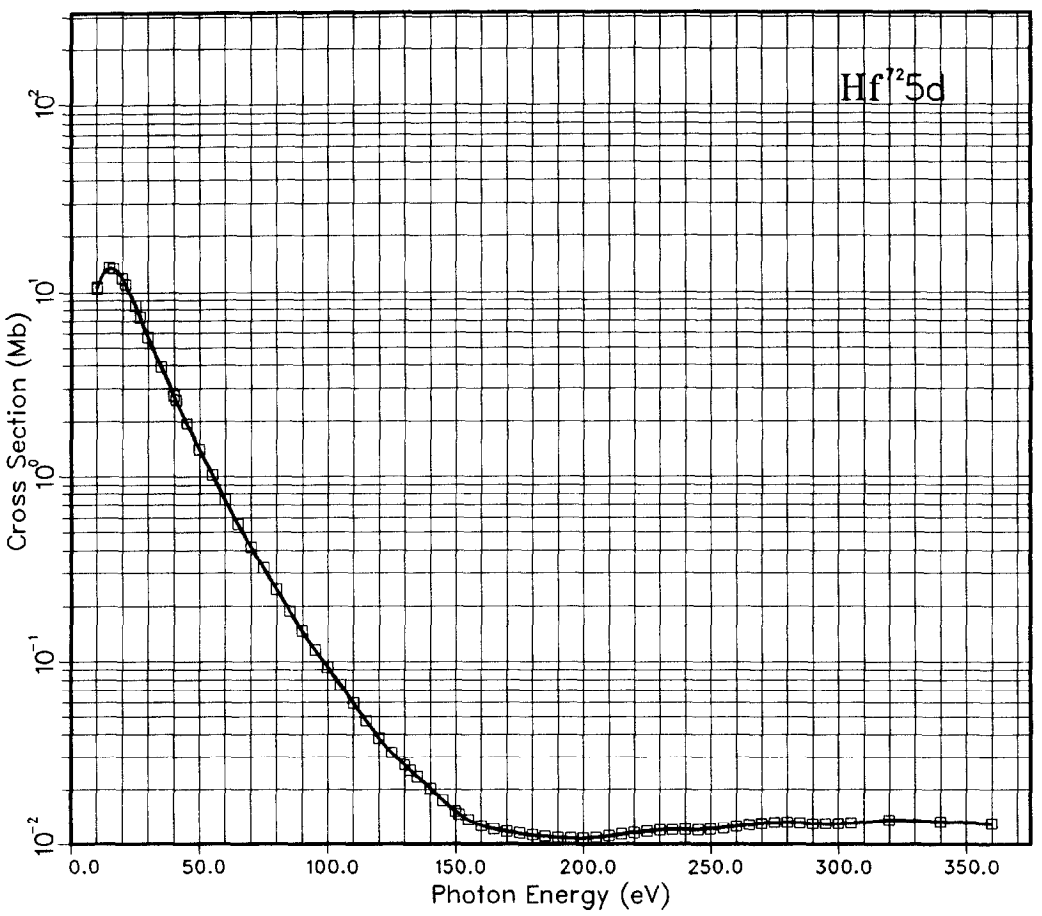

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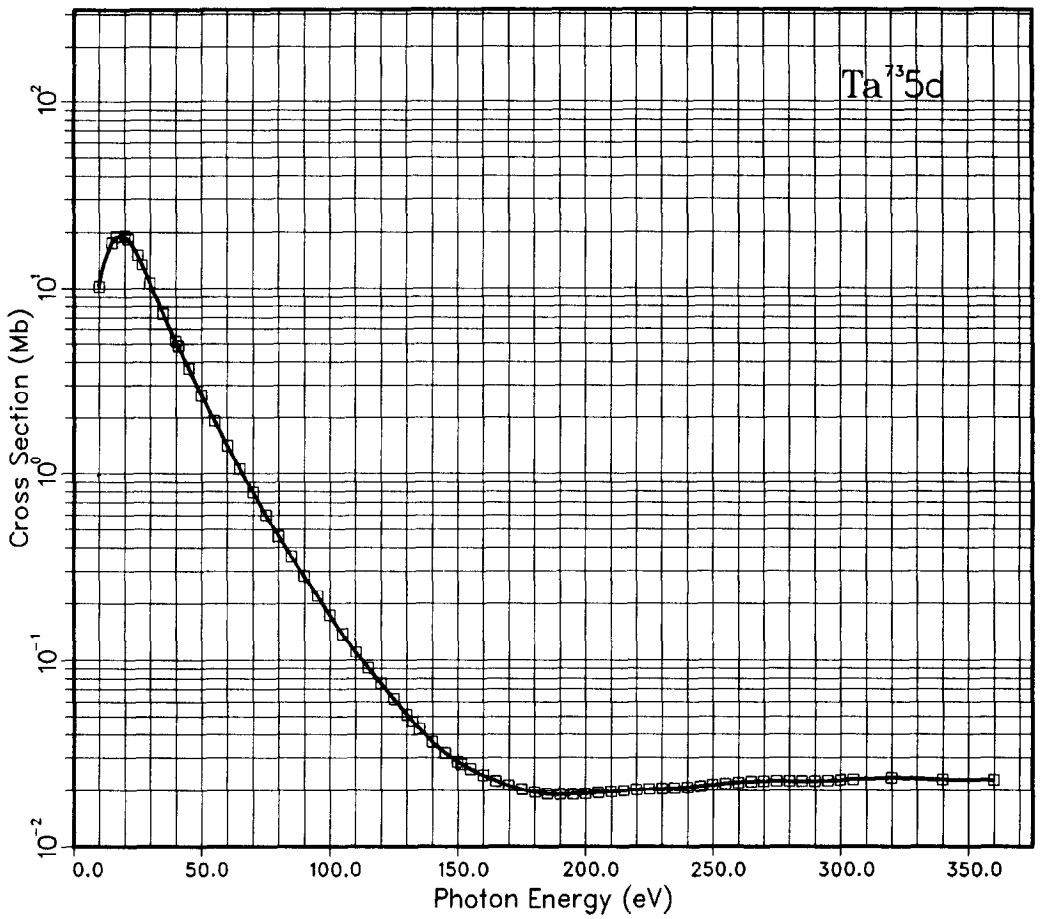

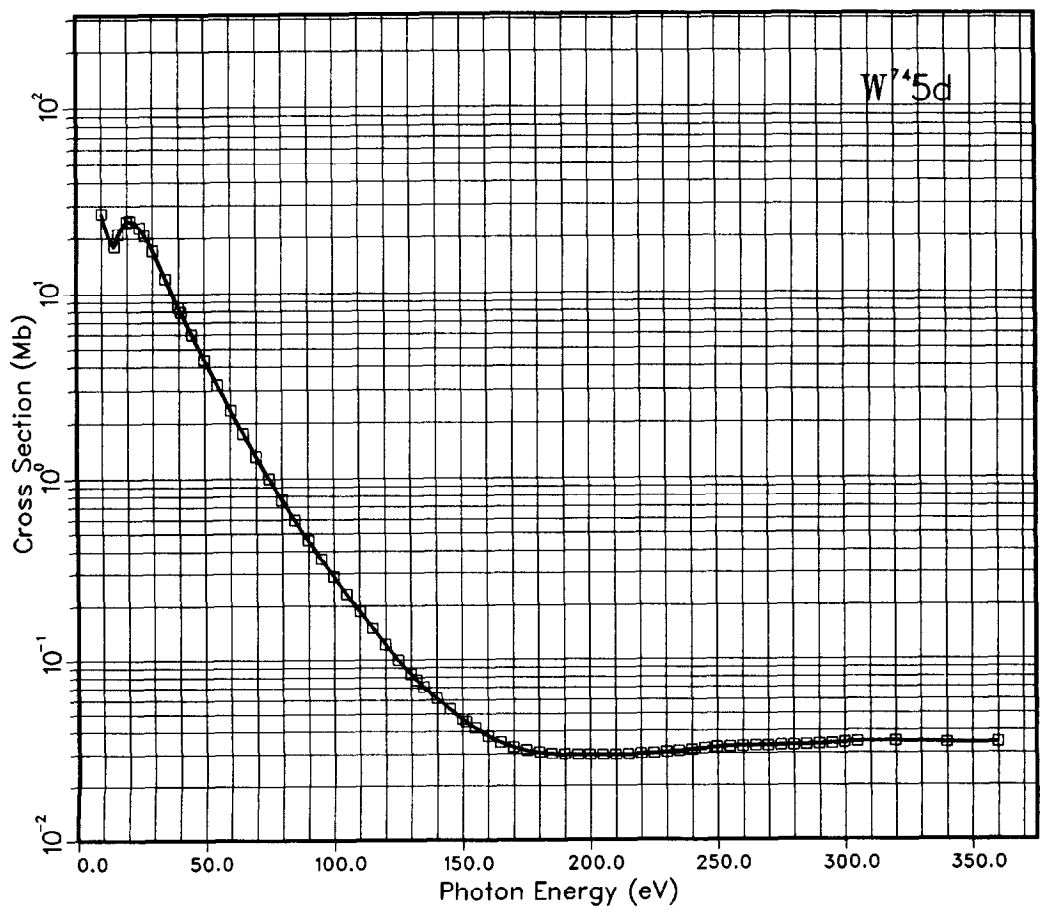

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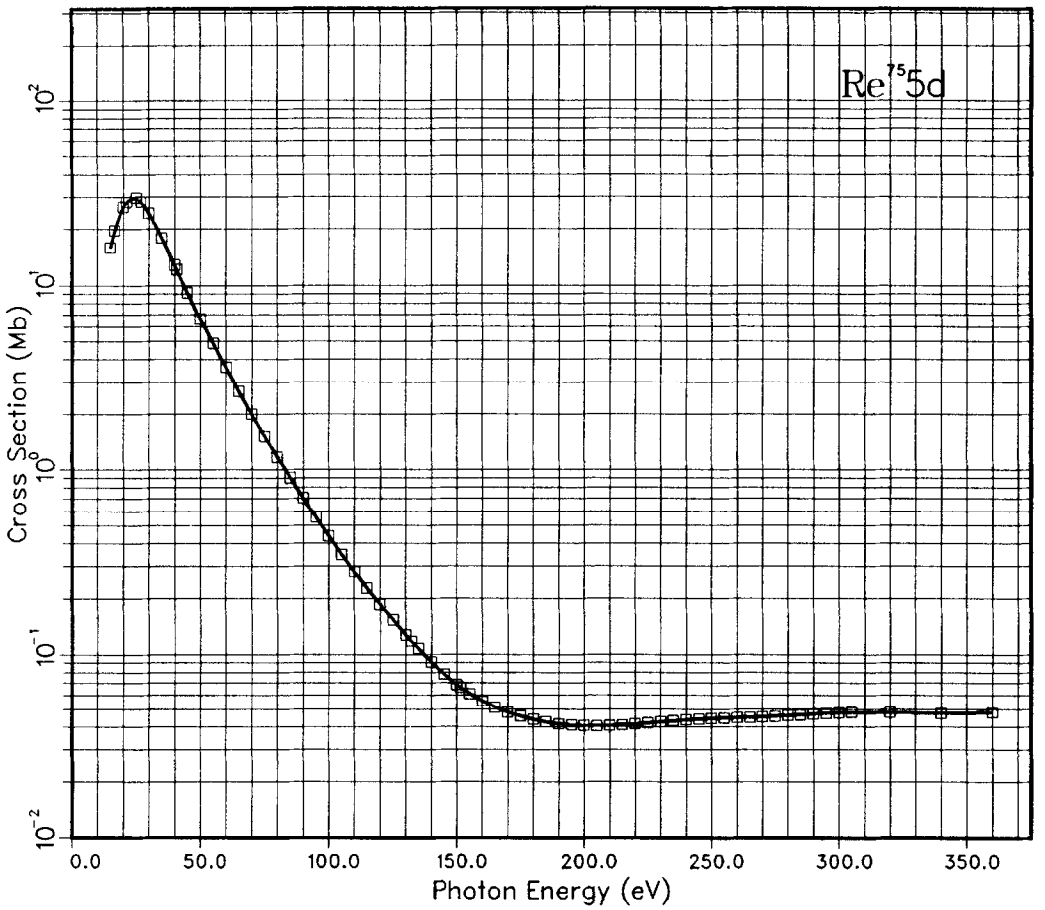

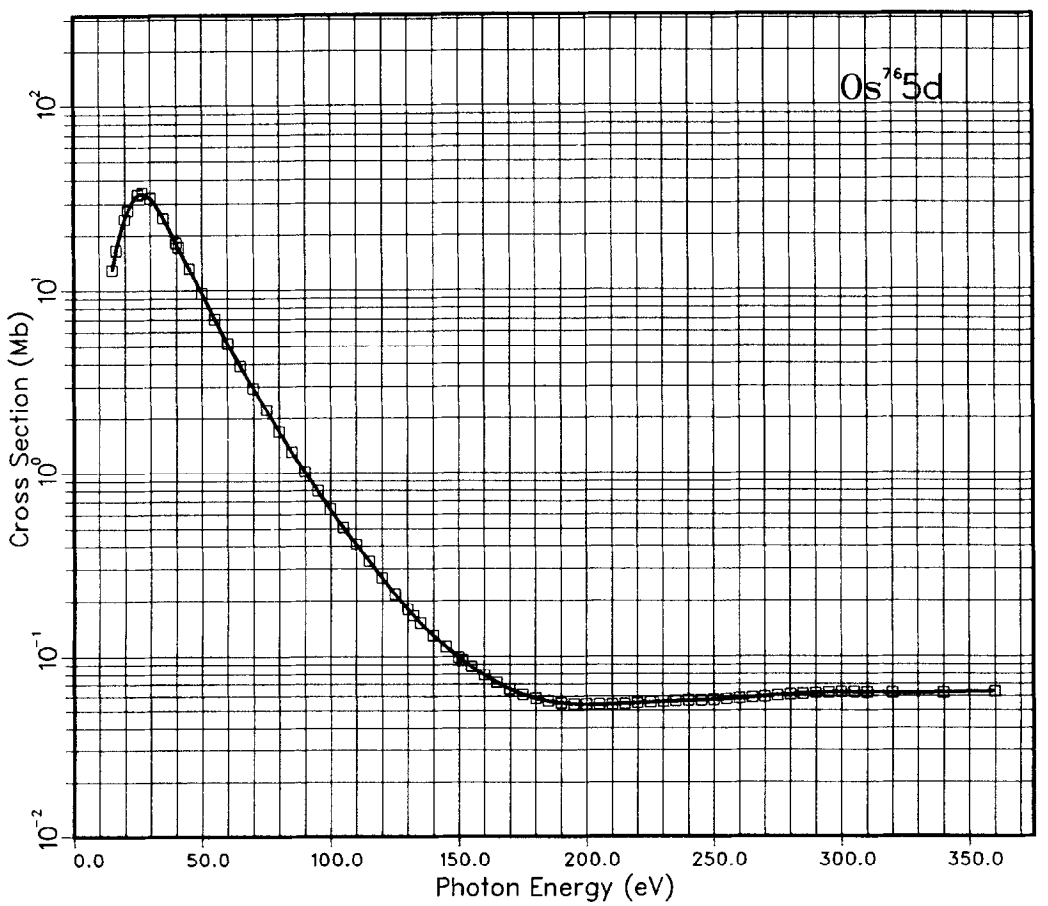

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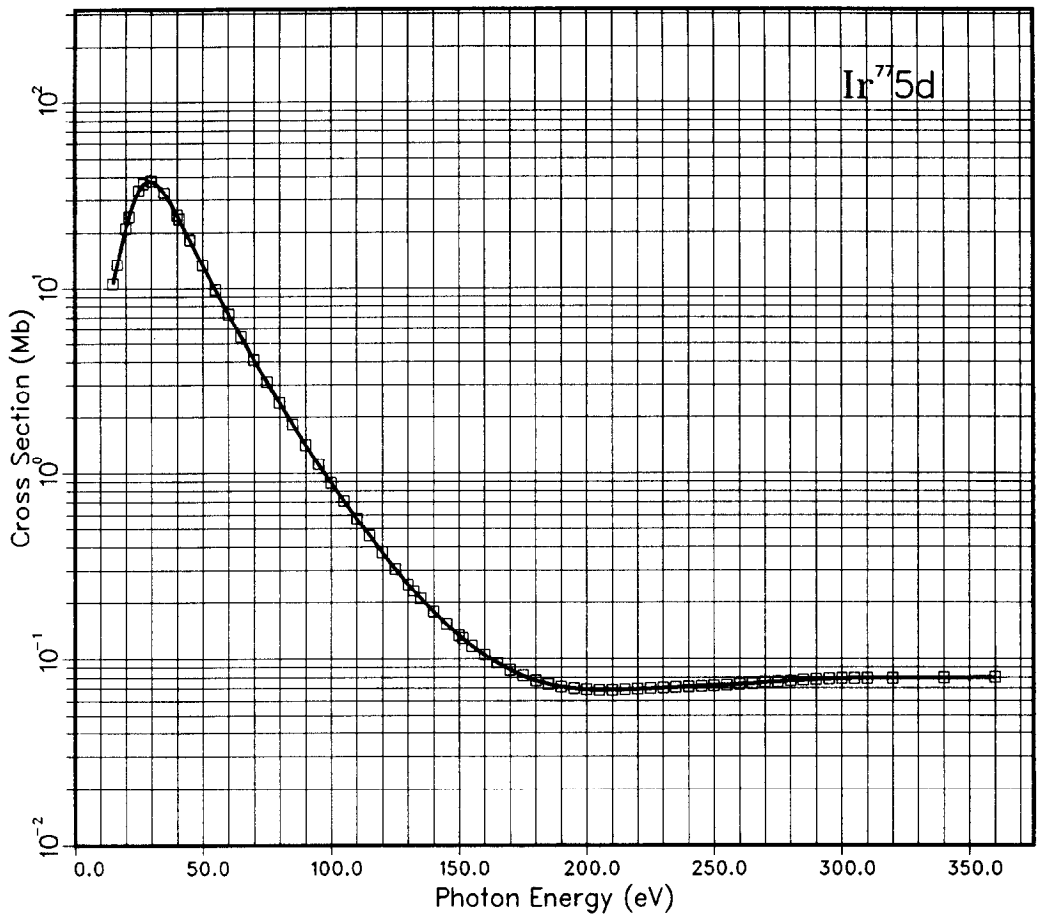

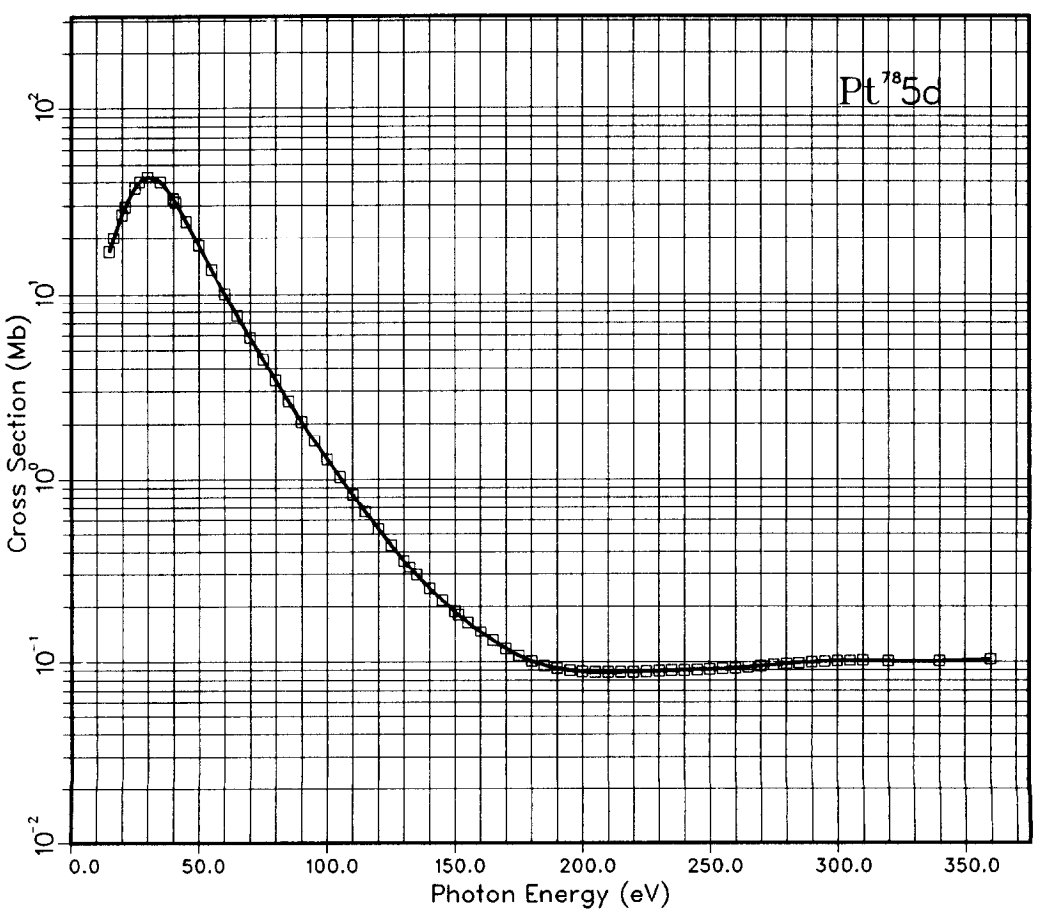

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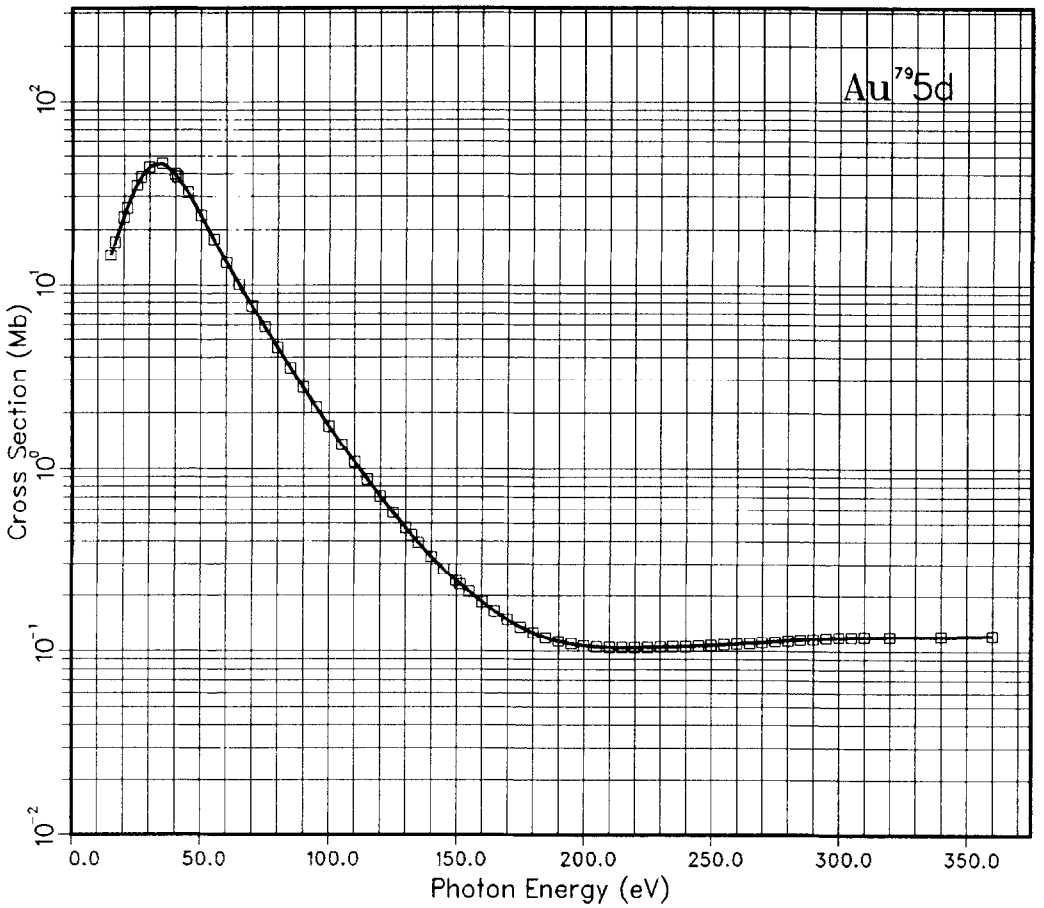

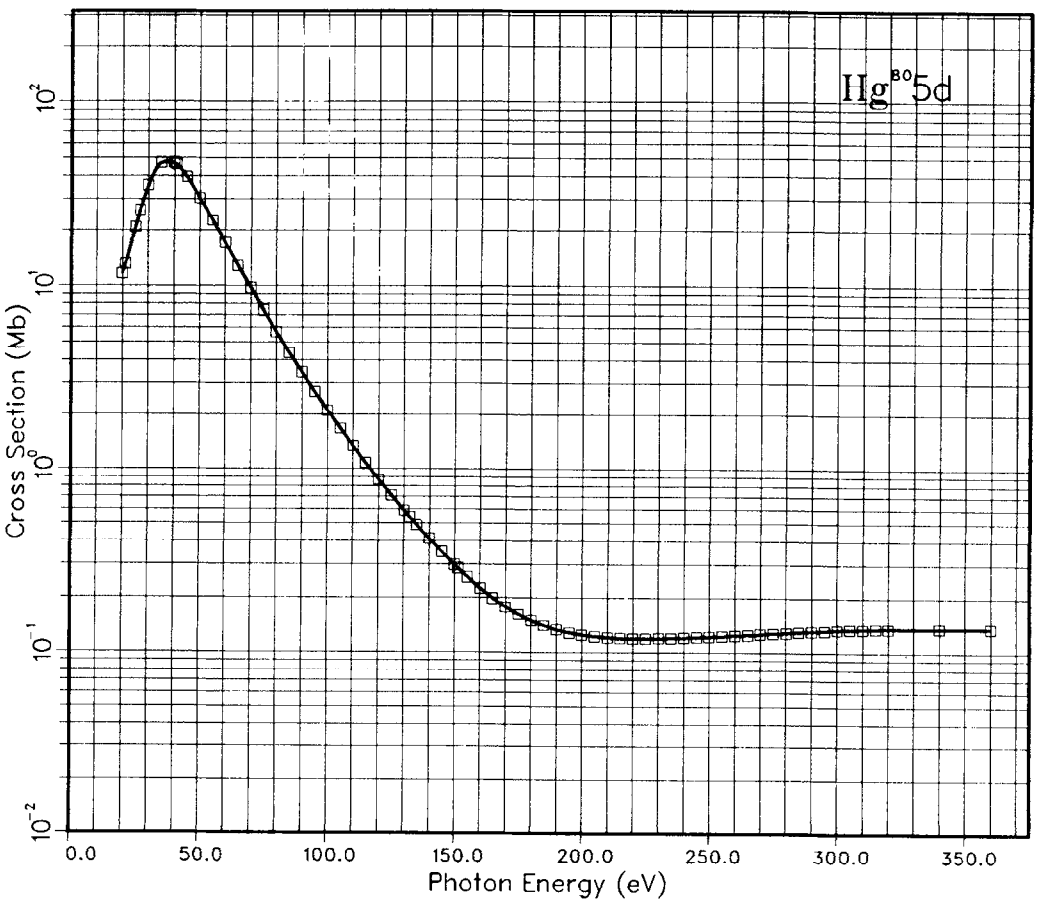

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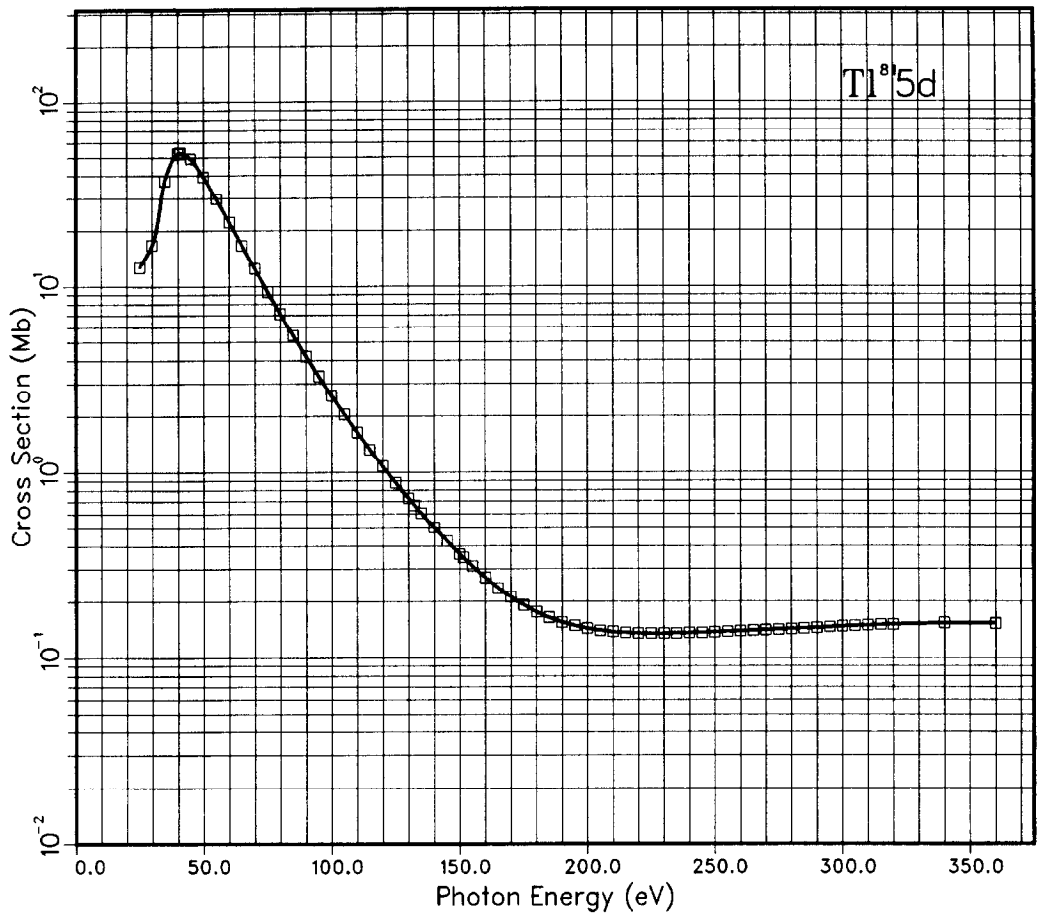

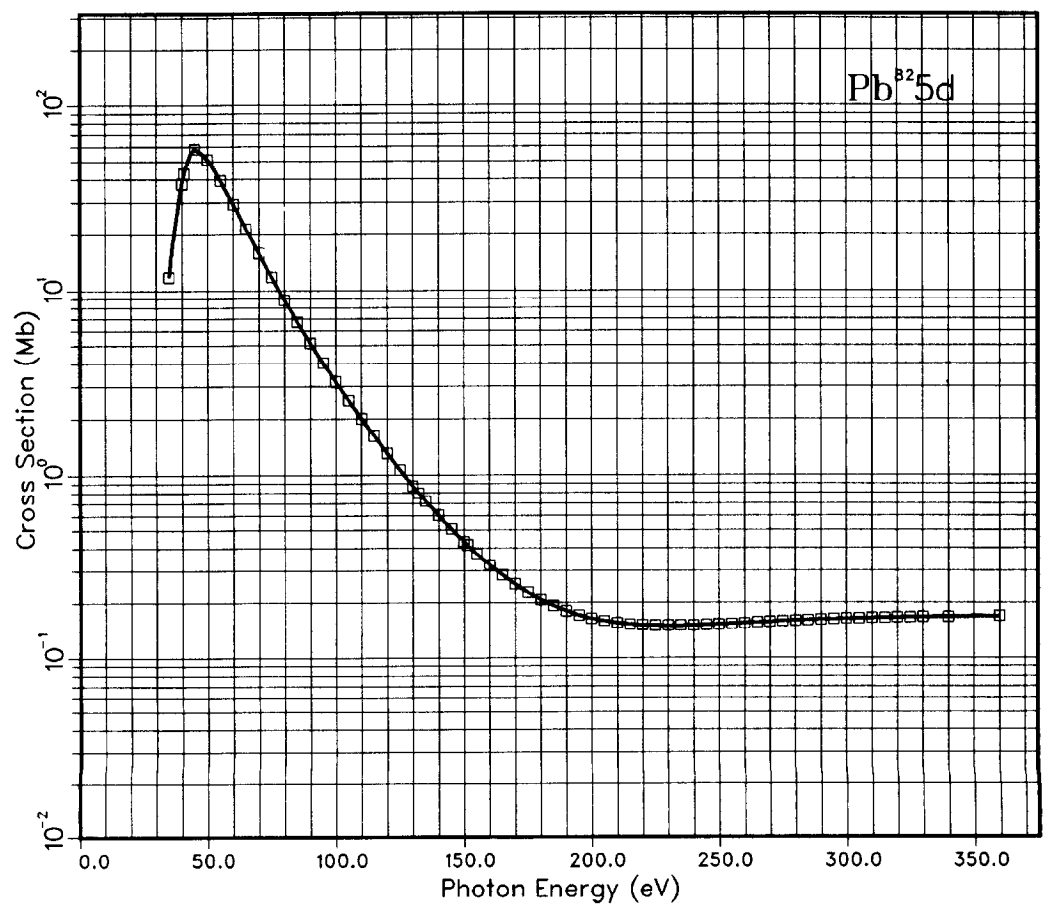

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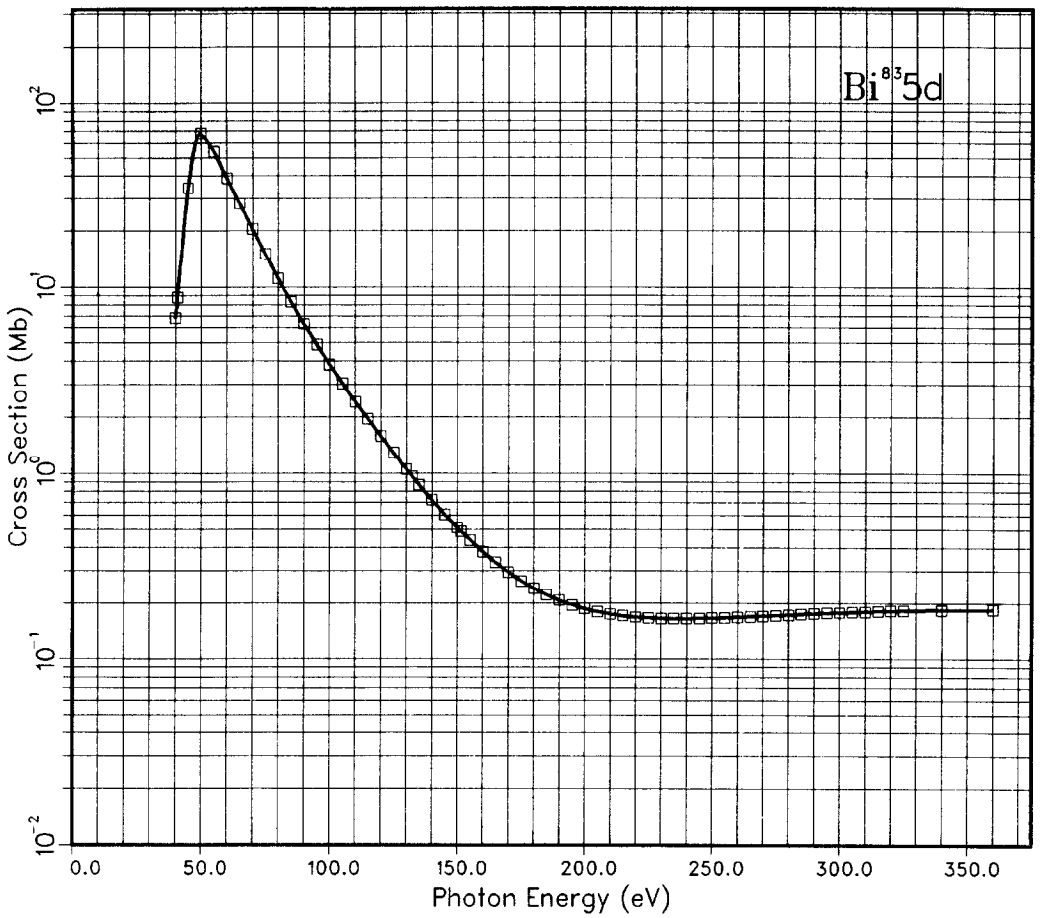

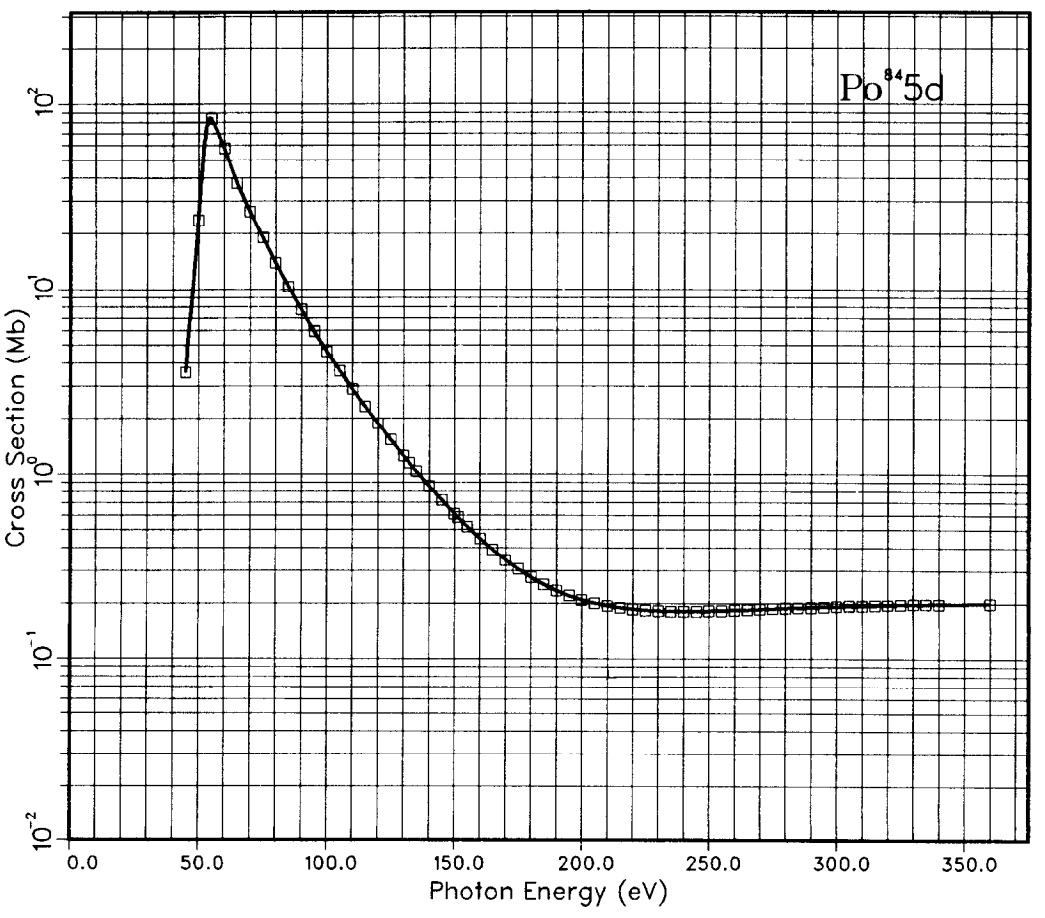

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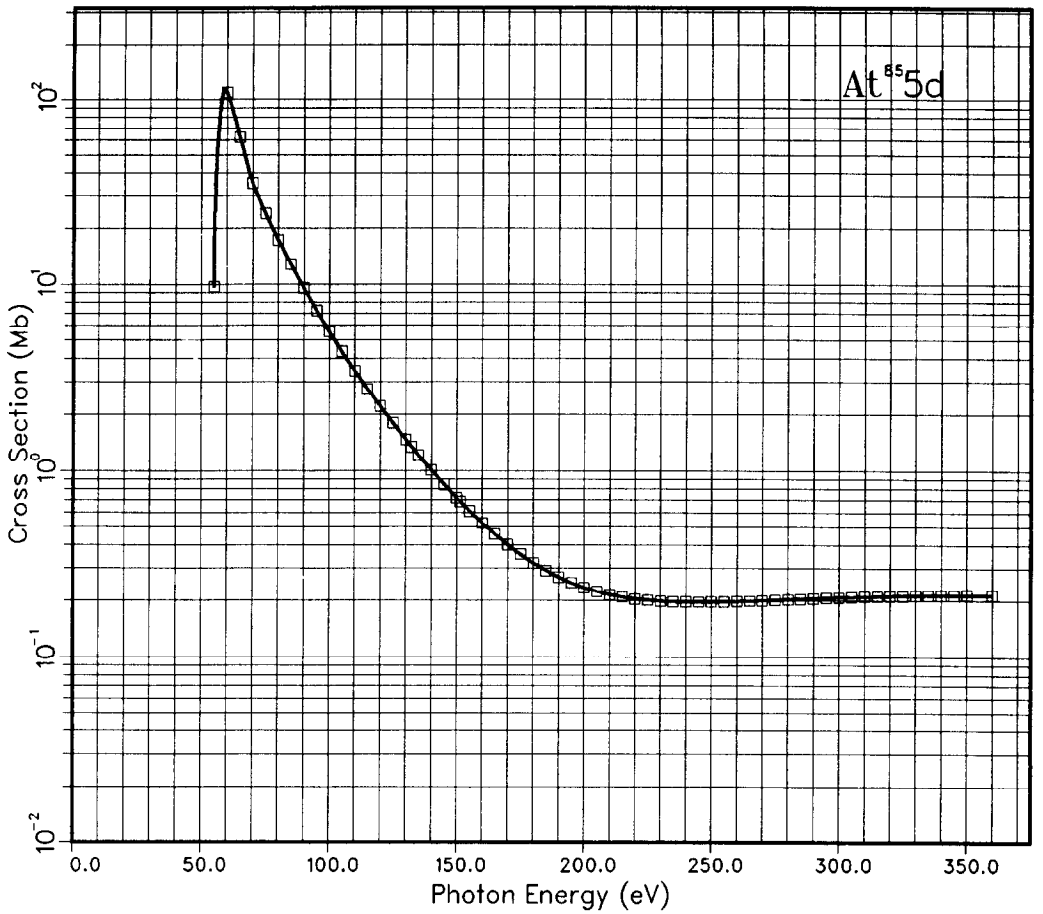

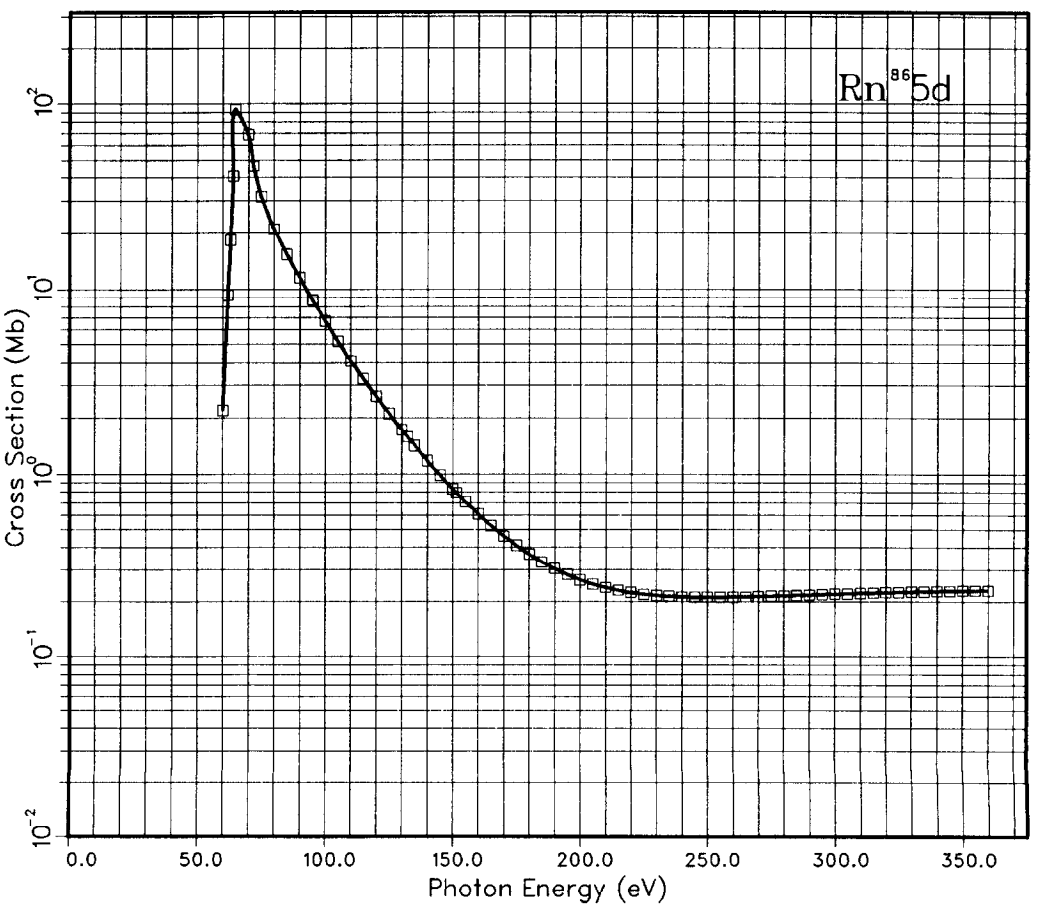

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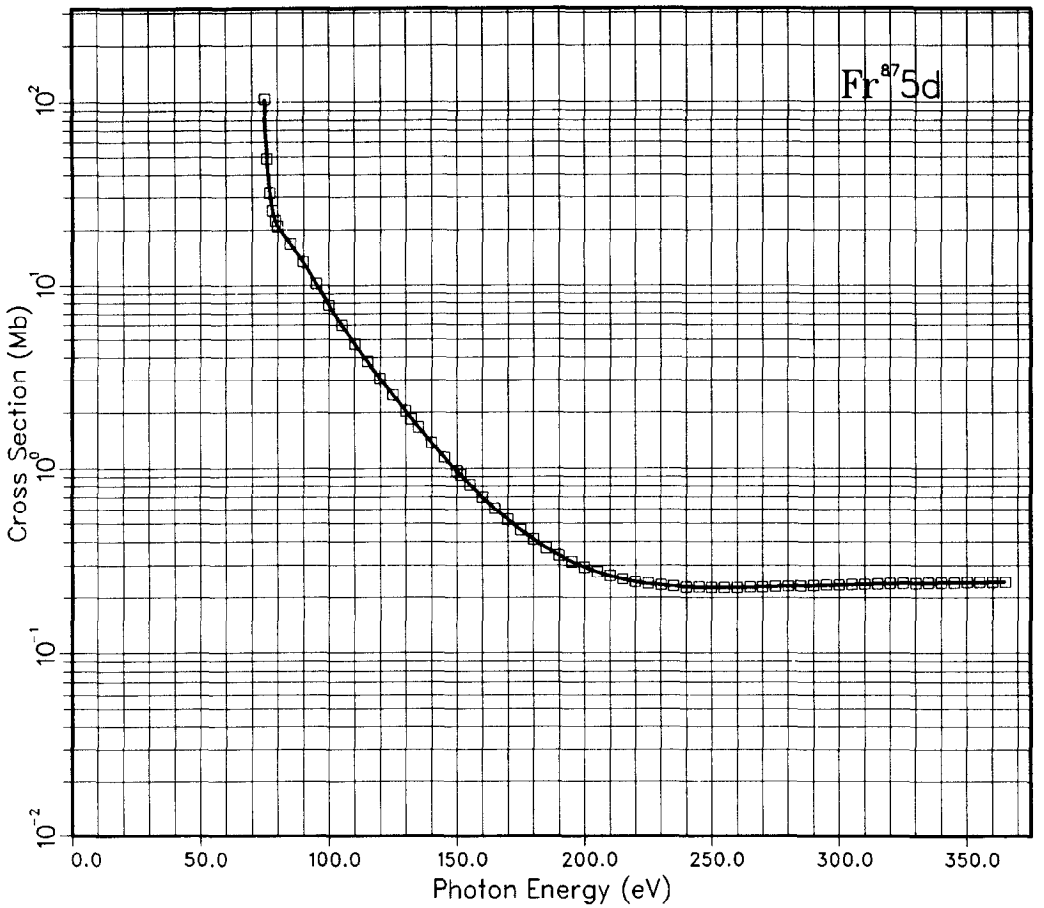

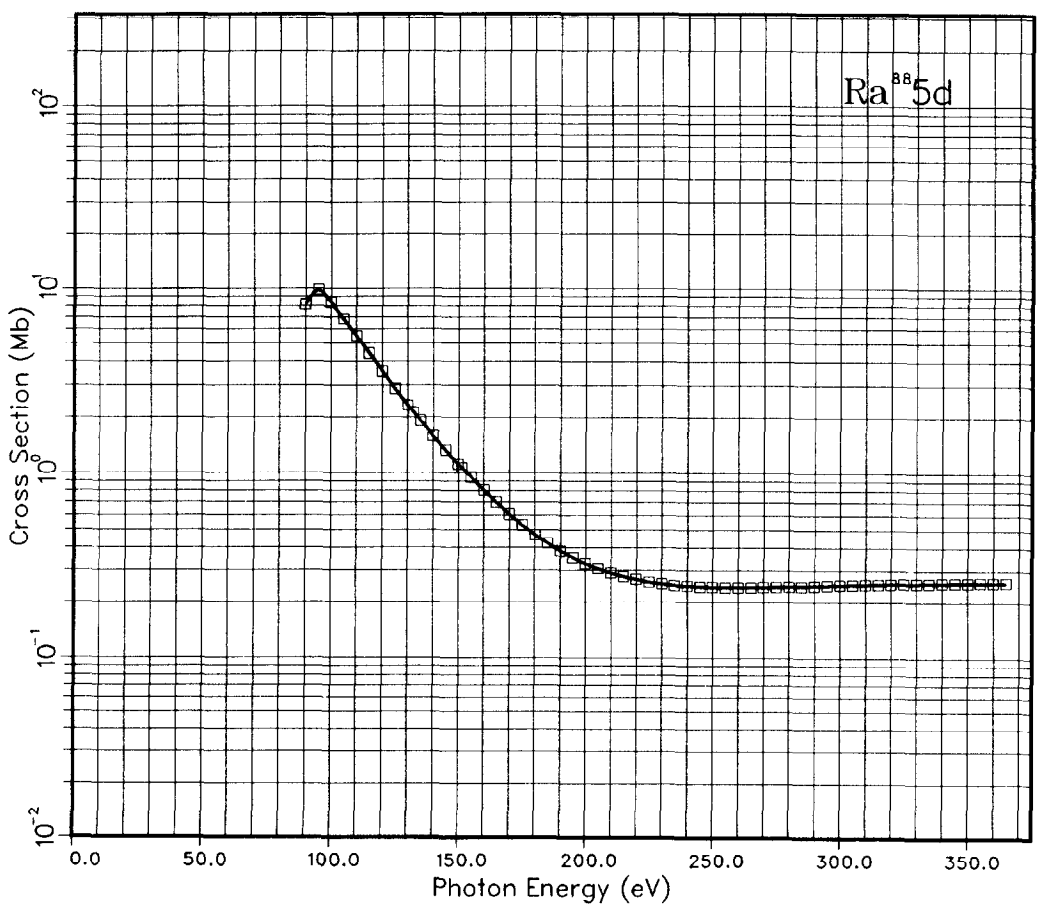

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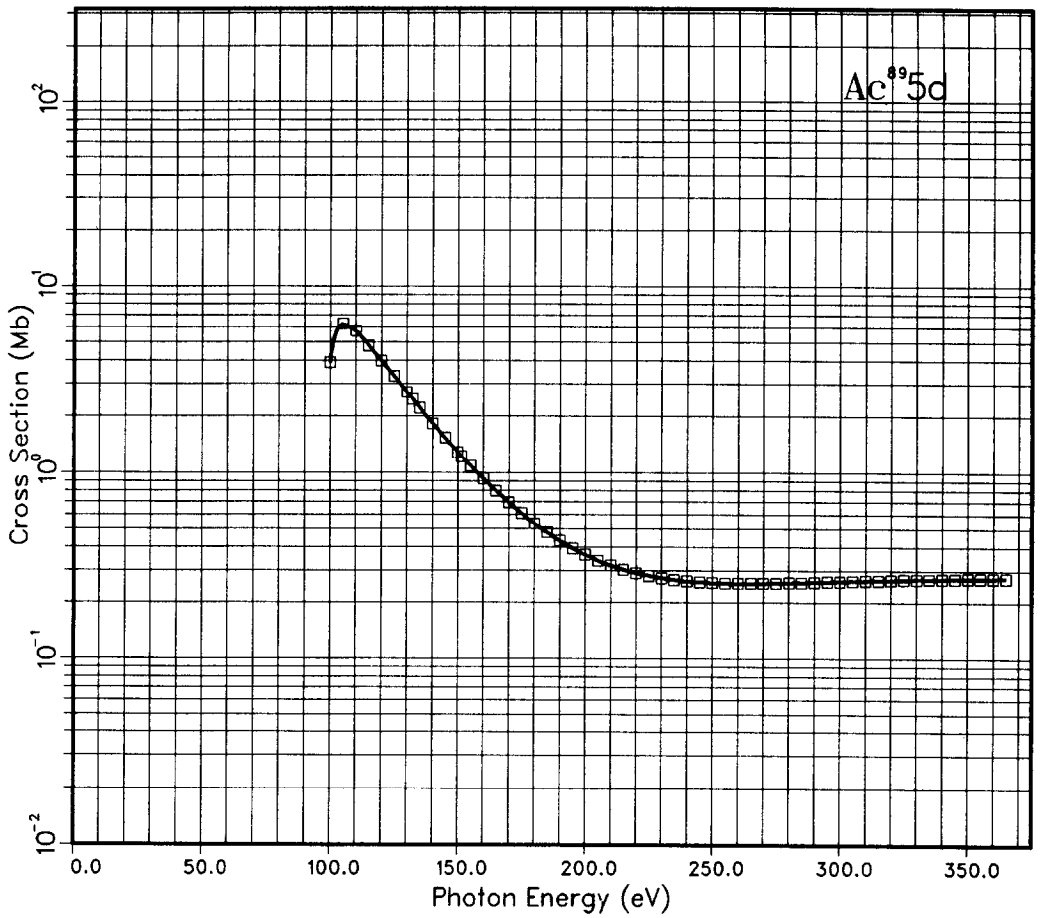

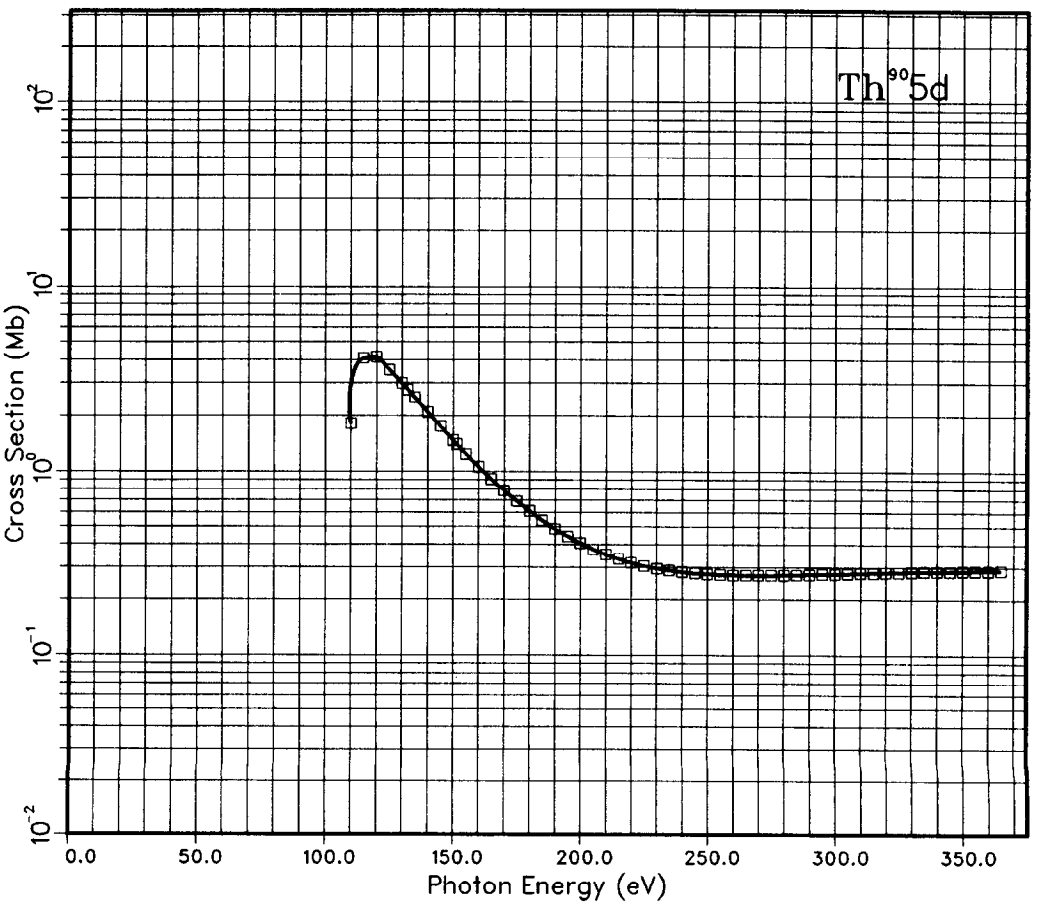

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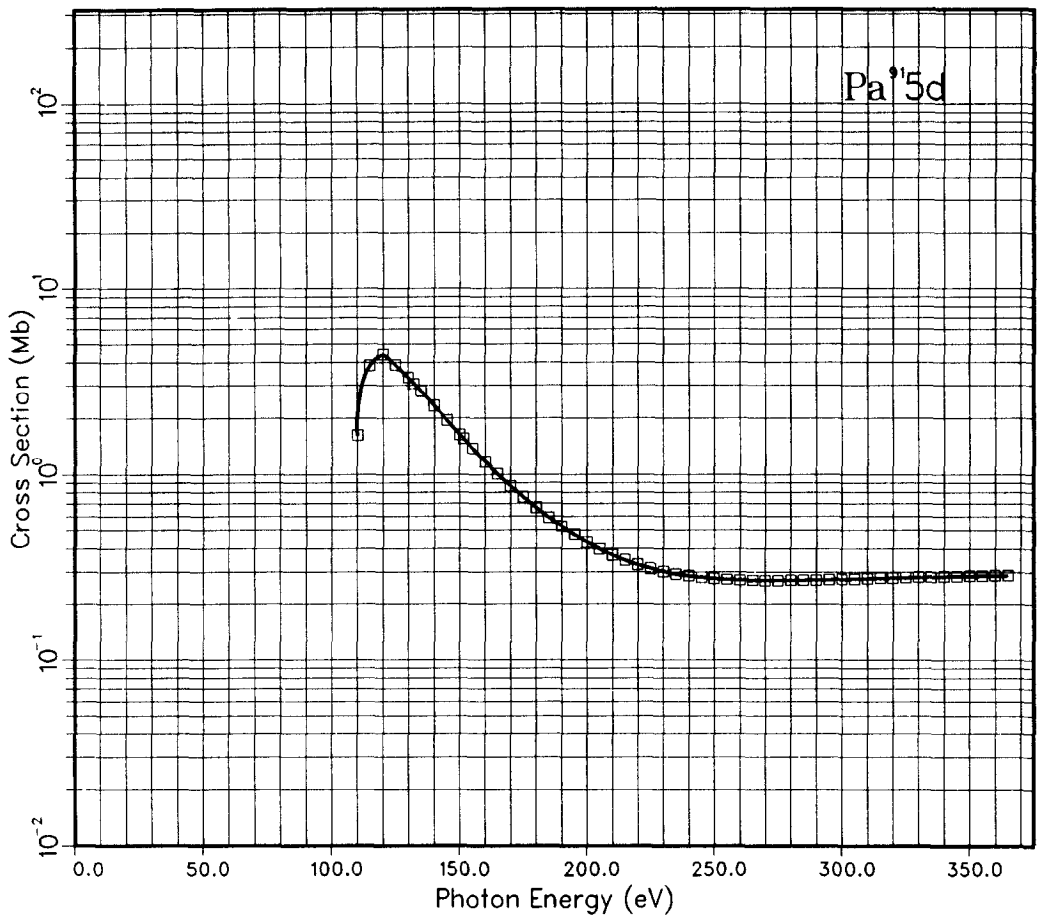

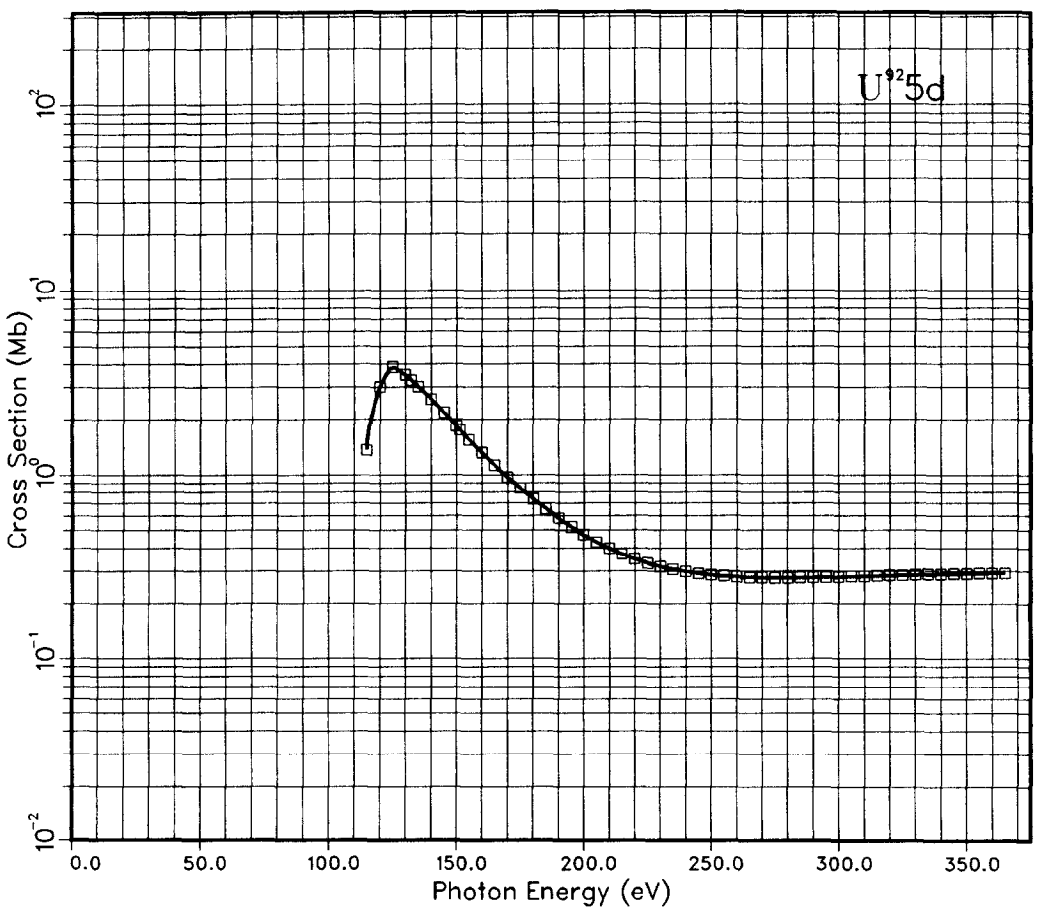

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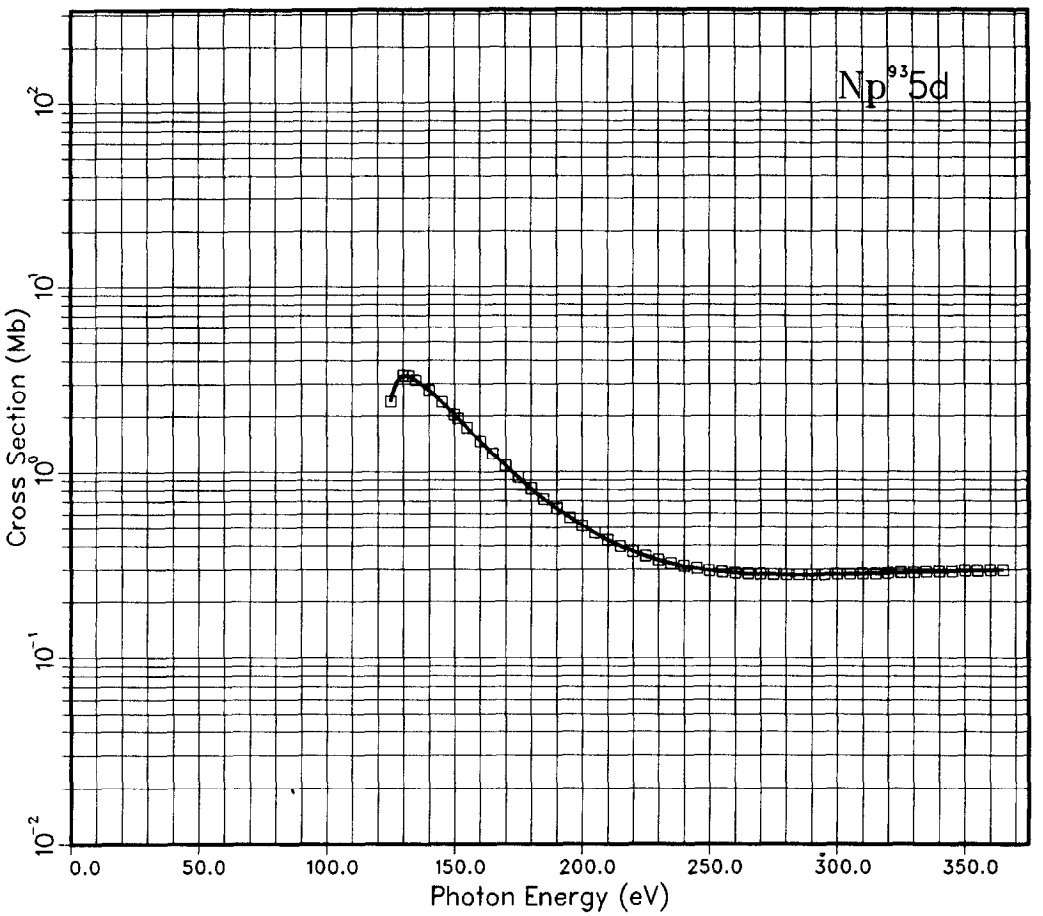

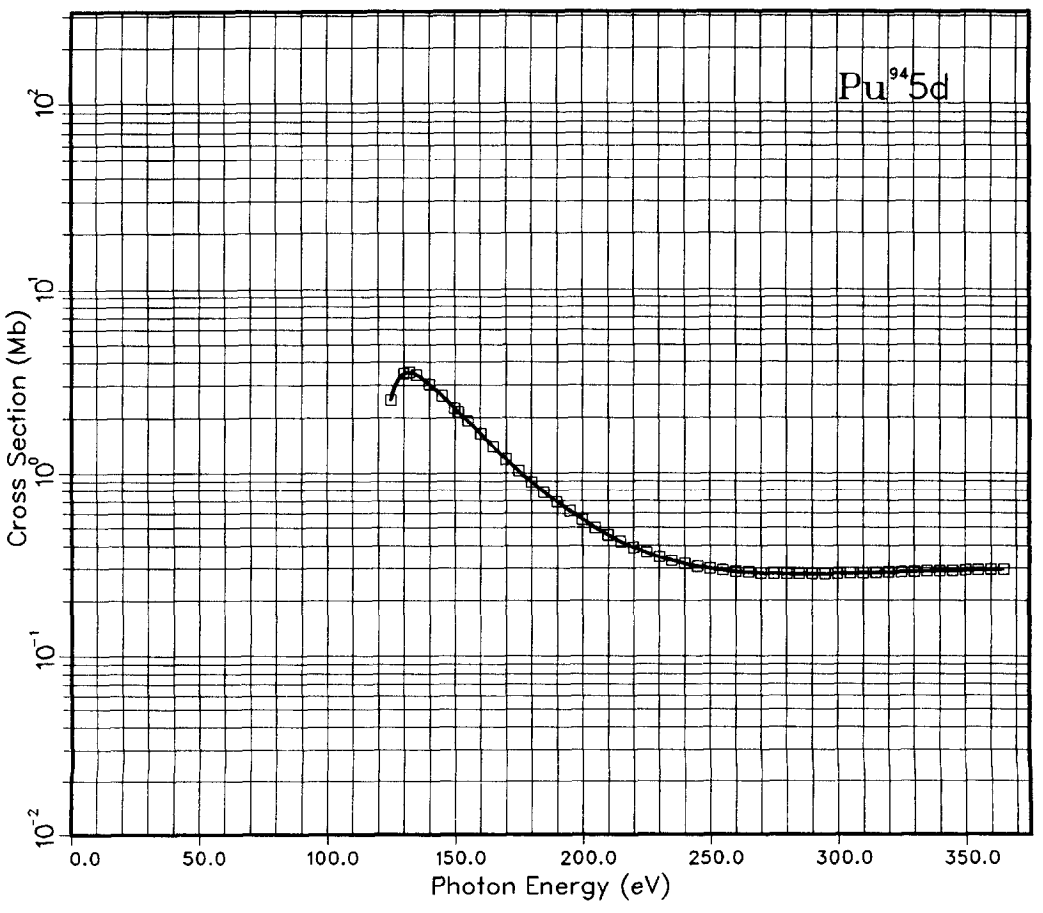

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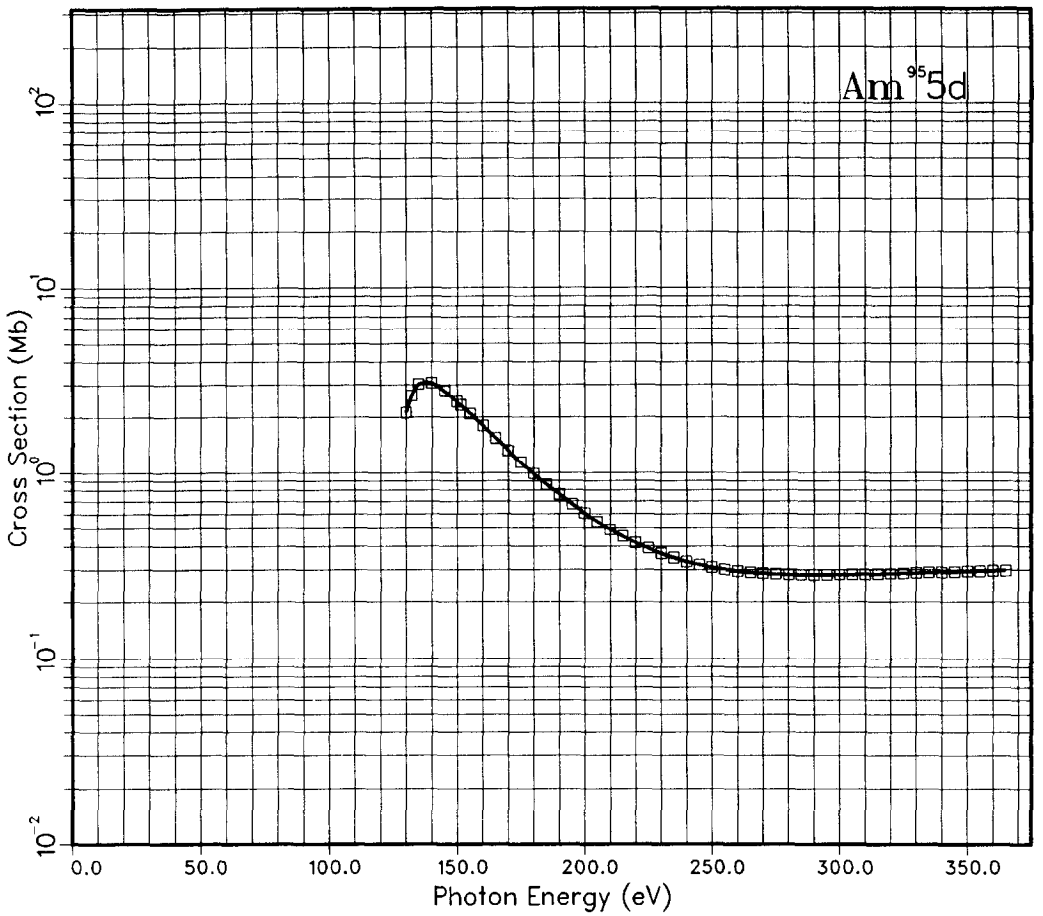

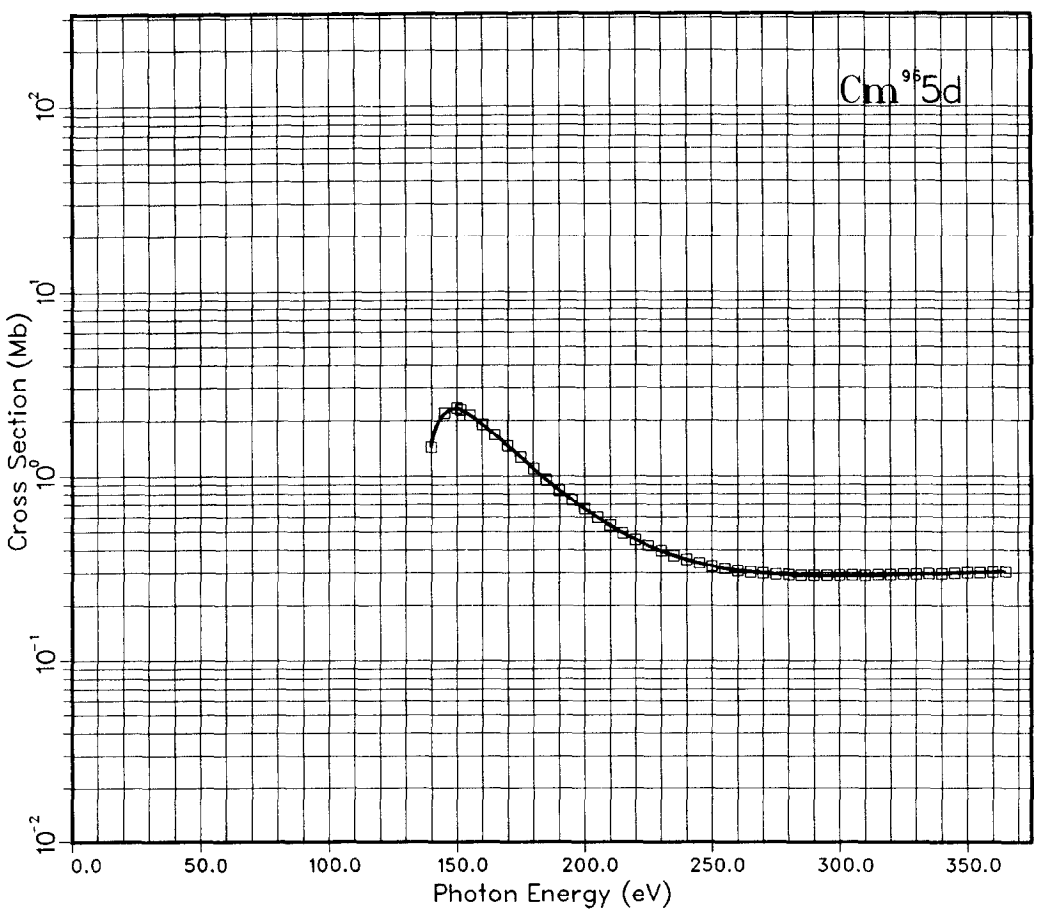

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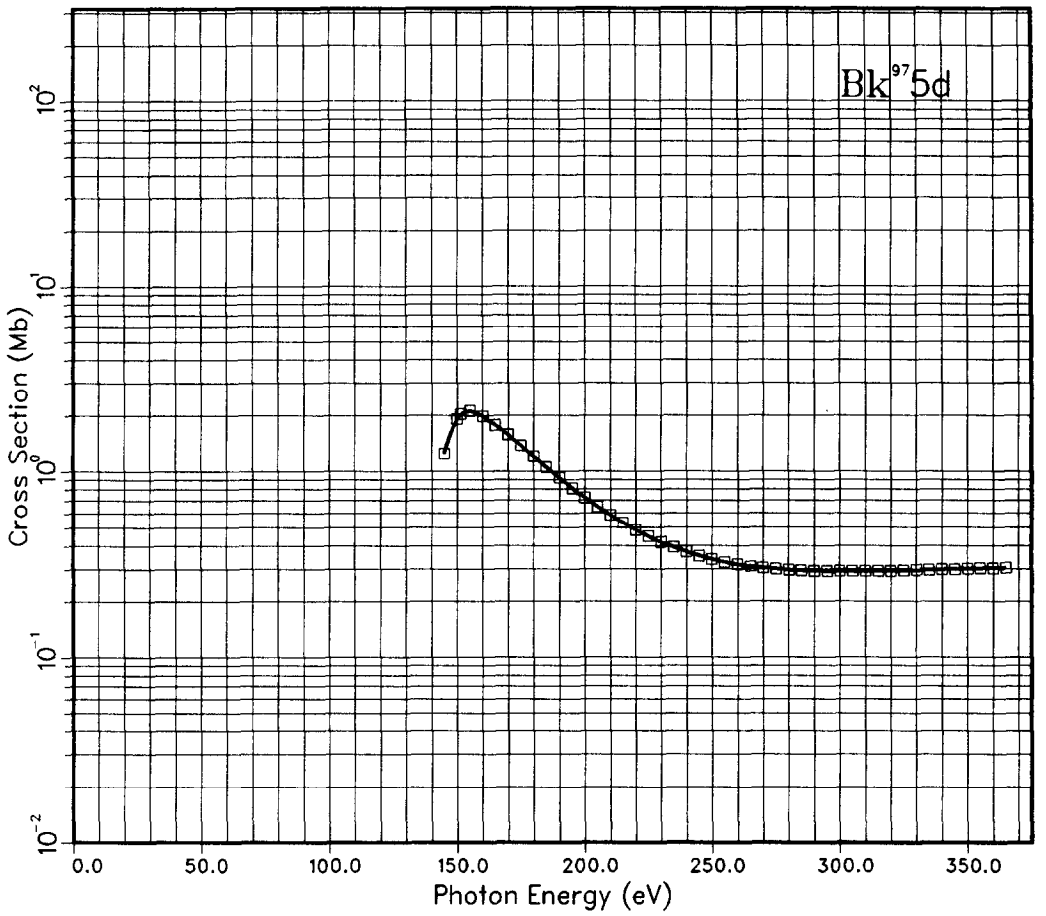

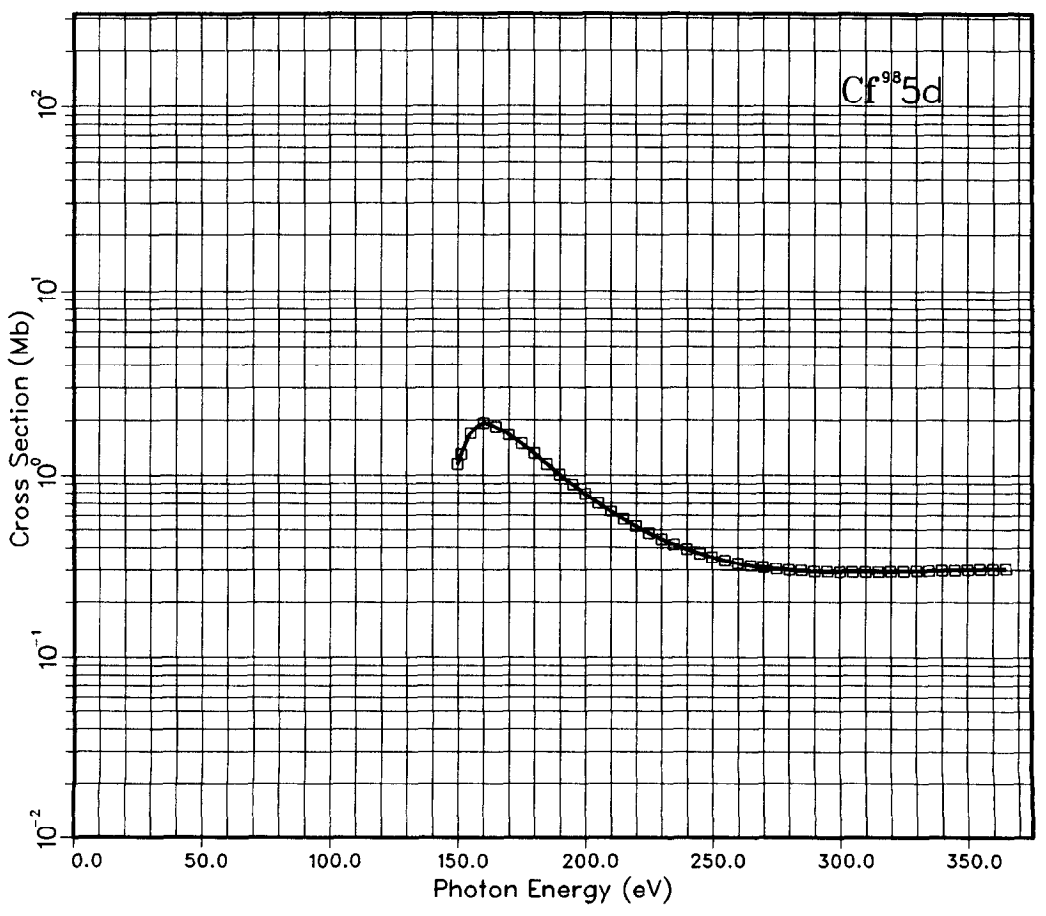

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