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Abstract

The yields of the ion-induced sputtering of monatomic solids on normal incidence for various ion-target combinations are presented graphically as a function of the energy of incident ions. Each graph shows available experimental data points for an ion-target combination and energy dependence of the sputtering yield calculated from an empirical formula, whose parameters were determined by the best fit to available data. Method of calculating the sputtering yields for the ion-target combinations based upon the empirical formula is also described.

I. Introduction

Ion-induced sputtering of solids is important in several fields of science and technology, such as plasma-surface interaction in fusion machines, ion implantation, thin film synthesis and surface analysis. An excellent review of ion-induced sputtering has been published by Andersen and Bay.[1)] Even though collections of existing data are included in their review article and other handbooks,[2)] the data are not presented in a readily usable form. Moreover, for application of sputtering phenomena, it is useful to extrapolate available data to the energy region where no data exist and even to the ion-target combination for which no experiment has been carried out.

The purpose of the present paper is to present the relation between the yield of ion-induced sputtering of monatomic solids and the energy of incident ions for various ion-target combinations. The compiled experimental data of the sputtering yields are shown by graphs, which include the yield-energy relation calculated using an empirical formula, where parameters are determined by the best fit to the available experimental data. It is shown that numerical values of the sputtering yield for ion-target combinations can be obtained easily using the empirical equation.

Data Base

1) Data available up to the early 1983 have been compiled. They are presented in graphs and used to obtain the best fit parameters for the empirical equation. The accuracy of sputtering data may be influenced by several factors,[1)] such as surface topographical and chemical conditions of specimens, the quality of incident beams (purity and uniformity) and the quality of the vacuum. A practical precaution in experiments is to use a beam current sufficiently high to remove atoms from a surface at a rate higher than the rate of sticking of residual gas molecules to the surface.[1)] For many of the experimental data it is not clear whether this condition is satisfied. We exclude a few experimental data that have been obtained under experimental conditions where the requirement above is not met clearly (*e.g.*, higher energy incident ions). Data for oxygen ion incidence are excluded unless measured at high vacuum.

2) Experimental data which are obtained using crystalline materials are not included because of possible orientation dependence.3) Even though most of specimens were thinned polycrystalline materials, no systematic difference is seen between the data obtained using thinned materials and evaporated films. The compiled data are only for so-called pure materials. The sputtering of alloys or compounds involves solid state processes such as diffusion and segregation,4) while the sputtering of monatomic solids is essentially a collisional process.5) Thus the present graphs cannot be used in predicting the sputtering yields of alloys. The rough surface is known to re-trap sputtered materials6) and hence the compiled data may not be applicable for such a case.

3) Data compiled are essentially those obtained at room temperature. It is well established, however, that the sputtering yield is not dependent on temperature1) except for the limited cases, such as hydrogen on carbon, fluorine on silicon, etc. These are known as chemical sputtering.7)

4) Data compiled are primarily the results of absolute measurements where are employed the weight loss measurement, interferometry, Rutherford backscattering, etc. There are quite a few references where only relative energy dependence was obtained but the absolute values were determined by comparing with those determined in literatures. The results of these relative measurements are also included in the present compilation.

5) Incident ions are atomic in most cases. Data obtained with H_2^+, D_2^+ and H_3^+ are also included, with incident energies being divided by the number of atoms in a molecule. Data for N_2 and O_2 ions are not included since they may cause the non-linear effect.6)

6) Only data for incidence normal to the surface are compiled. Dependence of the sputtering yields on incident angle has been studied by several authors.1)

7) Dose effects on sputtering yield may occur either because of doping of target materials with incident particles or because of topographical change of the surface induced by ion bombardments.1) The data compiled are free from such dose effects. Any dose rate dependence has not been reported for ion fluxes used conventionally.

Empirical formula

Empirical formula used in the present compilation is that developed by Yamamura *et al.*[9]:

$$Y(E) = 0.42 \frac{\alpha^* Q K s_n(\epsilon)}{U_s [1 + 0.35 U_s s_e(\epsilon)]} [1 - (E_{th}/E)^{1/2}]^{2.8} , \tag{1}$$

where Y(E) is the yield of sputtering by incident ions at an energy of E; α^*, Q and E_{th} are empirical parameters; U_s is the sublimation energy in eV; $s_n(\epsilon)$ and $s_e(\epsilon)$ are Lindhard's elastic and inelastic stopping functions, respectively.[10] These functions are expressed in terms of the reduced energy ϵ:

$$\epsilon = \frac{0.03255}{Z_1 Z_2 (Z_1^{2/3} + Z_2^{2/3})^{1/2}} \frac{M_2}{M_1 + M_2} E\,(\mathrm{eV}) . \tag{2}$$

K is the conversion factor from the elastic stopping function s_n to the stopping power S_n in the unit of eV cm^2/10^{15} atoms:

$$K = \frac{S_n}{s_n}$$

$$= 8.478 \frac{Z_1 Z_2}{(Z_1^{2/3} + Z_2^{2/3})^{1/2}} \frac{M_1}{M_1 + M_2} . \tag{3}$$

In Eqs. (2) and (3), Z_1 and Z_2 are the atomic numbers of incident ion and target atom and M_1 and M_2 are their mass numbers, respectively. The sublimation energy of elementary solids are shown in Table I. The functional form of $s_n(\epsilon)$ and the method of calculating $s_e(\epsilon)$ for a given ion-target combination are shown in Appendix.

Sputtering by heavy ions is known to be caused by collision cascades induced directly by incident ions, while that by light ions is by atoms scattered back from the inside.[11] It has been demonstrated[8] that the energy dependence of the sputtering yield by these two different mechanisms is given by a single equation of the form of Eq. (1): the difference in the mechanism results in only the difference in the dependence of E_{th} on M_2/M_1. The most important advantage of Eq. (1) over the empirical equation suggested by Bohdansky[12)] is that Eq. (1) can be applied to all the possible ion-target combinations. The present empirical equation is similar to that suggested by Matsunami *et al.*[13)] but includes modifications to meet the effect of the electronic stopping for light ions.

The procedures of obtaining the best fit values for parameters α, Q and E_{th} are as follows: Among all experimental data, those which do not satisfy the following conditions are excluded:

1) More than three data points are available in the energy region, $E \leqslant 80\ E_{th}'$, where E_{th}' is the threshold energy obtained previously.[14)]

2) $K\, s_n(\epsilon) > 2.5 \times 10^{16}$ eVcm².

The second requirement is necessary to avoid the influence of the non-linear effect on the empirical parameters. Using experimental data for each ion-target combination, the best fit values of $\alpha = \alpha^* Q$ and E_{th} were obtained. The obtained values of α and E_{th}/U_s are shown in Fig. 1 and Fig. 2, respectively, as a function of M_2/M_1. The solid line in Fig. 1 is the averaged dependence of α on M_2/M_1, which is now expressed as $\alpha^*(M_2/M_1)$:

$$\alpha^*(M_2/M_1) = 0.08 + 0.164\,(M_2/M_1)^{0.4} + 0.0145\,(M_2/M_1)^{1.29}\ . \qquad (4)$$

Similarly the averaged dependence of E_{th}/U_s on M_2/M_1 is given by

$$\frac{E_{th}}{U_s} = 1.9 + 3.8\,(M_2/M_1)^{-1} + 0.134\,(M_2/M_1)^{1.24}\ . \qquad (5)$$

It turns out that the ratio of the best fit values of α for each combination to $\alpha^*(M_2/M_1)$ depends primarily on target but not substantially on incident ions. The ratio averaged over incident ions for each target is now expressed as $Q(Z_2)$, which are shown in Table I. Fig. 3 shows the relation between $\alpha/Q(Z_2)$ and M_2/M_1. Clearly the relation fits to Eq. (4) better than that between α and M_2/M_1.

Presentation of Data and Discussion

Each graph shows both experimental data points and calculated curve of energy dependence of the sputtering yield for each ion-target combination. Only the ion-target combinations listed in Table II are shown in graphs. The graphs are ordered first by increasing projectile atomic number and then by increasing target atomic number. For plots of experimental data, different symbols are used for different references. The calculated yield-energy curves are shown by solid lines. References for all other ion-target combinations of which data are not shown in Table II are listed in Table III.

Agreement between the solid curve and data points for each ion-target combination is satisfactorily good except near the threshold energy region. This fact reflects the scattering of the relation between the best fit values of E_{th}/U_s and M_2/M_1 (Fig. 2) and is probably due to lack of experimental data at low energies. Even for higher energies, agreement between the experimental data points and calculated curves is poor for some combinations. These are mostly self-sputtering of several metal targets and sputtering of beryllium and carbon targets. It appears that the method of preparation of specimens affect the sputtering yield for beryllium and carbon targets. Thus we think that the sputtering yield for any ion-target combination evaluated using Eq. (1) is accurate within an error of ±20%.

II. Explanation of Graphs

Energy Dependence of Ion-Induced Sputtering Yield of Monatomic Solids

The graphs are ordered first by increasing projectile atomic number, and then by increasing target atomic number.

Ordinate	Sputtering yield or number of atoms sputtered per incident ion.
Abscissa	Total energy of incident ions in eV.
Heading	Incident ion and target. He → Cu means He ion on Cu target.
Symbols	Experimental data points. Not more than the first three authors and the year published for each reference are listed. For details see references for graphs.
Solid Line	Energy dependence of sputtering yield calculated using the empirical equation.

III. Sample Calculation of Sputtering Yield

As an example we calculate the sputtering yield of He on Cu at an incident energy of 1 keV. First, calculate ϵ using Eq. (2).

$$\epsilon = \frac{0.03255}{2 \times 29 \times (2^{2/3} + 29^{2/3})^{1/2}} \times \frac{63.55}{4 + 63.55} \times 10^{3}$$

$$= 0.159$$

Then obtain $s_n(\epsilon)$ and $s_e(\epsilon)$ using Eqs. A1, A2 and A3.

$$s_n(\epsilon) = 0.3920,$$

$$s_e(\epsilon) = 0.079 \times \frac{(4 + 63.55)^{3/2}}{4^{3/2} \times 63.55^{1/2}} \times \frac{2^{2/3} \times 29^{1/2}}{(2^{2/3} + 29^{2/3})^{3/4}} \times 0.159^{1/2}$$

$$= 0.39 \times 10^{-3}.$$

Now calculate K from Eq. (3):

$$K = 8.474 \times \frac{2 \times 29}{(2^{2/3} + 29^{2/3})^{1/2}} \times \frac{4}{4 + 63.55}$$

$$= 8.76\,.$$

Pick up the values of Q and U_s from Table I. If no Q value is listed, let Q = 1. α and E_{th} can be obtained from Eq. (4) and (5), respectively.

$$\alpha = 0.08 + 0.164 \times \left(\frac{63.55}{4}\right)^{0.4} + 0.0145 \left(\frac{63.55}{4}\right)^{1.29}$$

$$= 1.4568\,,$$

$$E_{th} = 3.49 \times \left\{1.9 + 3.8 \times \frac{4}{63.55} + 0.134 \times \left(\frac{63.55}{4}\right)^{1.24}\right\}$$

$$= 3.49 \times 6.27 = 21.9\,.$$

Now the sputtering yield is

$$Y = 0.42 \times \frac{1.4568 \times 1.2 \times 2.64 \times 0.3920}{3.52 \times (1 + 0.35 \times 3.52 \times 1.02 \times 10^{-3}}$$

$$\times \left\{1 - \left(\frac{21.9}{10^{3}}\right)^{1/2}\right\}^{2.8}$$

$$= 0.25\,.$$

Appendix Lindhard's elastic and inelastic stopping functions

Lindhard's elastic stopping function is approximated by

$$s_n(\epsilon) = \frac{3.441\sqrt{\epsilon}\,\ln(\epsilon + 2.718)}{1 + 6.355\sqrt{\epsilon} + \epsilon(-1.708 + 6.882\sqrt{\epsilon})} . \tag{A1}$$

Fig. A1 compares the curve for Eq. (A1) (solid lines) with the values (open circles) calculated using the Lindhard-Scharff-Schiott equation.$^{10)}$ The inelastic stopping function is given by

$$s_e = k\,\epsilon^{1/2} , \tag{A2}$$

where

$$k = 0.079\,\frac{(M_1 + M_2)^{3/2}}{M_1^{3/2} M_2^{1/2}}\,\frac{Z_1^{2/3} Z_2^{1/2}}{(Z_1^{2/3} + Z_2^{2/3})^{3/4}} . \tag{A3}$$

References

1) H.H. Andersen and H.L. Bay, "Sputtering by Particle Bombardment" ed. R. Behrish (Springer, Berlin, 1981) p. 145.
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14) N. Matsunami, Y. Yamamura, Y. Itikawa, N. Itoh, Y. Kazumata, S. Miyagawa, K. Morita and R. Shimizu, IPPJ-AM-14 (Inst. Plasma Phys., Nagoya Univ., 1980).

Table I Sublimation energy and Q-value

Target	Atomic number	Sublimation energy[a)] (eV)	Q
Be	4	3.32	2.17 ± 0.82
B	5	5.77	4.6 ± 1.5
C	6	7.37	3.1 ± 0.9
Al	13	3.39	1.09 ± 0.14
Si	14	4.63	0.78 ± 0.17
Ti	22	4.85	0.58 ± 0.10
V	23	5.31	0.9 ± 0.3
Cr	24	4.10	1.23 ± 0.21
Mn	25	2.92	1.13 ± 0.08
Fe	26	4.28	1.06 ± 0.18
Co	27	4.39	1.0 ± 0.32
Ni	28	4.44	1.06 ± 0.26
Cu	29	3.49	1.30 ± 0.22
Ge	32	3.85	0.83 ± 0.10
Zr	40	6.25	0.70 ± 0.16
Nb	41	7.57	1.02 ± 0.09
Mo	42	6.82	0.84 ± 0.24
Ru	44	6.74	1.52 ± 0.20
Rh	45	5.75	1.26 ± 0.18
Pd	46	3.89	1.10 ± 0.25
Ag	47	2.95	1.21 ± 0.19
Sn	50	3.14	0.47 ± 0.14
Hf	72	6.44	0.75 ± 0.08
Ta	73	8.10	0.78 ± 0.19
W	74	8.90	1.10 ± 0.18
Re	75	8.03	1.27 ± 0.22
Os	76	8.17	1.47 ± 0.19
Ir	77	6.94	1.37 ± 0.22
Pt	78	5.84	1.13 ± 0.17
Au	79	3.81	1.04 ± 0.23
Th	90	6.20	0.9 ± 0.3
U	92	5.55	0.81 ± 0.13

a) C. Kittel, Introduction to Solid State Physics (John Wiley, New York, 1976)

Table II Ion-target combinations of which sputtering yield data are shown by graphs.

	Ion	H	D	He	Li	N	O	Ne	Ar	K	Kr	Cd	Sb	Xe	Cs	Hg	Pb	Bi	+
Target		1	1	2	3	7	8	10	18	19	36	48	51	54	55	80	82	83	
Be	4	*	*	*				*	*		*			*					
B	5			*															
C	6	*	*	*					*		*	*		*		*			
Al	13	*	*	*				*	*		*			*		*			*
Si	14	*	*	*				*	*		*			*		*	*		
Ti	22	*	*	*				*	*		*	*		*		*			
V	23		*	*				*	*		*			*		*			
Cr	24			*				*	*		*			*		*			*
Mn	25										*			*					
Fe	26	*	*	*		*		*	*		*			*	*	*	*		
Co	27			*				*	*		*			*		*			*
Ni	28	*	*	*		*	*	*	*		*			*		*			*
Cu†[1]	29	*	*	*		*		*	*	*	*	*		*	*	*	*		*
Zn	30								*										*
Ge	32			*				*	*		*			*		*			
Zr	40			*	*			*	*		*	*		*		*			
Nb	41	*	*	*	*			*	*		*			*	*	*			*
Mo	42	*	*	*†[2]		*		*	*		*	*		*	*	*	*		*
Ru	44							*	*		*			*					
Rh	45			*				*	*		*			*		*			
Pd	46			*				*	*		*			*		*			
Ag	47	*	*	*		*		*	*		*		*	*		*		*	*
Cd	48								*										
Sn	50							*	*		*			*					*
Hf	72			*				*	*		*			*		*			
Ta	73	*	*	*				*	*		*			*		*			
W	74	*	*	*		*	*	*	*	*	*	*		*	*	*	*		*
Re	75							*	*		*			*		*			
Os	76			*				*	*		*			*					
Ir	77			*				*	*		*			*		*			
Pt	78			*				*	*		*		*	*		*		*	
Au	79	*	*	*†[2]		*		*	*		*		*	*		*		*	*
Pb	82			*					*										
Th	90			*				*	*		*			*		*			
U	92			*				*	*		*			*		*			

+ Self-sputtering

†[1] Data for Na, Si, P, S, Cl, Zn and Tl ions are shown also in graphs.

†[2] Data both for ^{3}He and ^{4}He are shown in graphs.

Table III References of normal-incidence sputtering yield of monatomic solids for ion-target combinations of which graphs are not presented. For reference code see references for graphs.

Ion	Target	Reference
H	B	Miyagawa, Ato, Moriya (1978)
C	C	Almen, Bruce (1961 B)
Ne	C	Laegreid, Wehner (1960, 1961)
Mg	Mg	Almen, Bruce (1961 B)
Kr	Mg	Almen, Bruce (1961 A)
N, Al, Cl, V, Zn, Se, Ag, Sn, Te, Tm, Bi	Si	Andersen, Bay (1975 A)
Al	Si	Krautle (1976)
Si	Si	Almen, Bruce (1961 B)
Ca	Ca	Almen, Bruce (1961 B)
Sc	Sc	Almen, Bruce (1961 B)
Li	Ti	Martynenko (1969)
Ti	Ti	Almen, Bruce (1961 B)
H	V	Roth, Bohdansky, Ottenberger (1979)
V	V	Almen, Bruce (1961 B)
Fe	Fe	Almen, Bruce (1961 B)
O, V, Cr, Mn, Fe, Co, Ni, Ga, Ge, As, Se, Br, Rb, Sr, Y, Zr, Nb, Mo, Pd, Ag, In, Sn Sb, Te, I, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Dy, Yb, Hf, Ta, W, Pt, Au, Bi	Cu	Almen, Bruce (1961 B)
Co, Ni	Cu	Smith (1973)
Ar	Zn	Benninghoven (1969)
Co, Ni, Cu, Cd	Zn	Smith (1973)
Kr	Zn	Almen, Bruce (1961 A)
H	Zr	Roth, Bohdansky, Ottenberger (1979)
Zr	Zr	Almen, Bruce (1961 B)
Li	Mo	Martynenko (1969)
Hg	Ru	Laegreid, Wehner (1961)
Pd	Pd	Almen, Bruce (1961 B)
C, O, S, Cl, K, Zn, Se, Te, I, Cs, Pb	Ag	Andersen, Bay (1973)
O, Na, P, S, Cl, K, Ca, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Se, Br, Rb, Sr, Y, Zr, Nb, Mo, Pd, Cd, In, Sn, Sb, Te, I, Cs, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Dy, Yb, Hf, Ta, W, Pt, Au, Tl, Pb	Ag	Almen, Bruce (1961 B)
Ni	Cd	Smith (1973)
Kr	Cd	Almen, Bruce (1961 A)
Cd	Cd	Almen, Bruce (1961 B)
Ar	In	Benninghoven (1969)
Kr	In	Almen, Bruce (1961 A)
In	In	Almen, Bruce (1961 B)
Hg	In	Ismail (1970)
Co, Cu, Cd	Sn	Smith (1973)
Kr	Sb	Almen, Bruce (1961 A)
Hg	Ho	Ismail (1970)
Li	Ta	Martynenko (1969)

Ion	Target	Reference
Na, P, S, Cl, K, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Se, Br, Rb, Sr, Y, Zr, Nb, Mo, Pd, Ag, Cd, In, Sn, Sb, Te, I, Cs, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Dy, Yb, Hf, Ta, W, Pt, Au, Tl, Pb, Bi	Ta	Almen, Bruce (1961 B)
Li	W	Martynenko (1969)
Hg	Os	Laegreid, Wehner (1961)
Pt	Pt	Almen, Bruce (1961 B)
P, Al, V, Zn, Se, Ag, Te, Tm, Pb	Au	Andersen, Bay (1975 B)
Zn, Ag	Au	Eernisse (1976)
Kr	Tl	Almen, Bruce (1961 A)
Ne	Pb	Almen, Bruce (1961 A)
Ni	Pb	Smith (1973)
Kr, Xe	Pb	Almen, Bruce (1961 A)
Pb	Pb	Almen, Bruce (1961 B)
Kr	Bi	Almen, Bruce (1961 A)

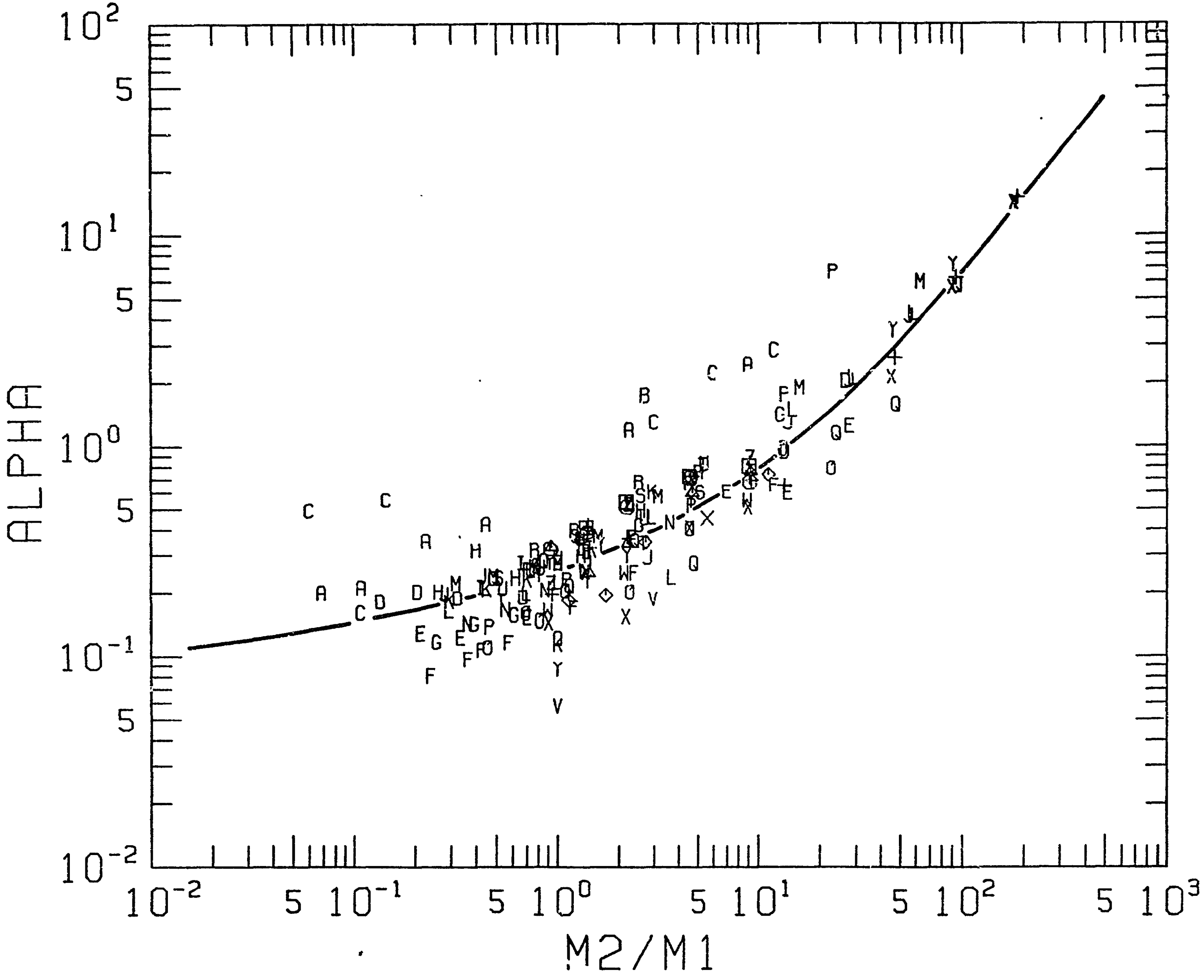


Fig. 1. Best fit values of $\alpha = \alpha^* Q$ as a function of M_2/M_1.

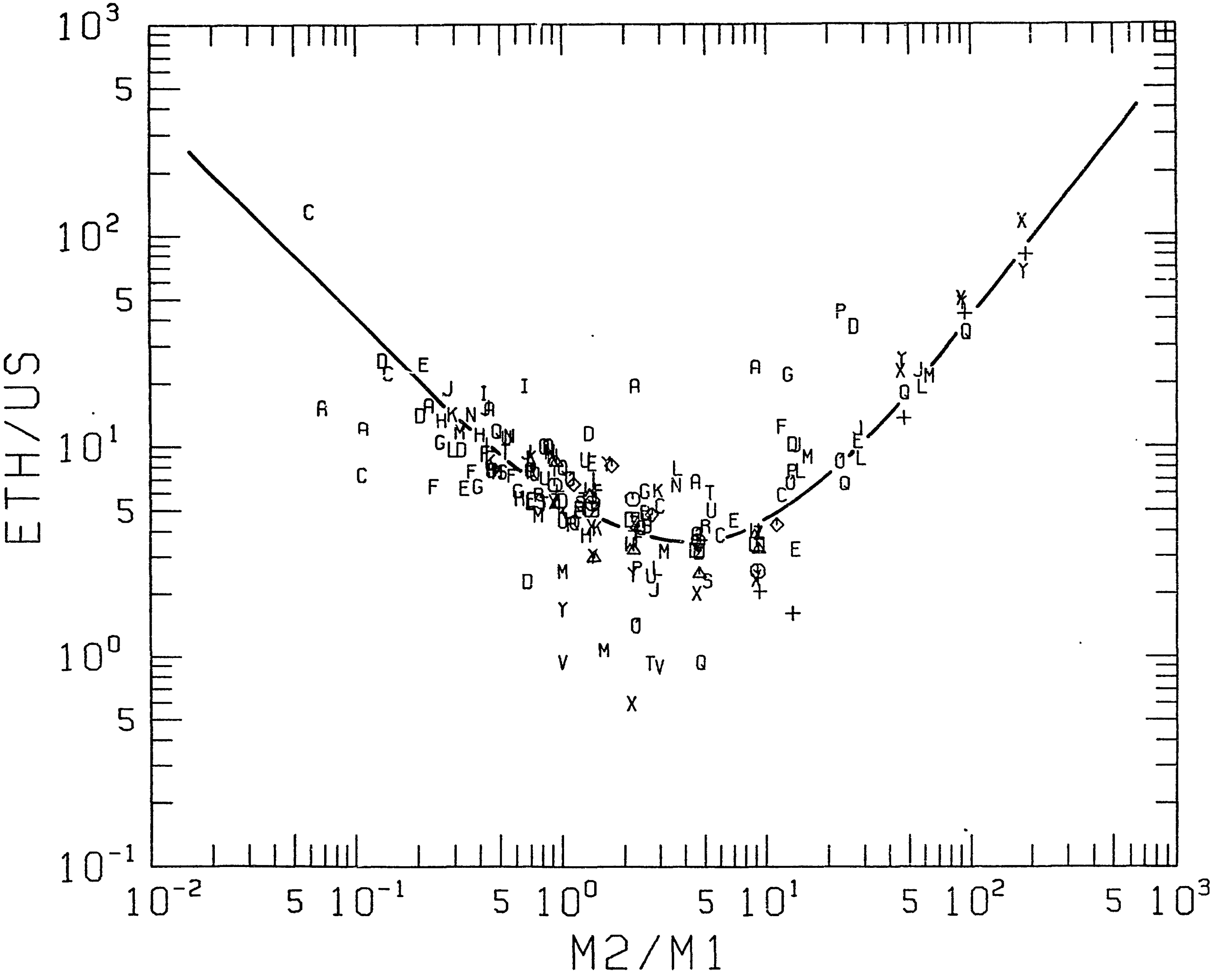


Fig. 2. Best fit values of E_{th}/U_s as a function of M_2/M_1.

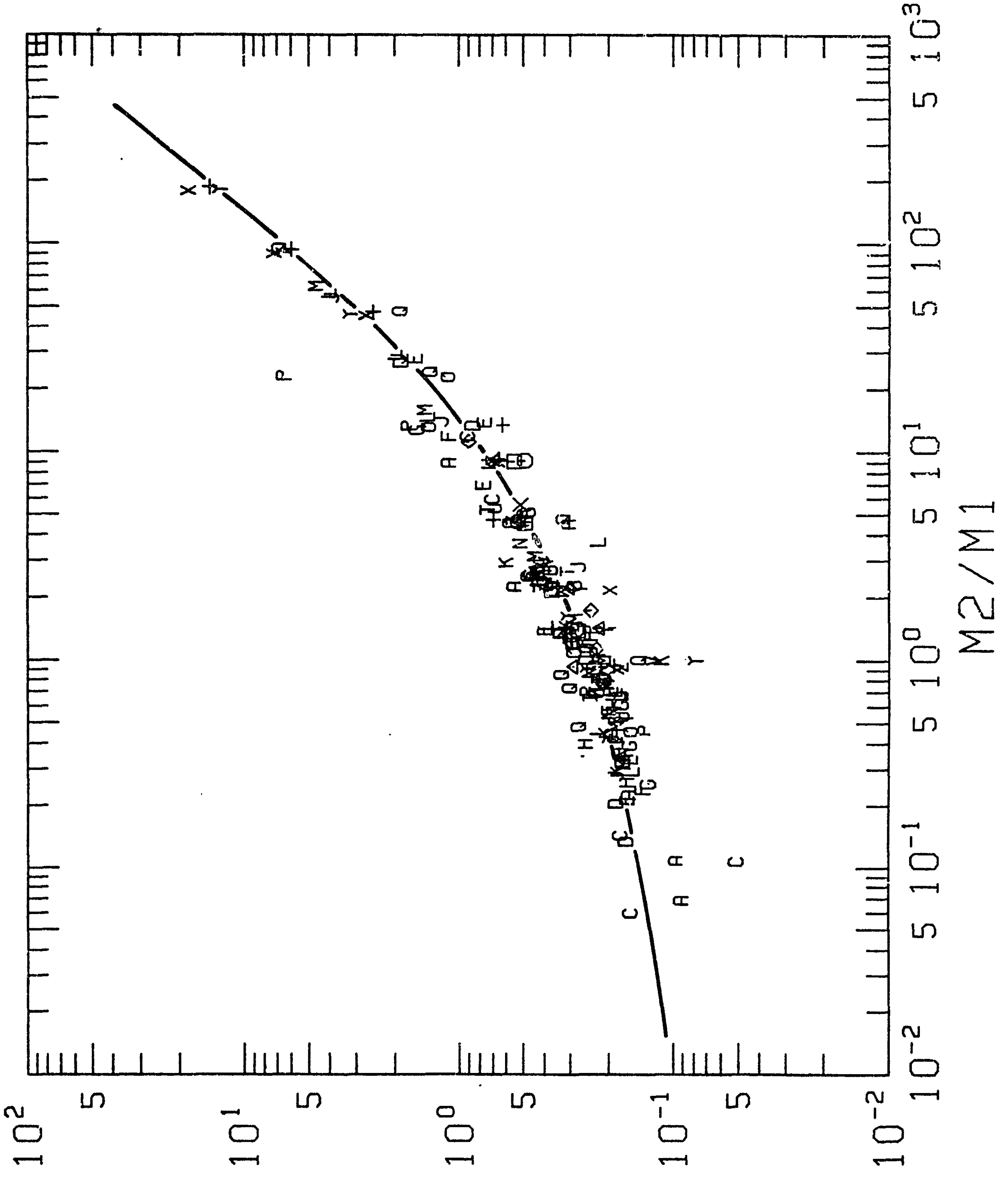


Fig. 3. Relation between best fit values of α and M_2/M_1.

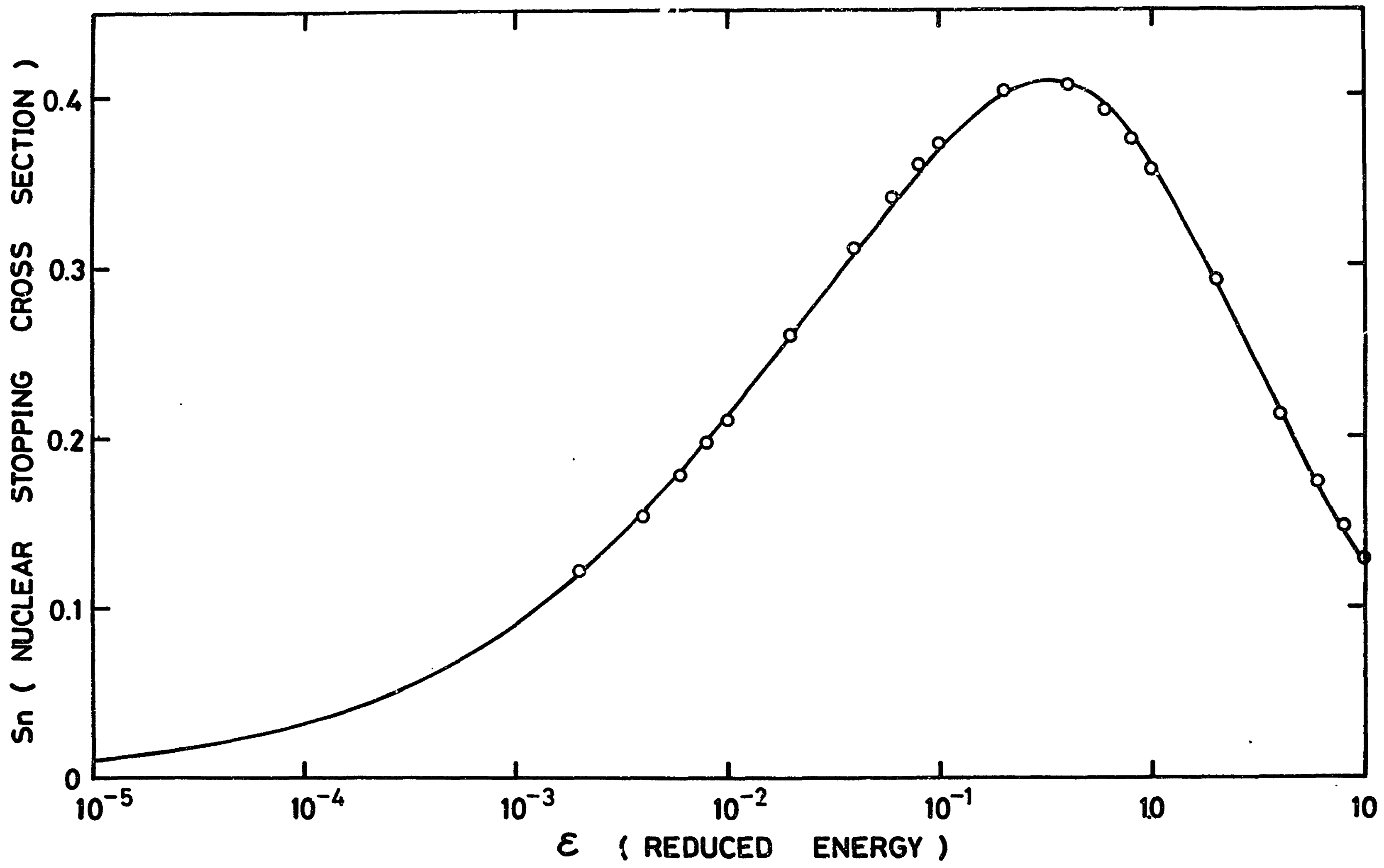
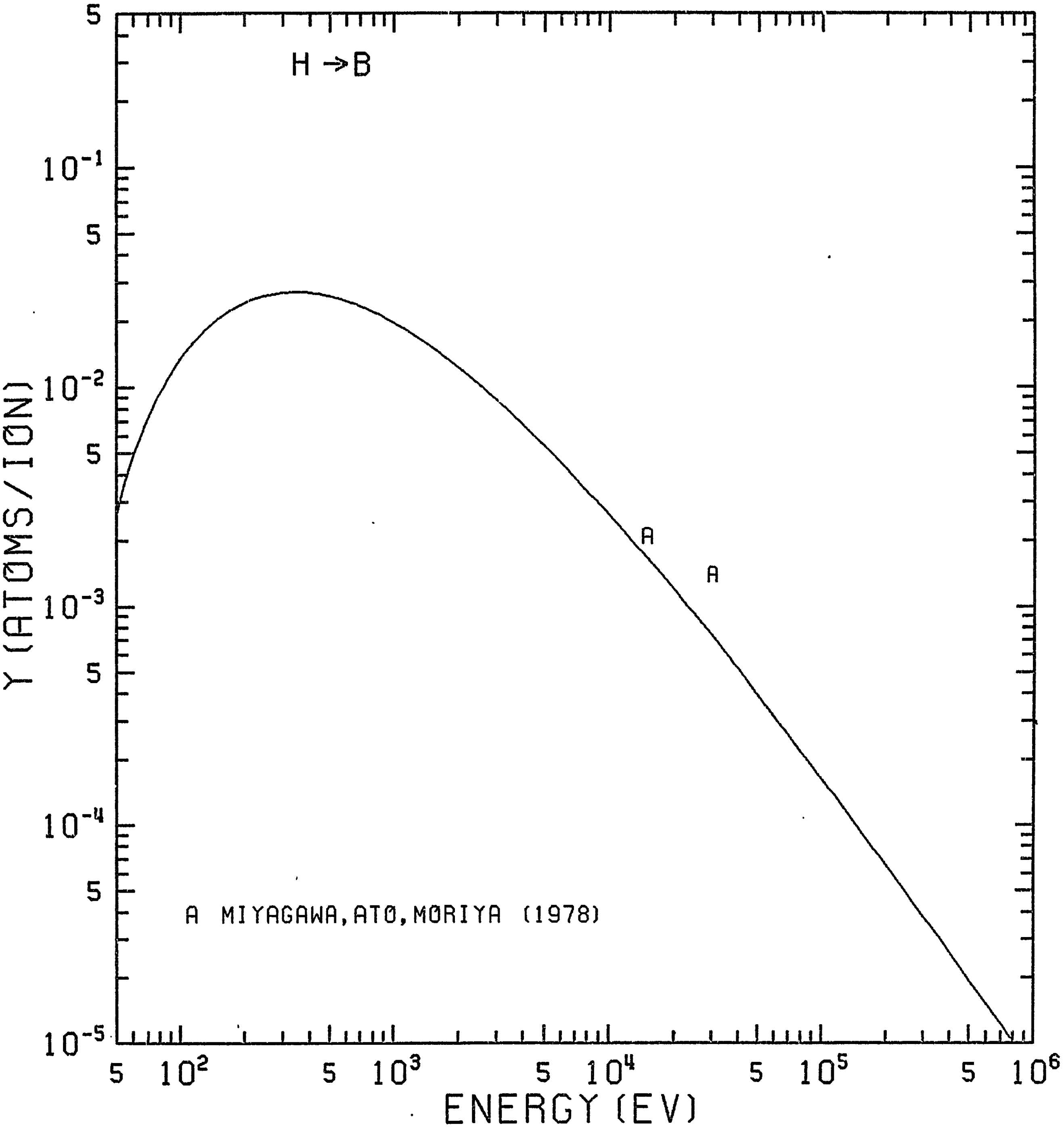
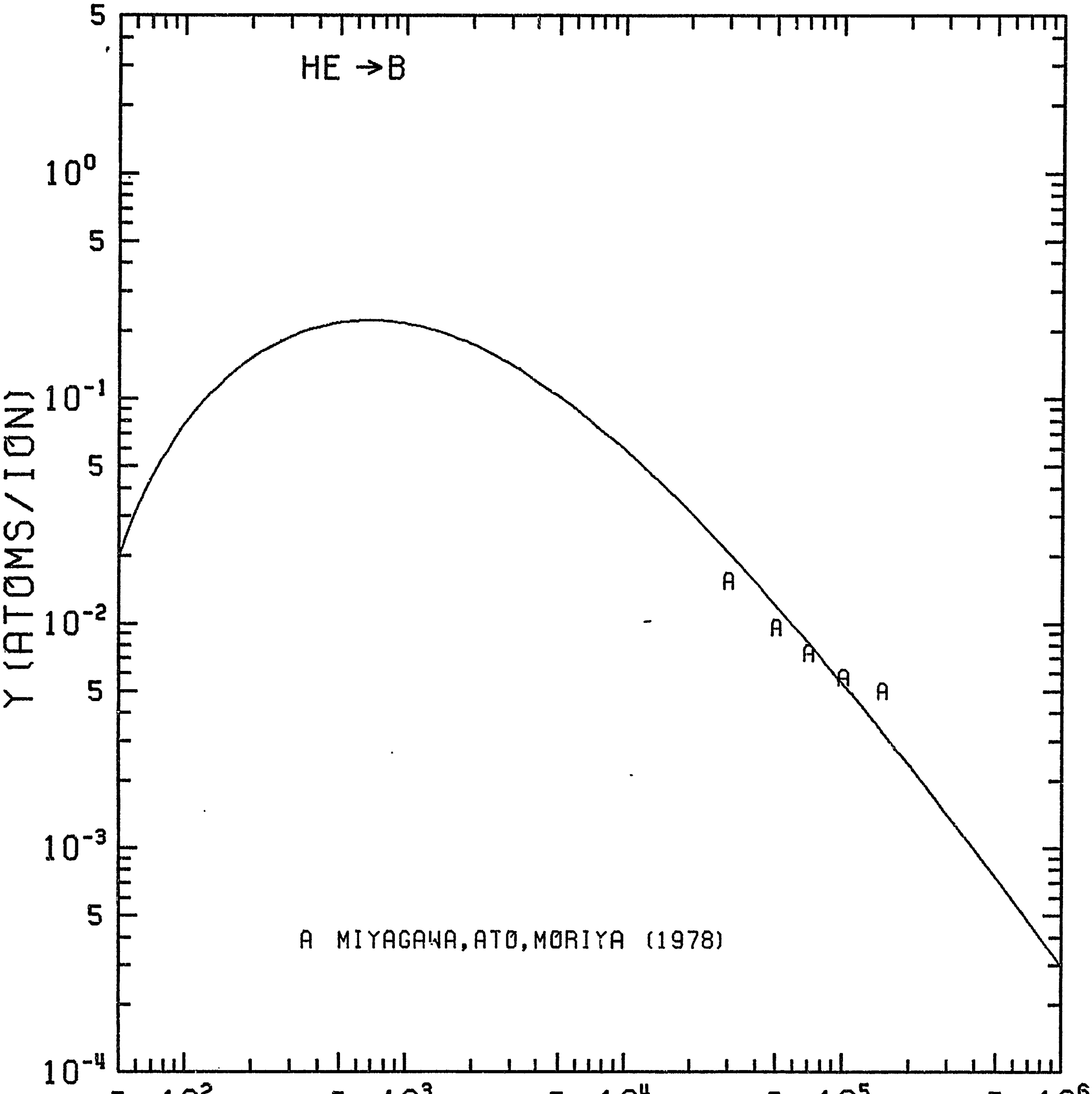
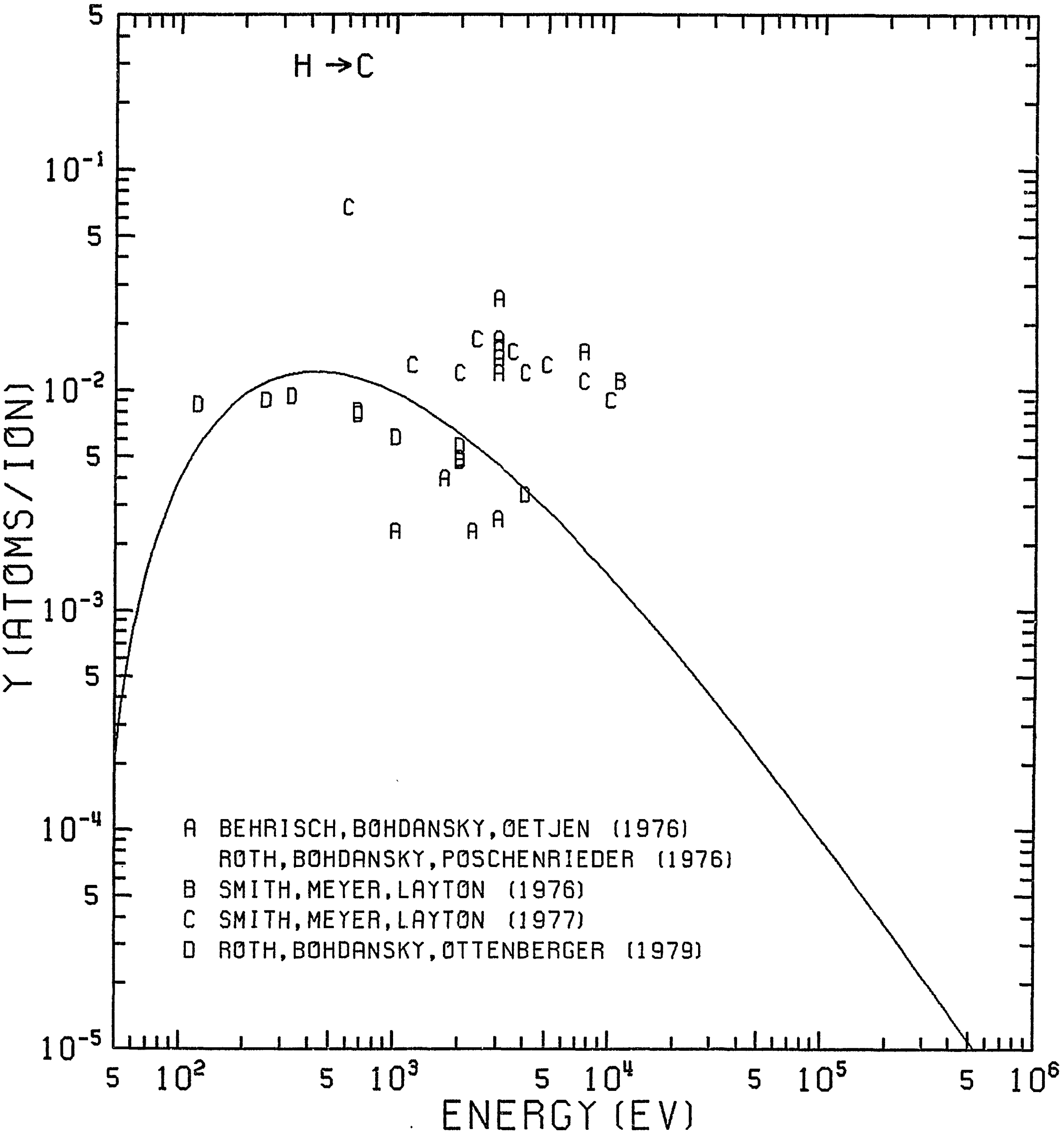


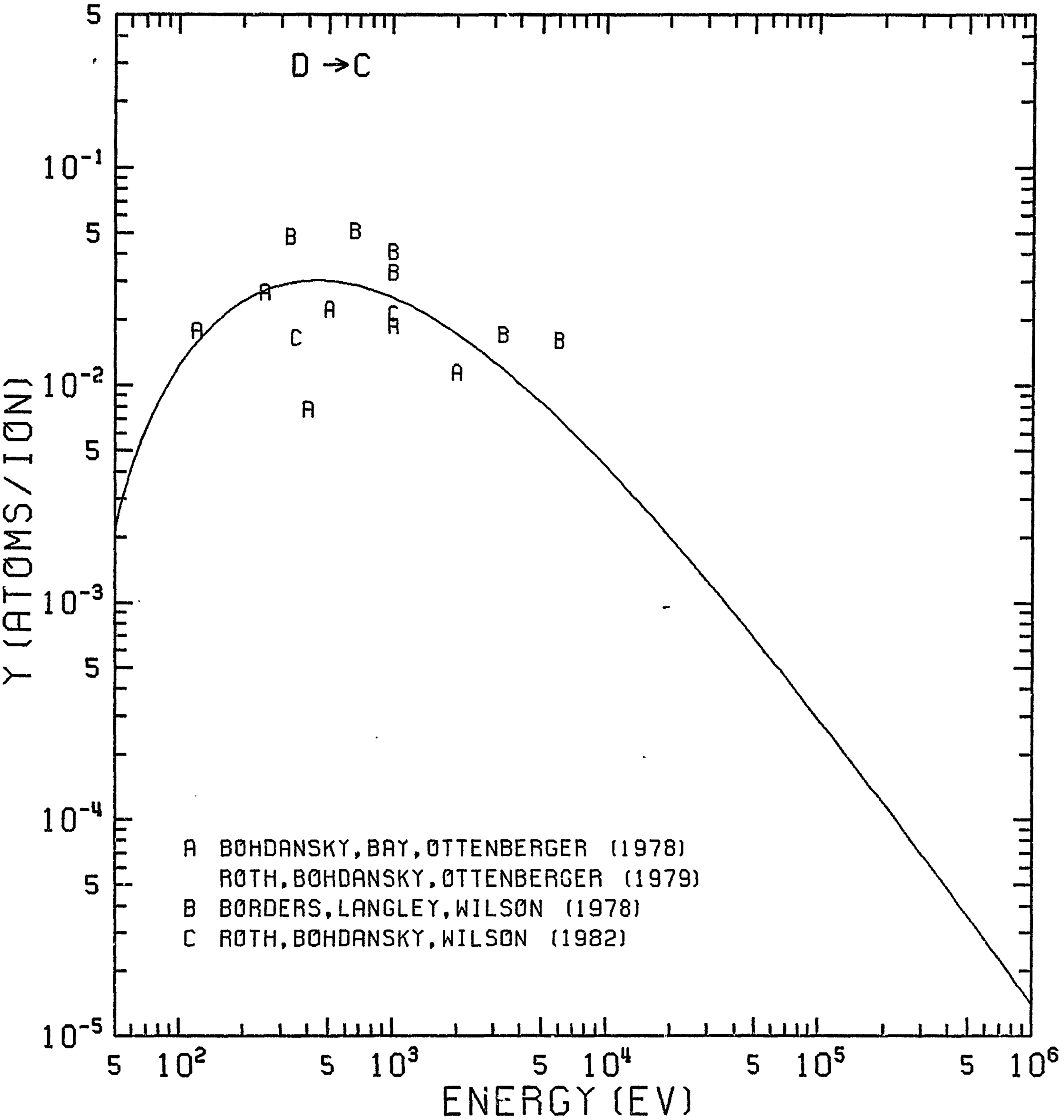
Fig. A1. Comparison of the approximate form [Eq. (A1), shown by the solid curve] of the Lindhard's elastic stopping function with the results (open circles) of exact calculation according to Lindhard-Scharff-Schiott theory.[10)]

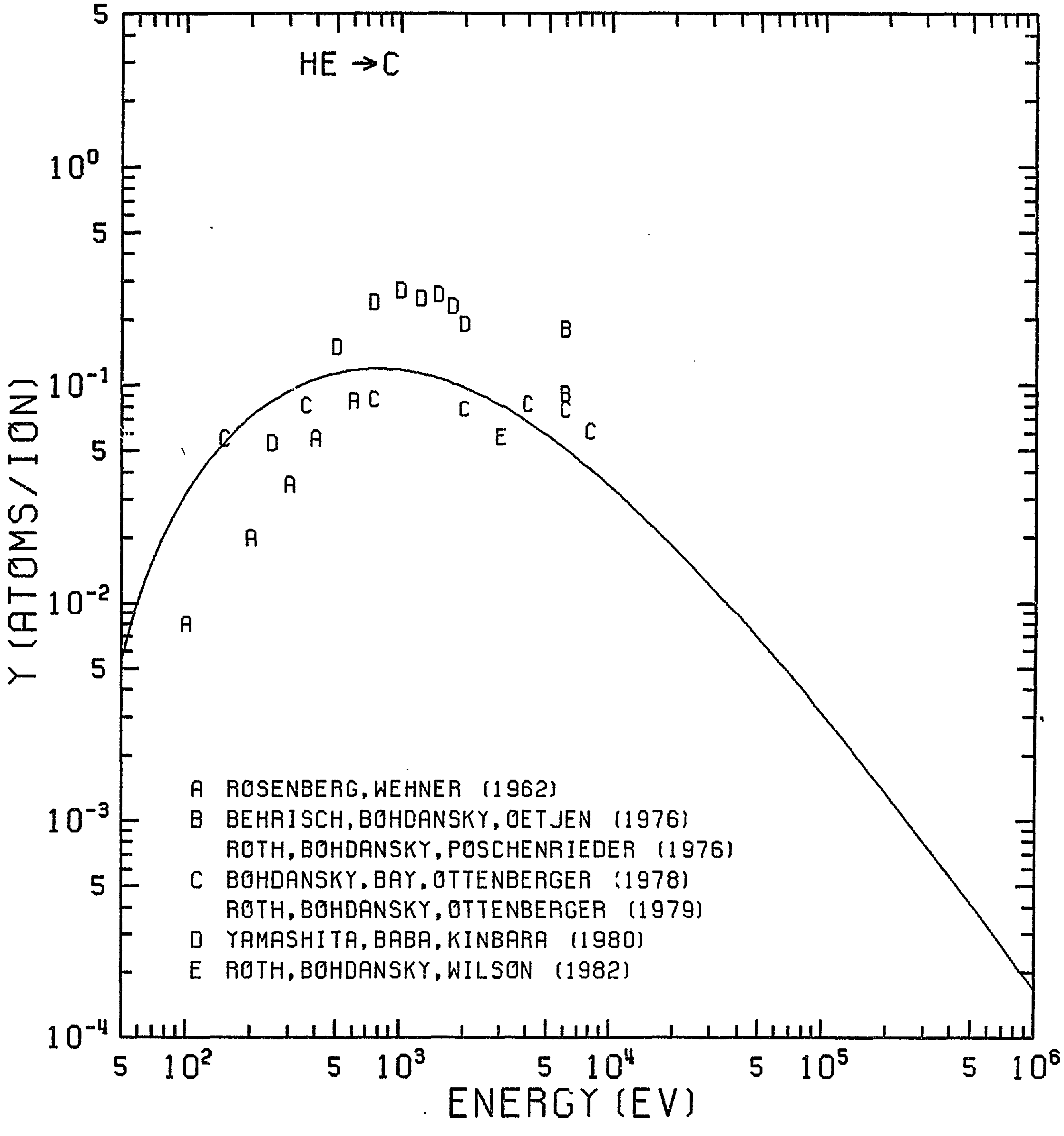
Graphs

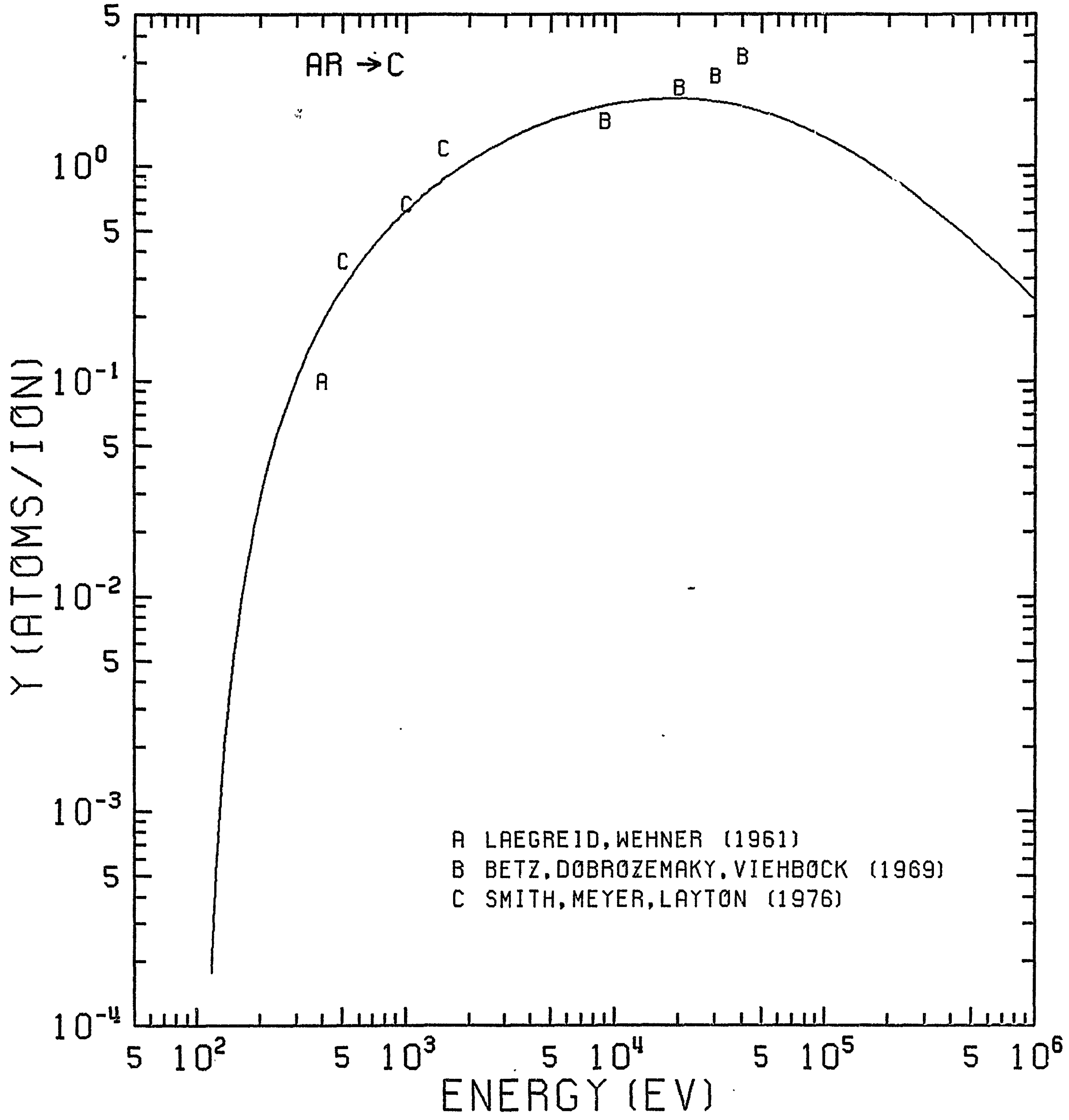

H →B
Y (ATOMS/ION)
ENERGY (EV)
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^{-5}
5
10^{2}
5
10^{3}
5
10^{4}
5
10^{5}
5
10^{6}
A
A
A MIYAGAWA,ATO,MORIYA (1978)

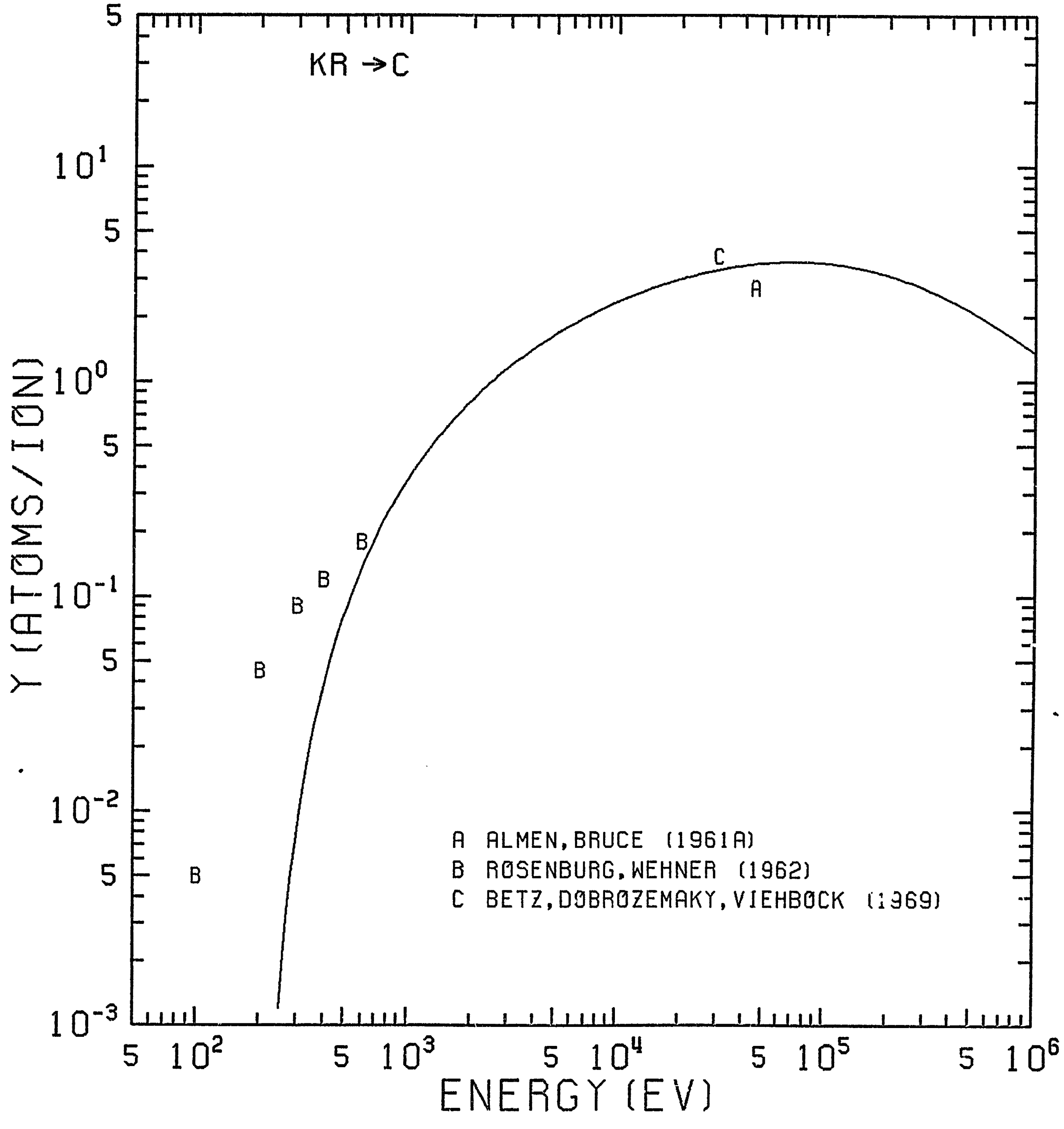

HE →B
Y (ATOMS/ION)
ENERGY (EV)
A MIYAGAWA,ATO,MORIYA (1978)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A

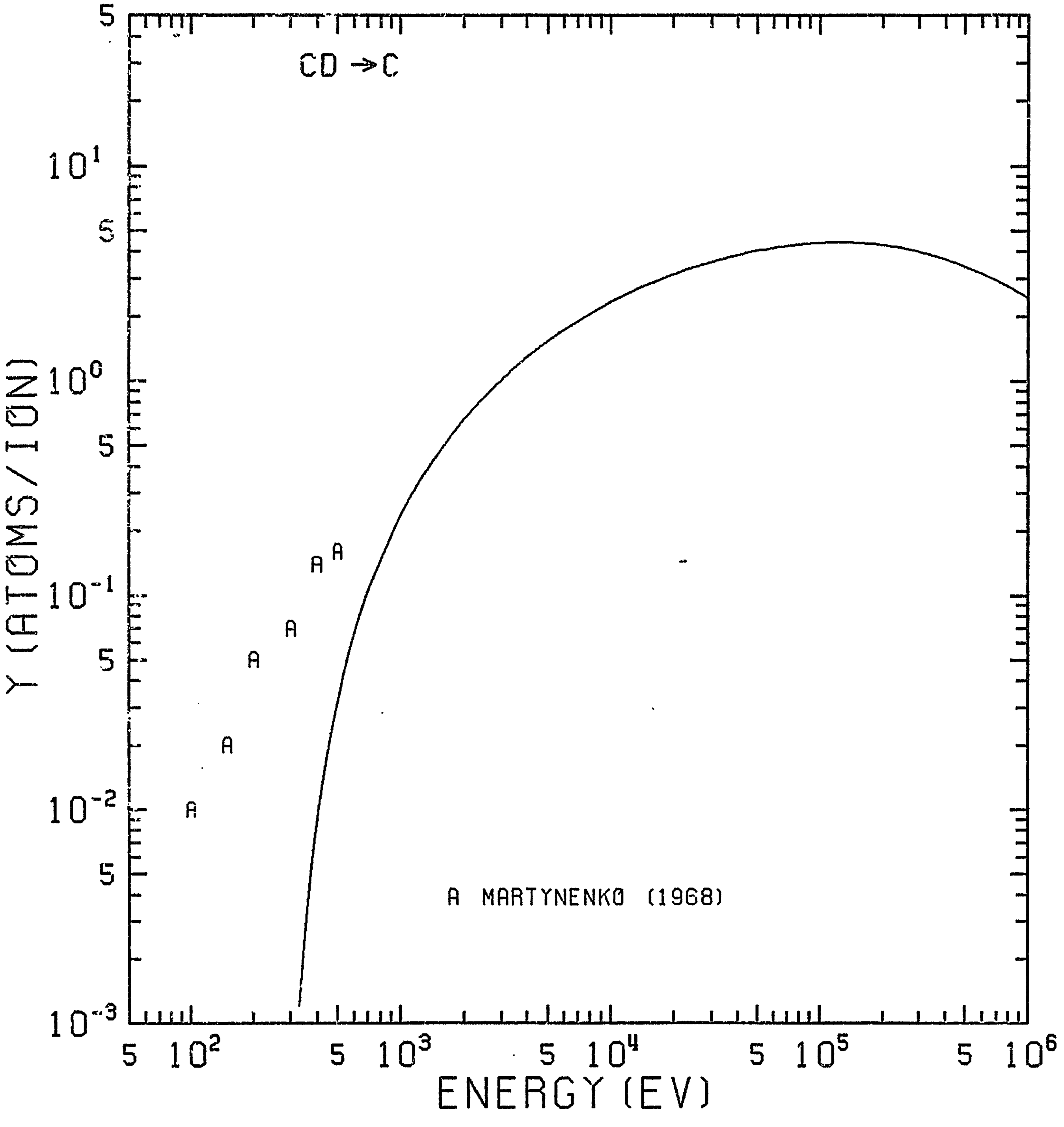

H → C
Y (ATOMS/ION)
ENERGY (EV)
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^-5
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A BEHRISCH, BOHDANSKY, OETJEN (1976)
ROTH, BOHDANSKY, POSCHENRIEDER (1976)
B SMITH, MEYER, LAYTON (1976)
C SMITH, MEYER, LAYTON (1977)
D ROTH, BOHDANSKY, OTTENBERGER (1979)

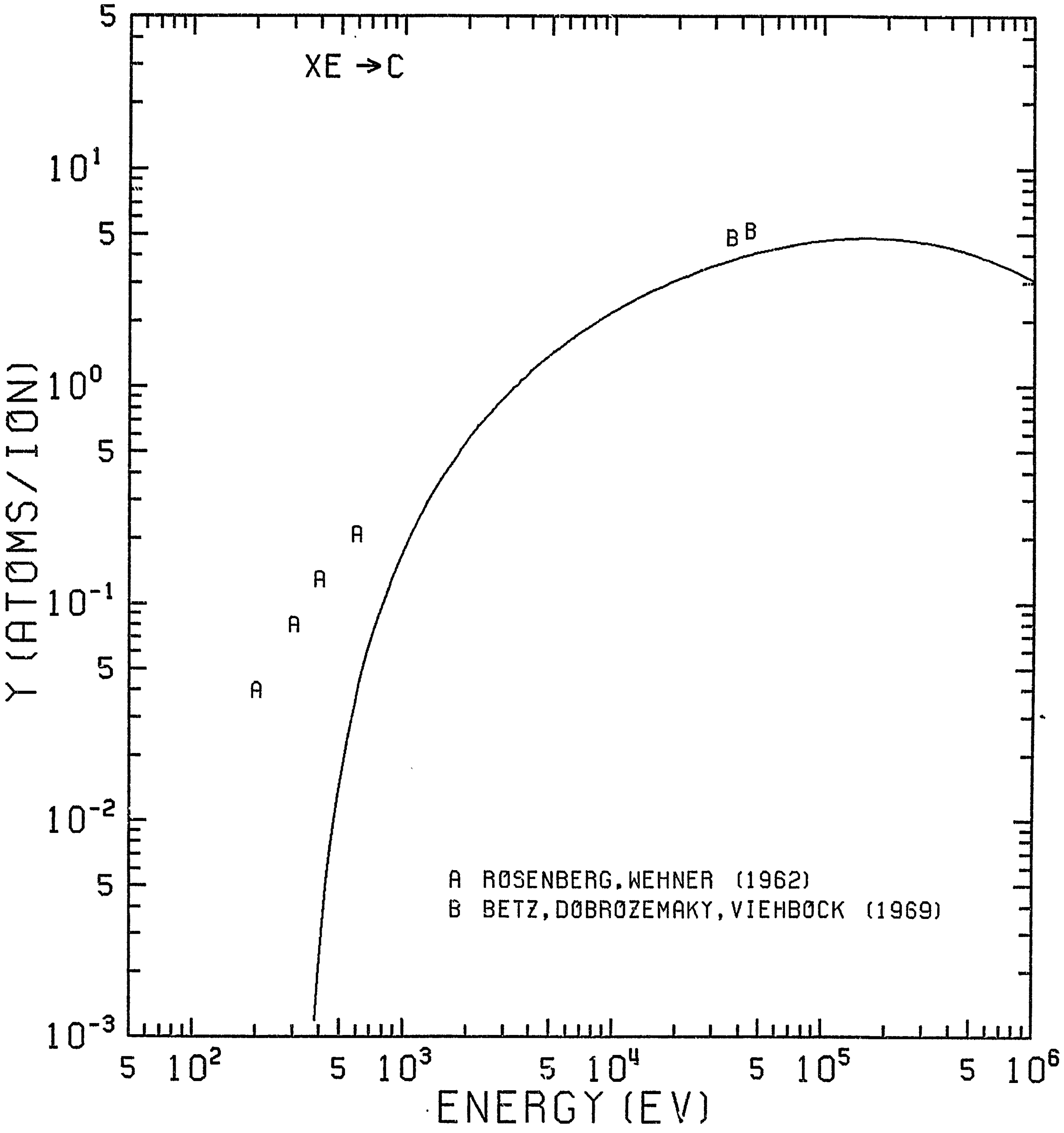

D →C
Y (ATOMS/ION)
ENERGY (EV)
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^-5
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A BOHDANSKY, BAY, OTTENBERGER (1978)
ROTH, BOHDANSKY, OTTENBERGER (1979)
B BORDERS, LANGLEY, WILSON (1978)
C ROTH, BOHDANSKY, WILSON (1982)

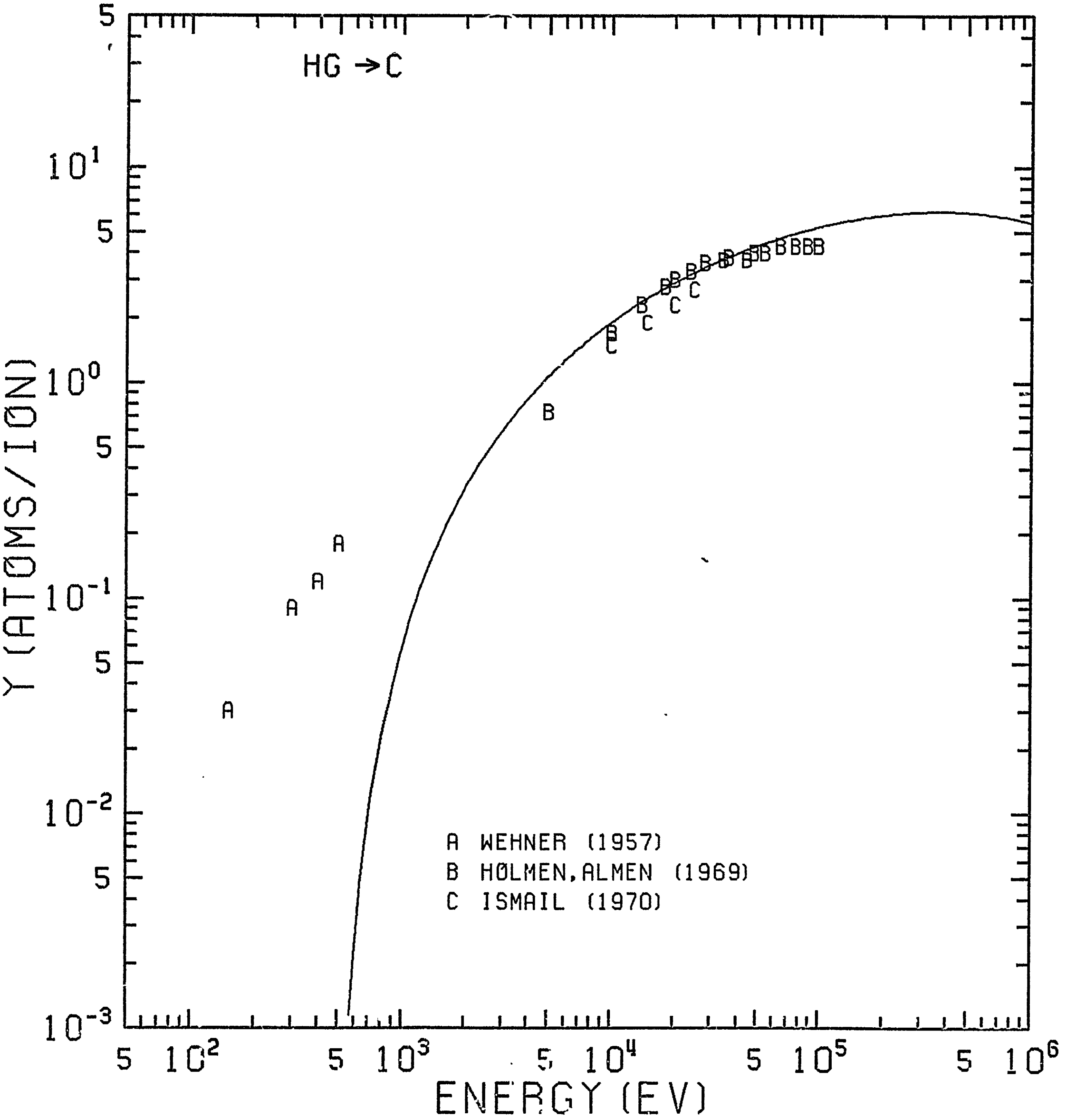

HE →C
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ROSENBERG, WEHNER (1962)
B BEHRISCH, BOHDANSKY, OETJEN (1976)
ROTH, BOHDANSKY, POSCHENRIEDER (1976)
C BOHDANSKY, BAY, OTTENBERGER (1978)
ROTH, BOHDANSKY, OTTENBERGER (1979)
D YAMASHITA, BABA, KINBARA (1980)
E ROTH, BOHDANSKY, WILSON (1982)

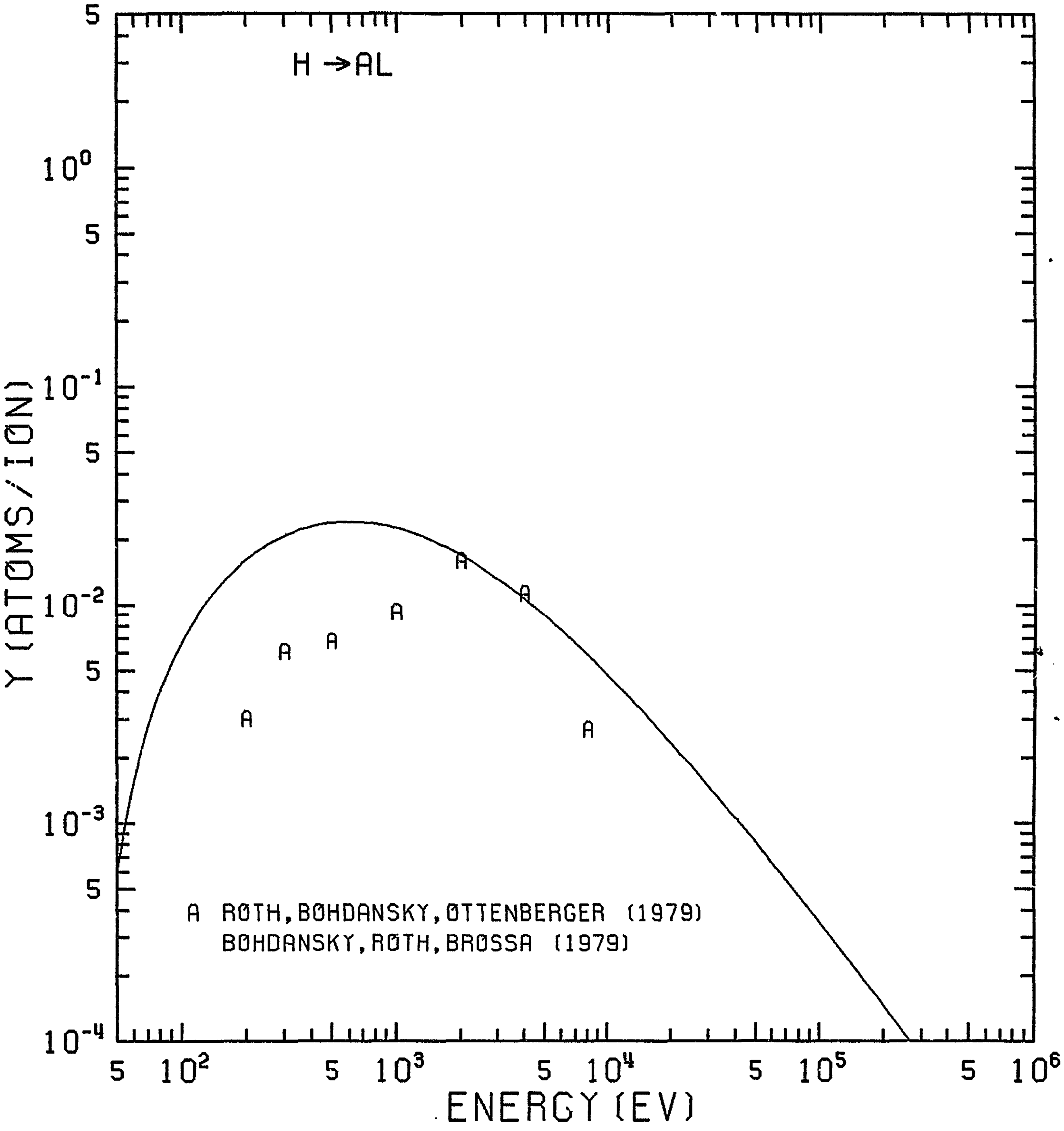

AR → C
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B
C
A LAEGREID, WEHNER (1961)
B BETZ, DOBROZEMAKY, VIEHBOCK (1969)
C SMITH, MEYER, LAYTON (1976)

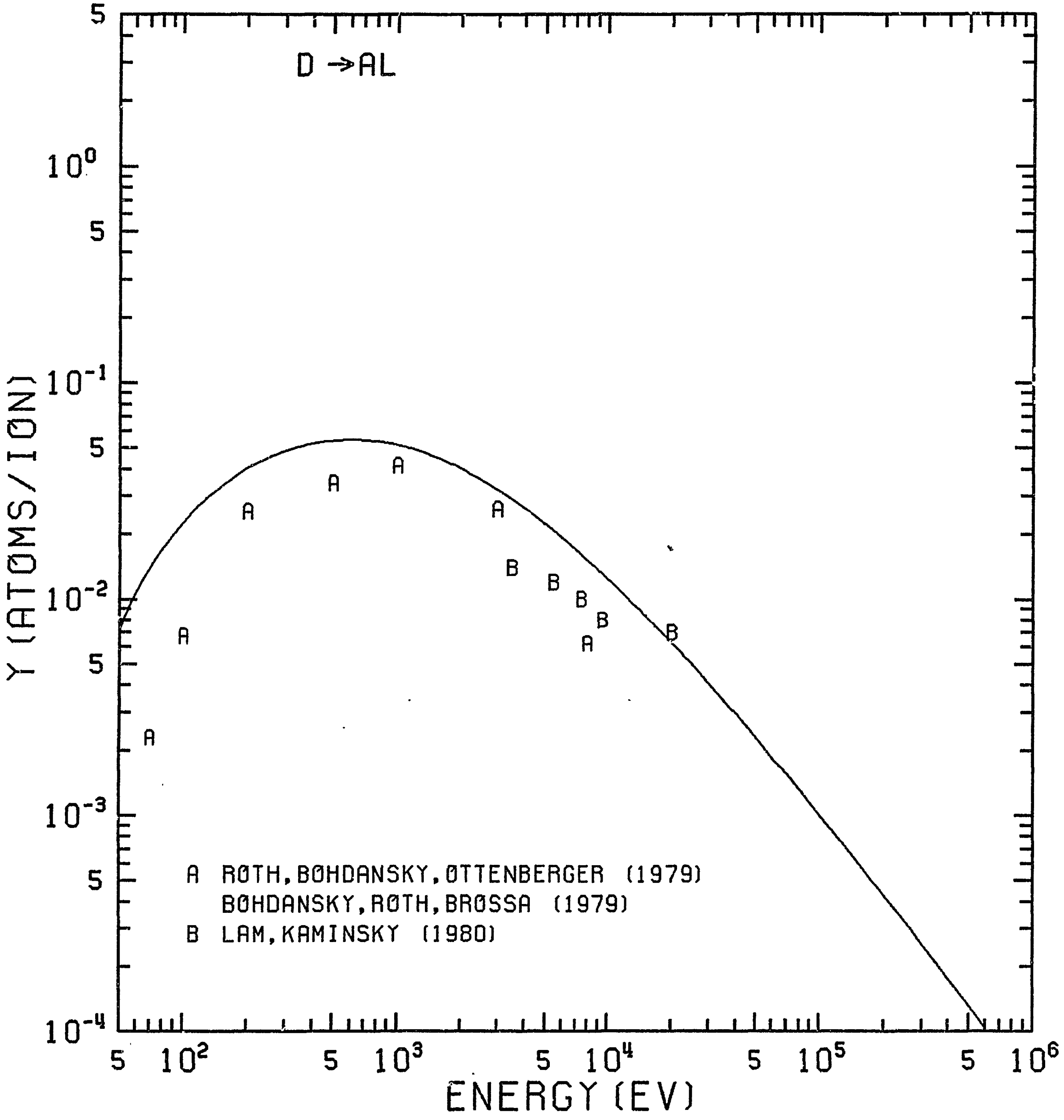

KR →C
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5 10^2
5 10^3
5 10^4
5 10^5
5 10^6
A ALMEN, BRUCE (1961A)
B ROSENBURG, WEHNER (1962)
C BETZ, DOBROZEMAKY, VIEHBOCK (1969)
A
B
C

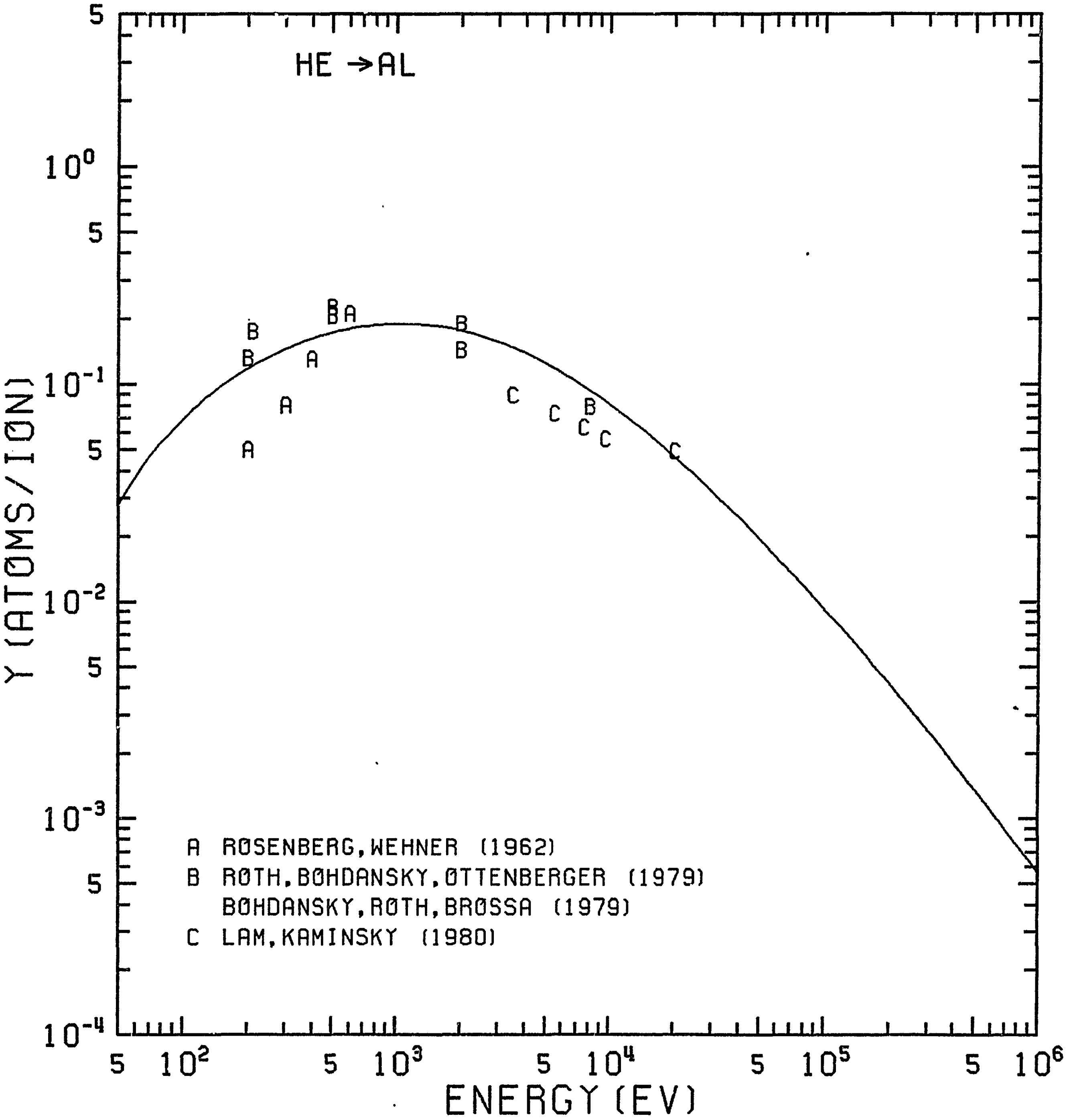

CD →C
Y (ATOMS/ION)
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
ENERGY (EV)
5
10^2
10^3
10^4
10^5
10^6
A
A MARTYNENKO (1968)

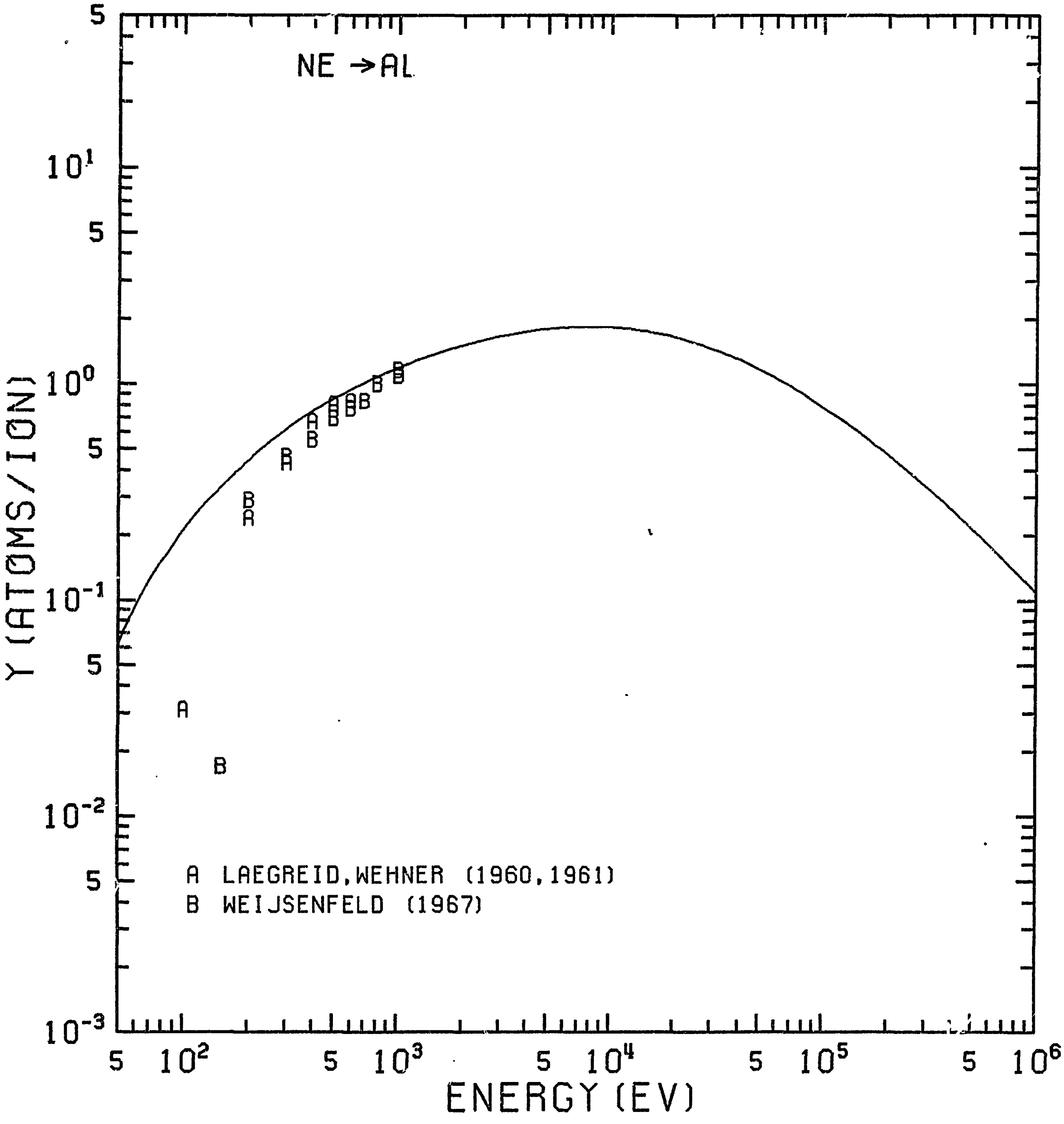
XE →C
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
A
A
A
B B
A ROSENBERG.WEHNER (1962)
B BETZ,DOBROZEMAKY,VIEHBOCK (1969)

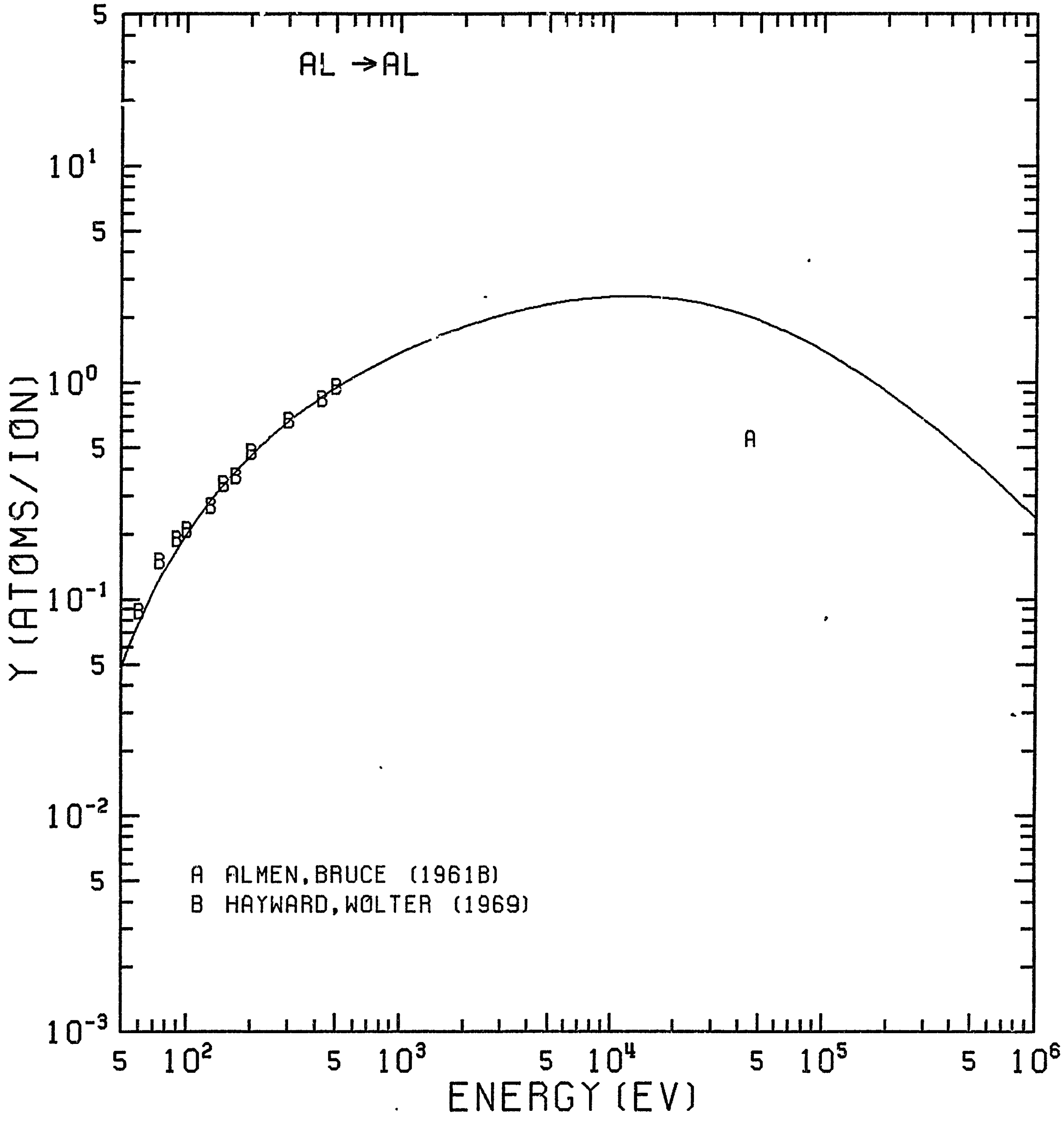

HG → C
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A WEHNER (1957)
B HOLMEN, ALMEN (1969)
C ISMAIL (1970)

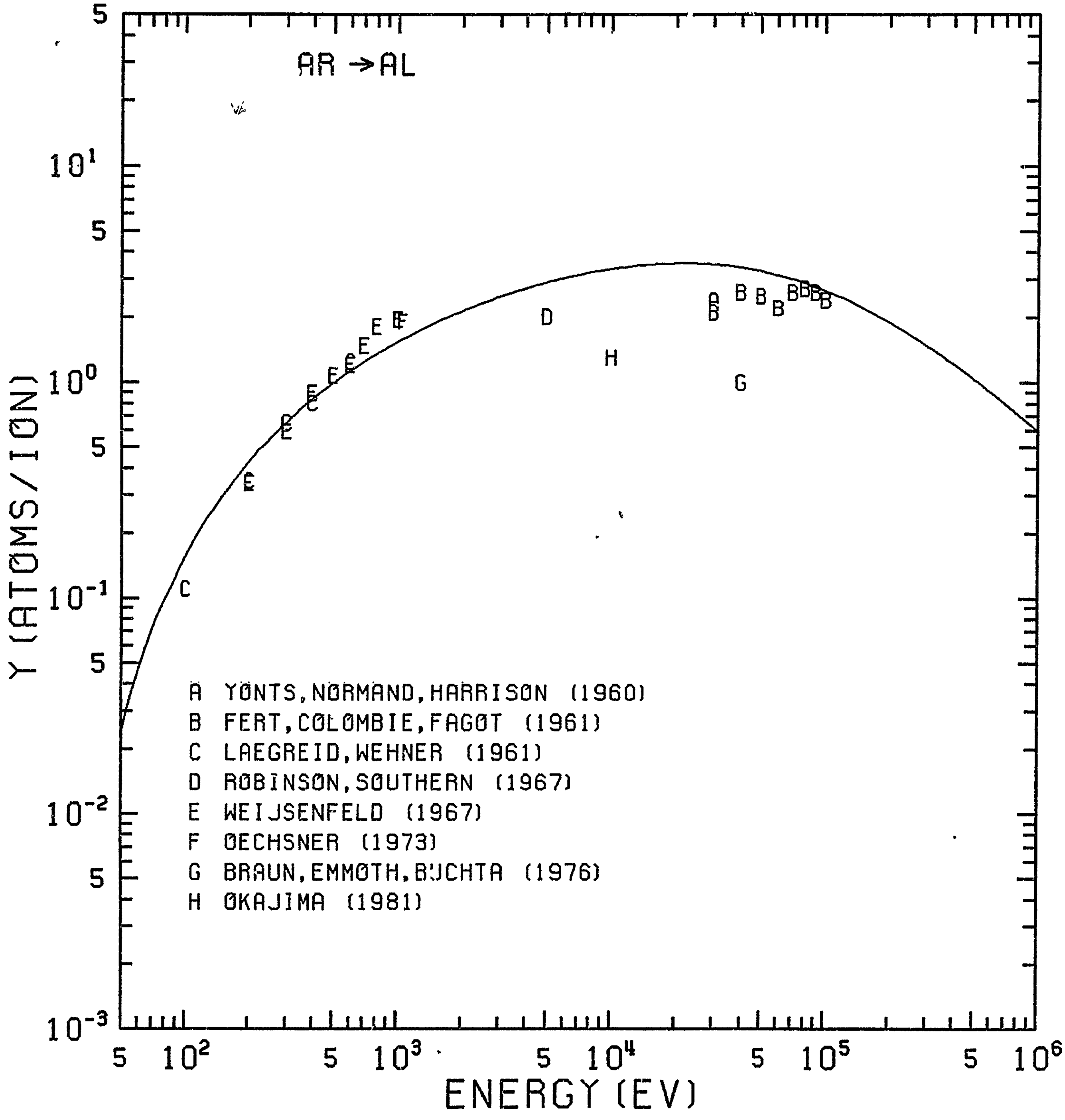

H →AL
Y (ATOMS/ION)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A ROTH, BOHDANSKY, OTTENBERGER (1979)
BOHDANSKY, ROTH, BROSSA (1979)

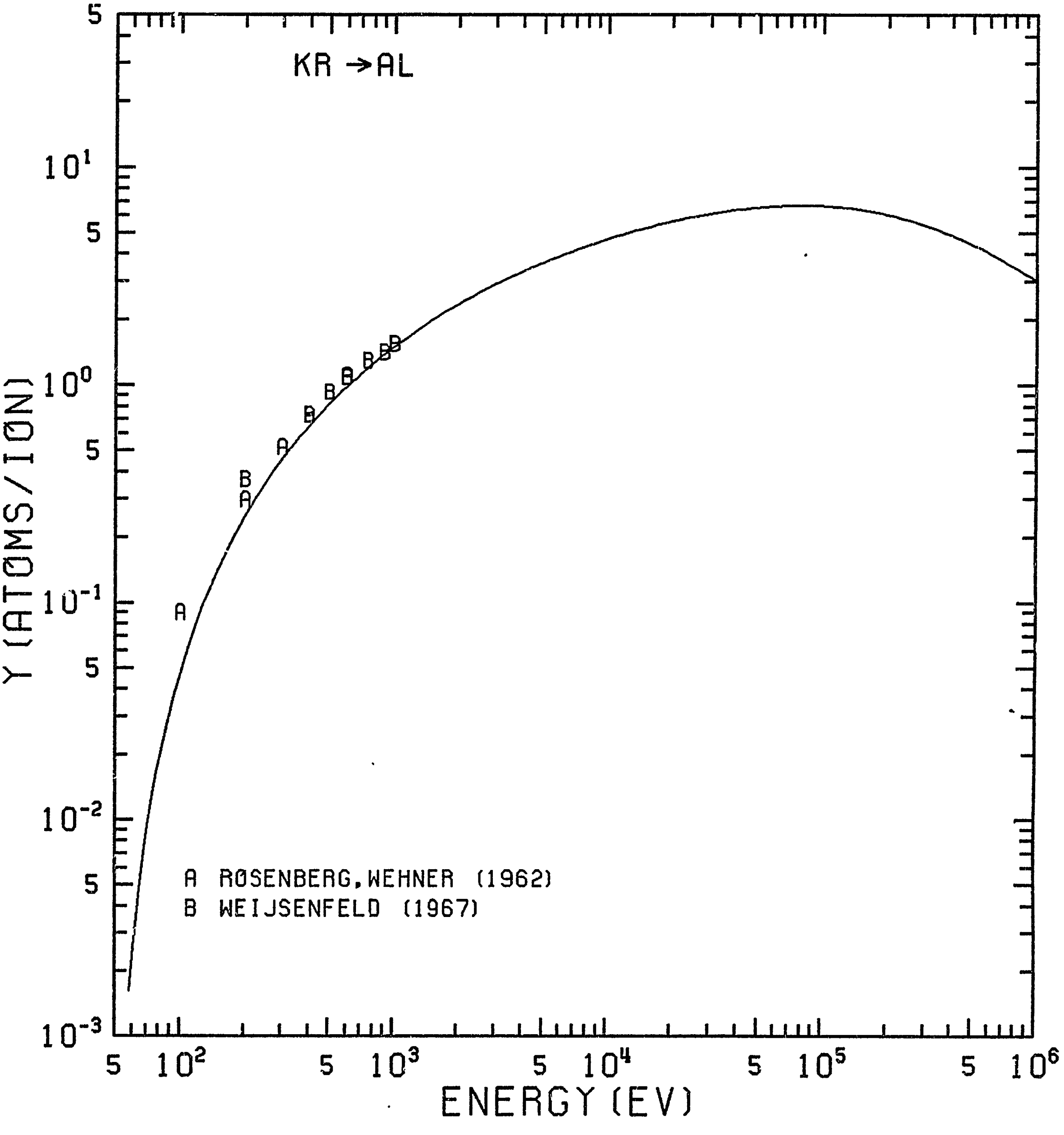
D →AL
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ROTH, BOHDANSKY, OTTENBERGER (1979)
BOHDANSKY, ROTH, BROSSA (1979)
B LAM, KAMINSKY (1980)

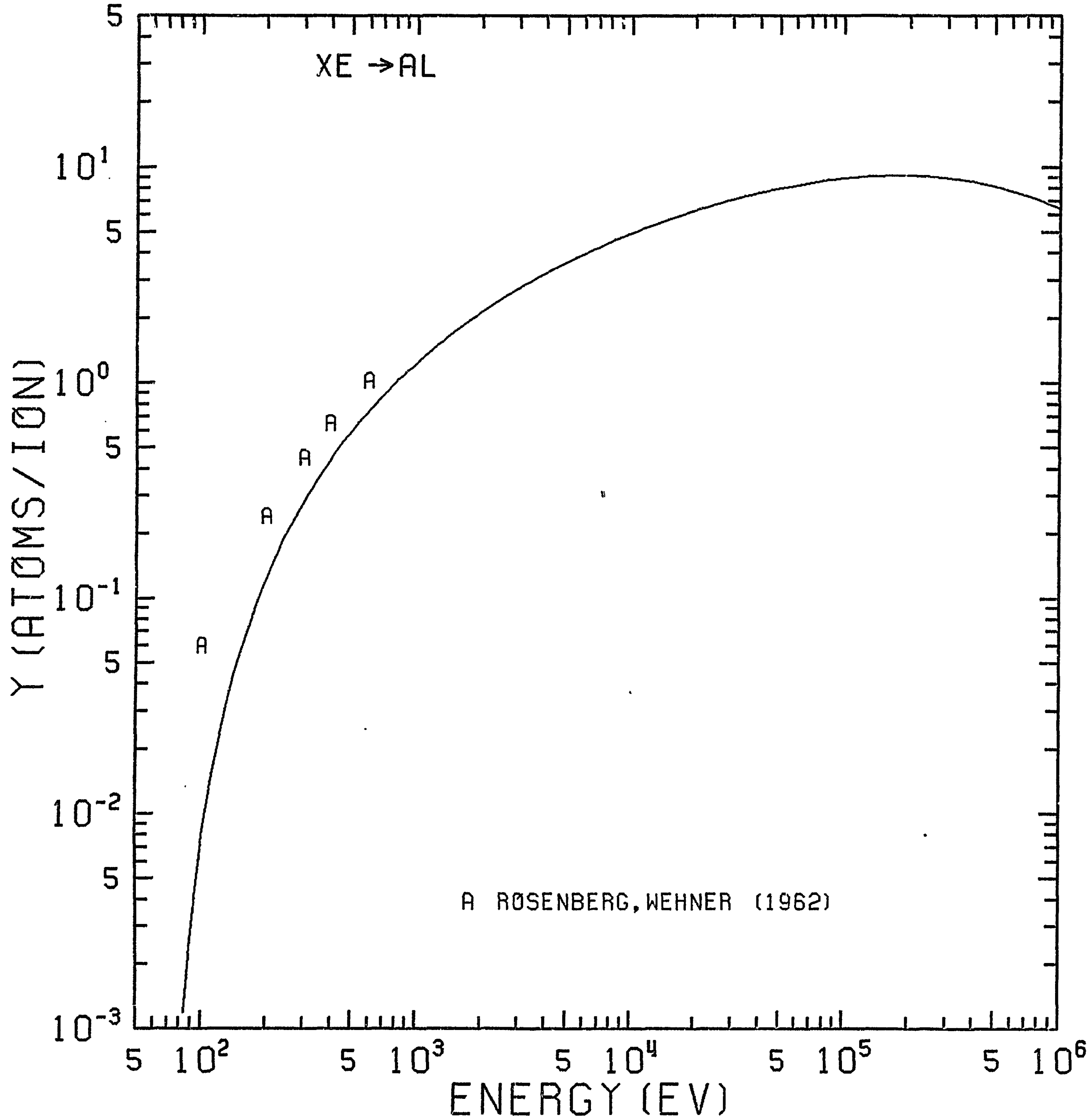

HE →AL
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ROSENBERG, WEHNER (1962)
B ROTH, BOHDANSKY, OTTENBERGER (1979)
BOHDANSKY, ROTH, BROSSA (1979)
C LAM, KAMINSKY (1980)

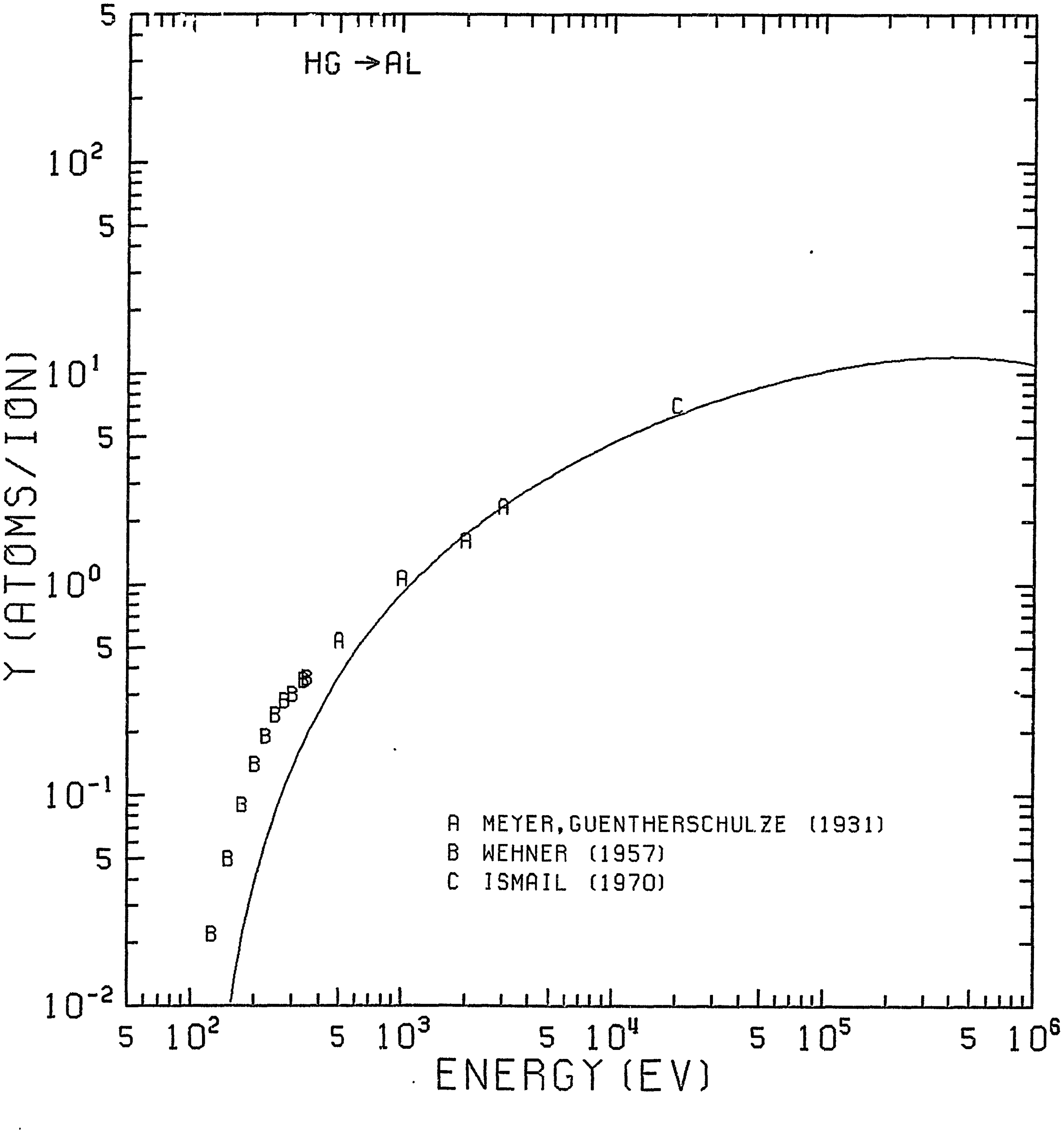

NE →AL
Y (ATOMS/ION)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A LAEGREID, WEHNER (1960, 1961)
B WEIJSENFELD (1967)

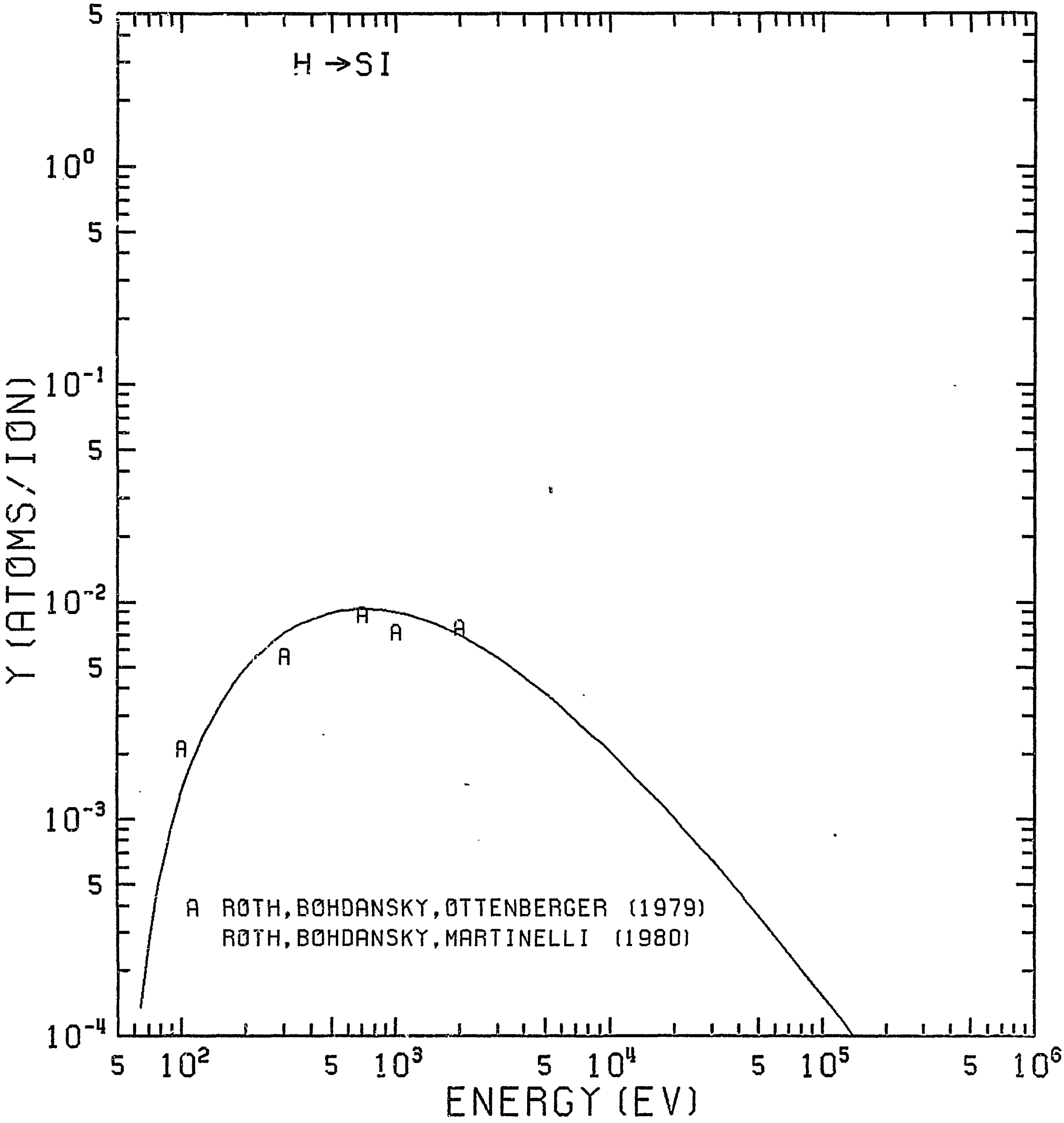

AL →AL
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B
A ALMEN, BRUCE (1961B)
B HAYWARD, WOLTER (1969)

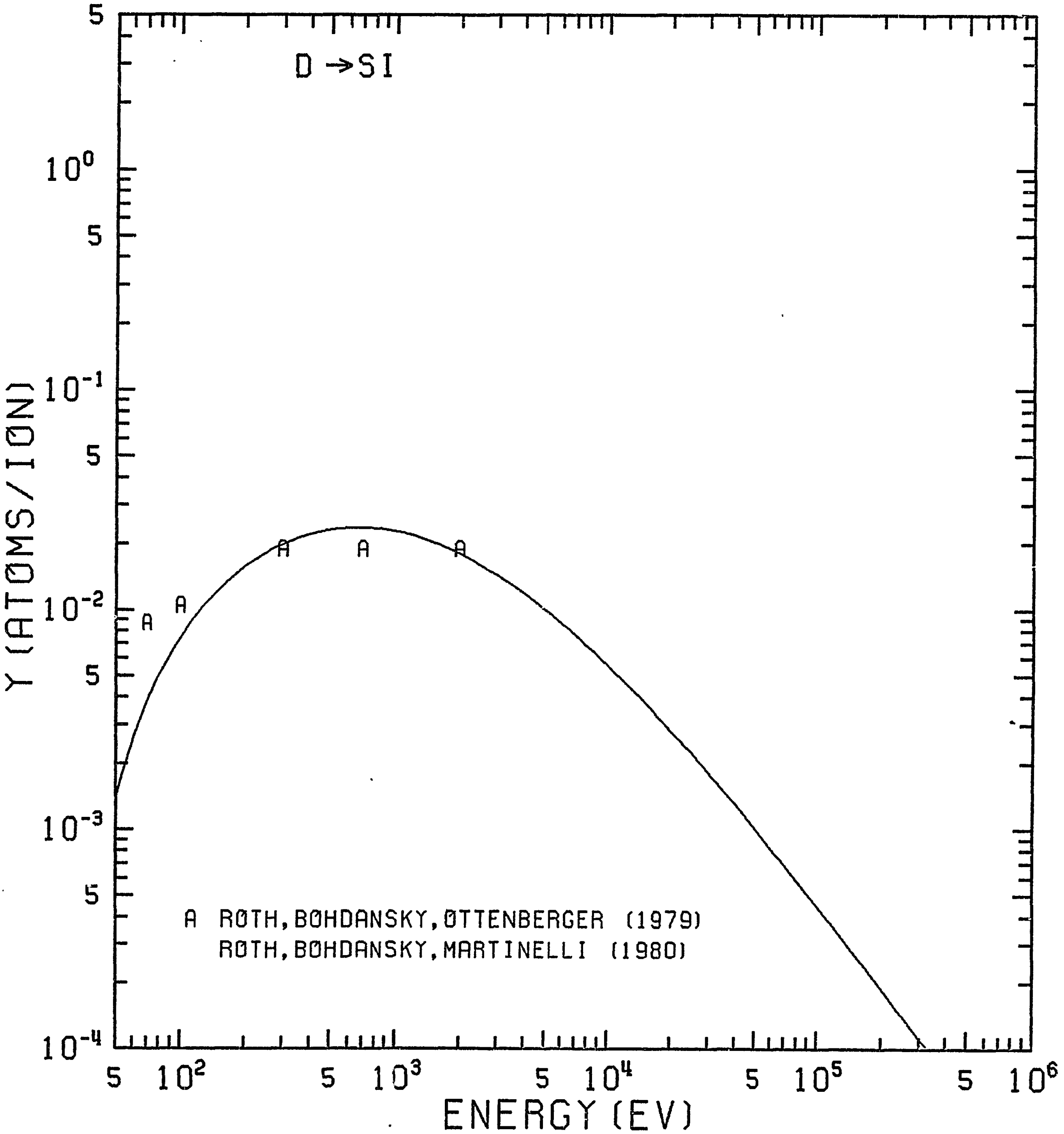

AR →AL
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
Y (ATOMS/ION)
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A YONTS, NORMAND, HARRISON (1960)
B FERT, COLOMBIE, FAGOT (1961)
C LAEGREID, WEHNER (1961)
D ROBINSON, SOUTHERN (1967)
E WEIJSENFELD (1967)
F OECHSNER (1973)
G BRAUN, EMMOTH, BUCHTA (1976)
H OKAJIMA (1981)
A
B
C
D
E
F
G
H

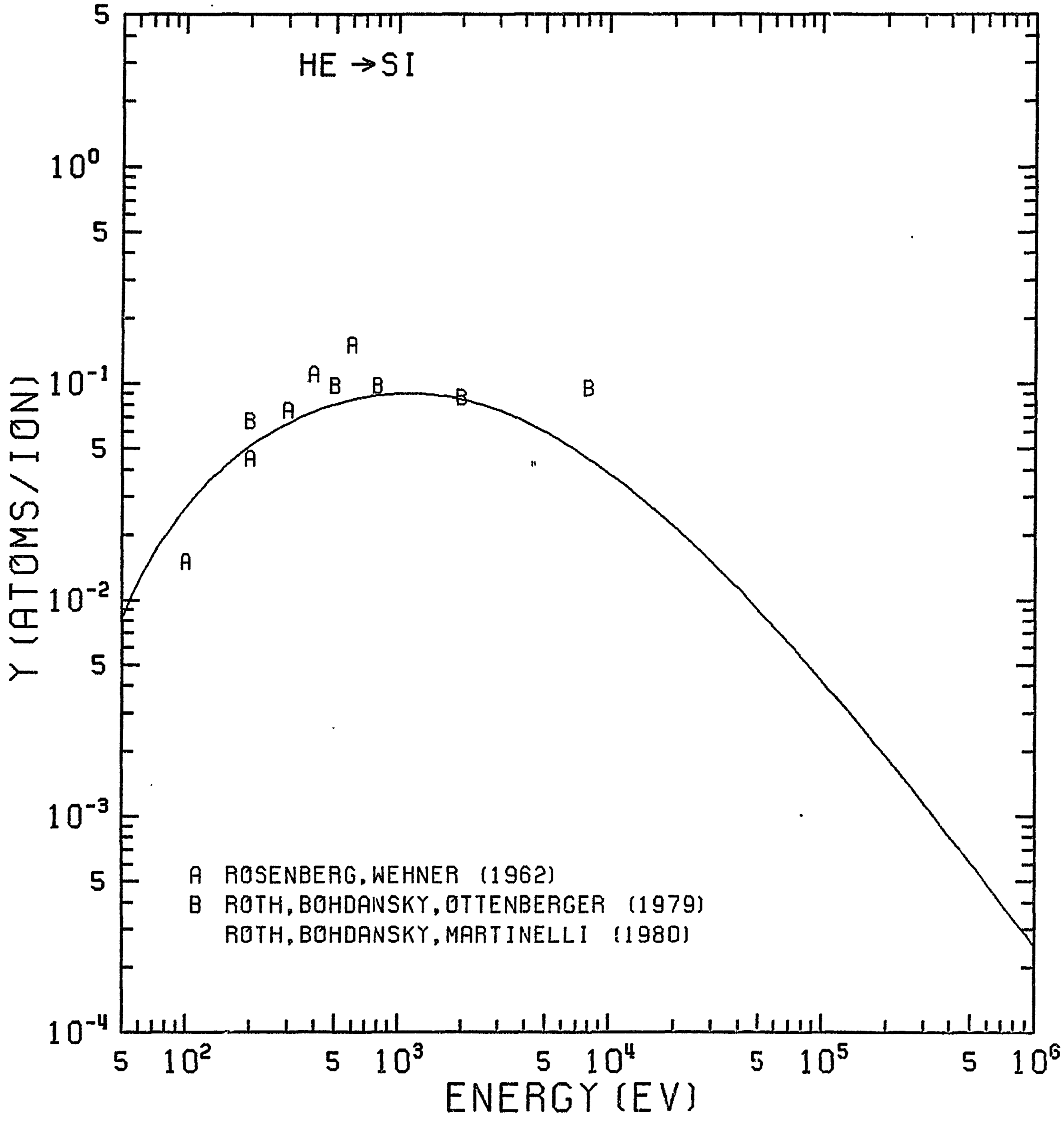

KR →AL
Y (ATOMS/ION)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A ROSENBERG, WEHNER (1962)
B WEIJSENFELD (1967)

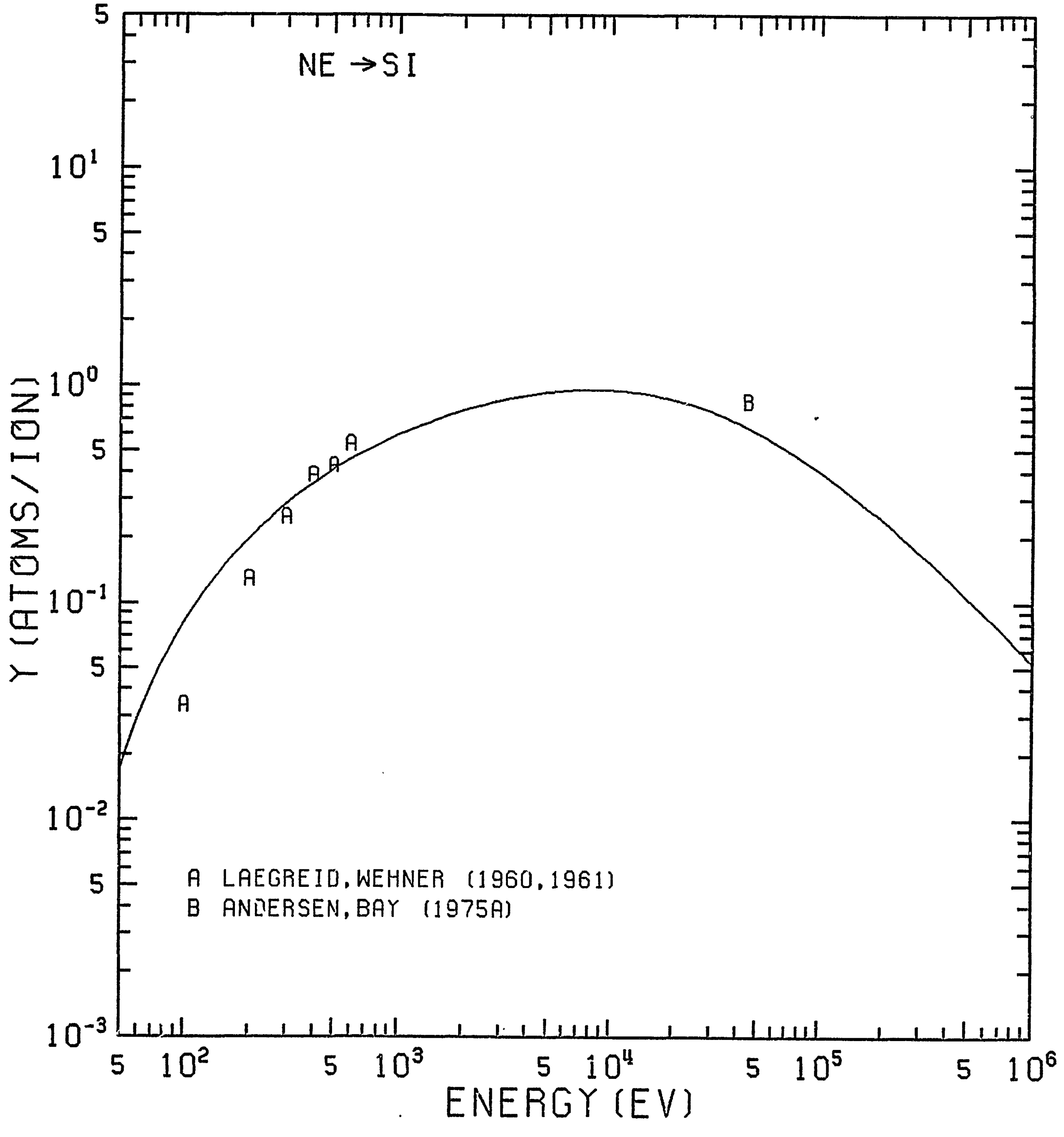

XE →AL
Y (ATOMS/ION)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5 10^2
5 10^3
5 10^4
5 10^5
5 10^6
ENERGY (EV)
A ROSENBERG, WEHNER (1962)

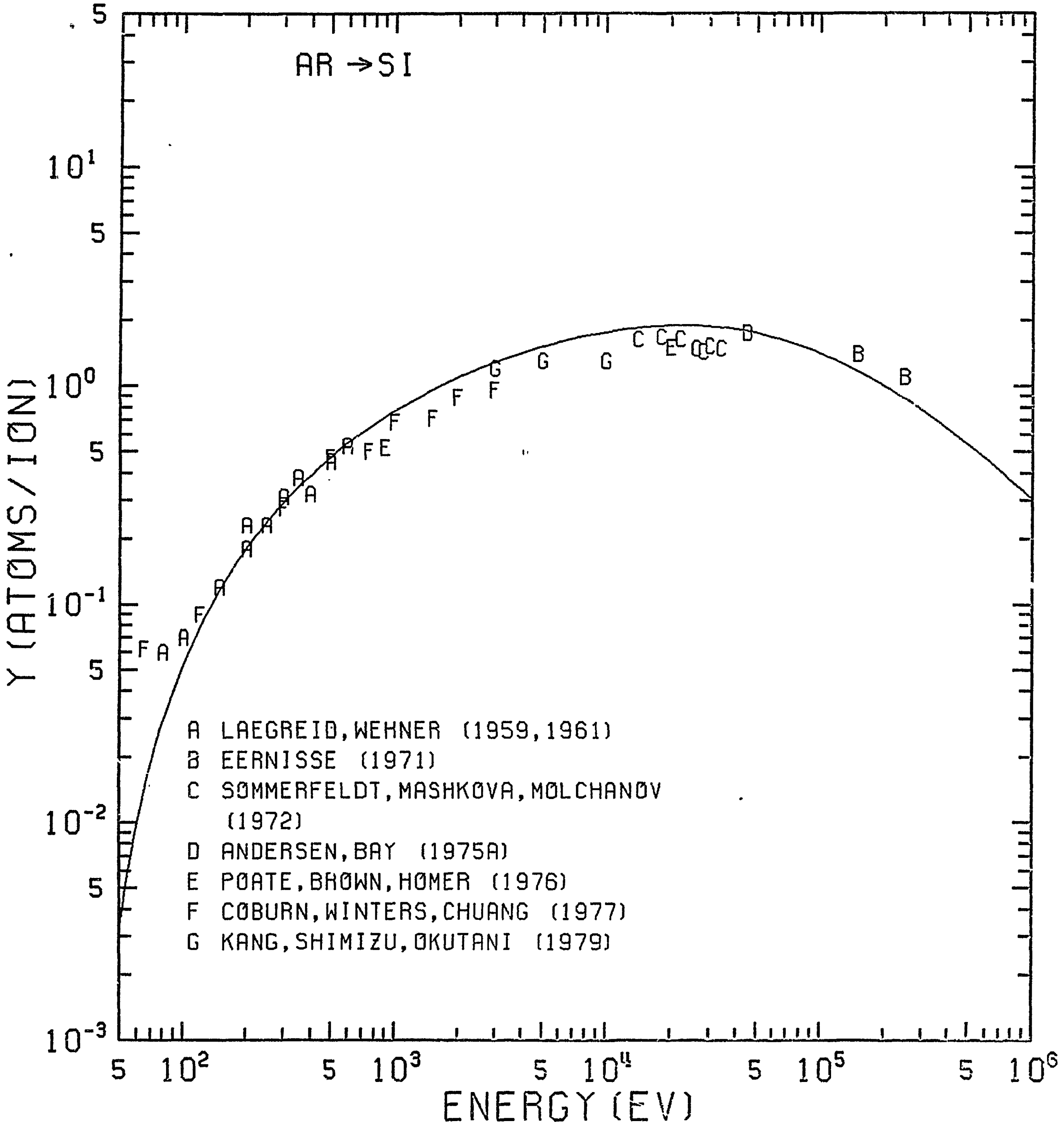

HG →AL
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A MEYER, GUENTHERSCHULZE (1931)
B WEHNER (1957)
C ISMAIL (1970)


H →SI
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, MARTINELLI (1980)

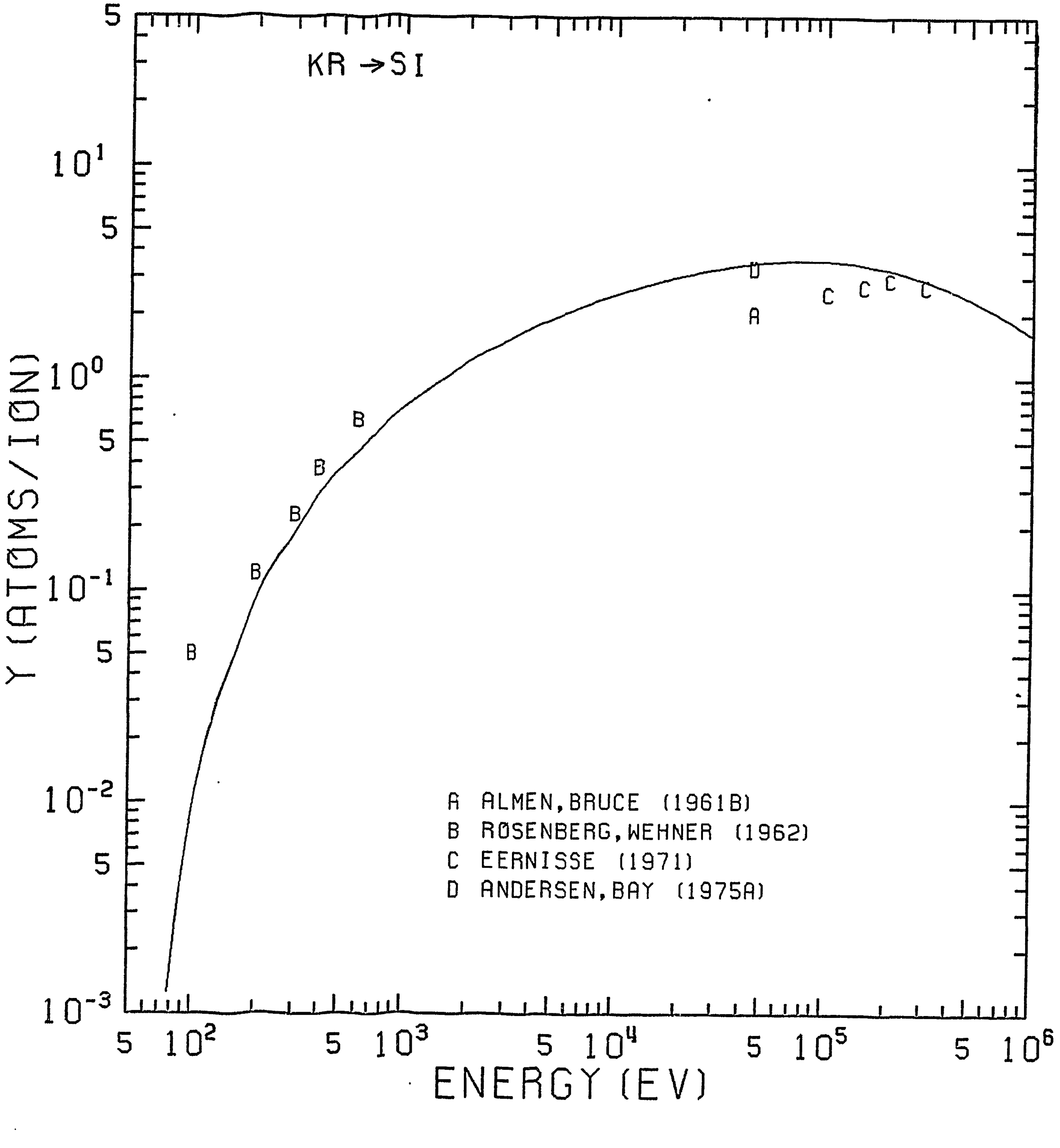

D →SI
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, MARTINELLI (1980)

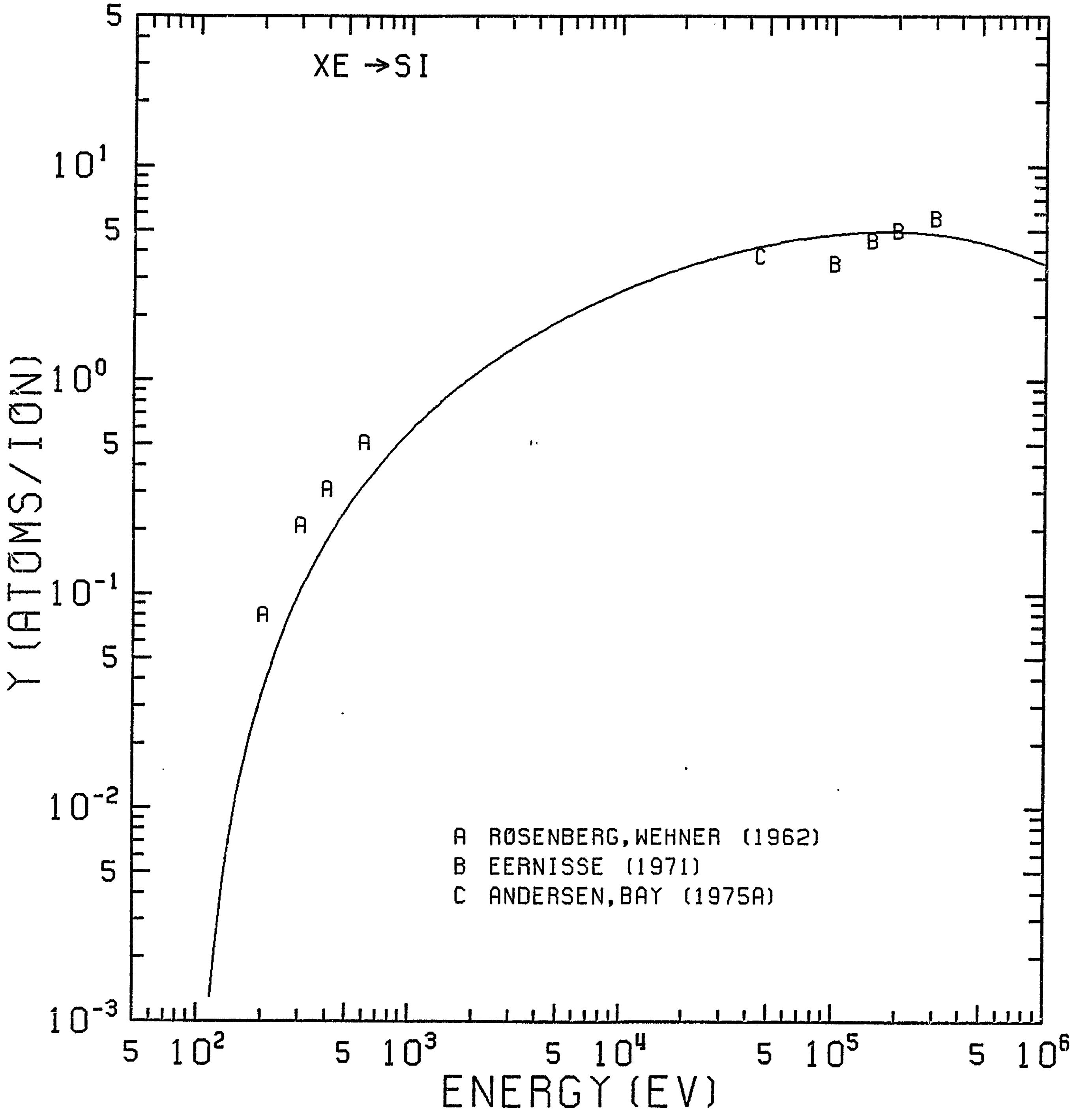

HE → SI
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ROSENBERG, WEHNER (1962)
B ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, MARTINELLI (1980)

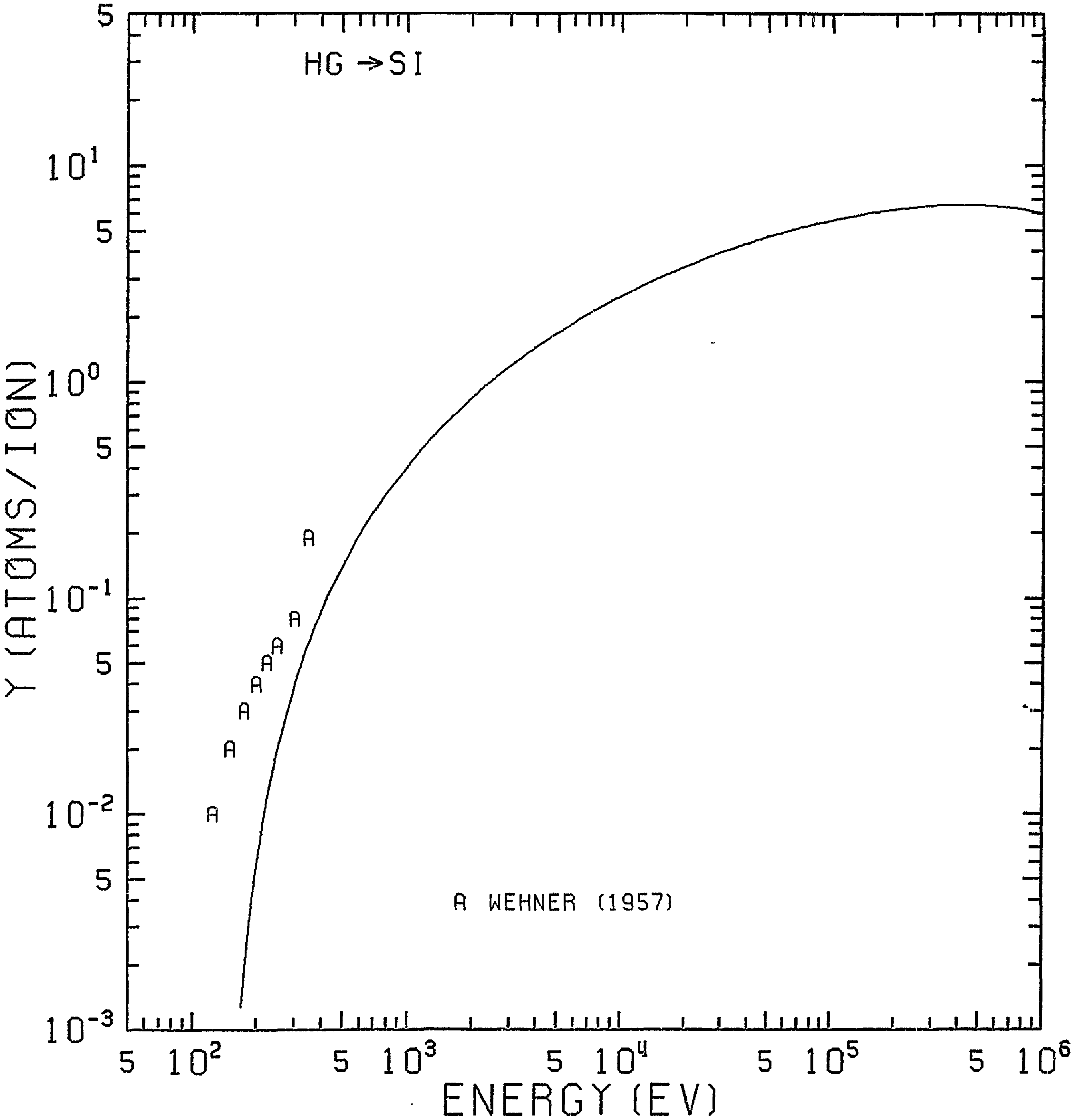

NE → SI
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A LAEGREID, WEHNER (1960, 1961)
B ANDERSEN, BAY (1975A)

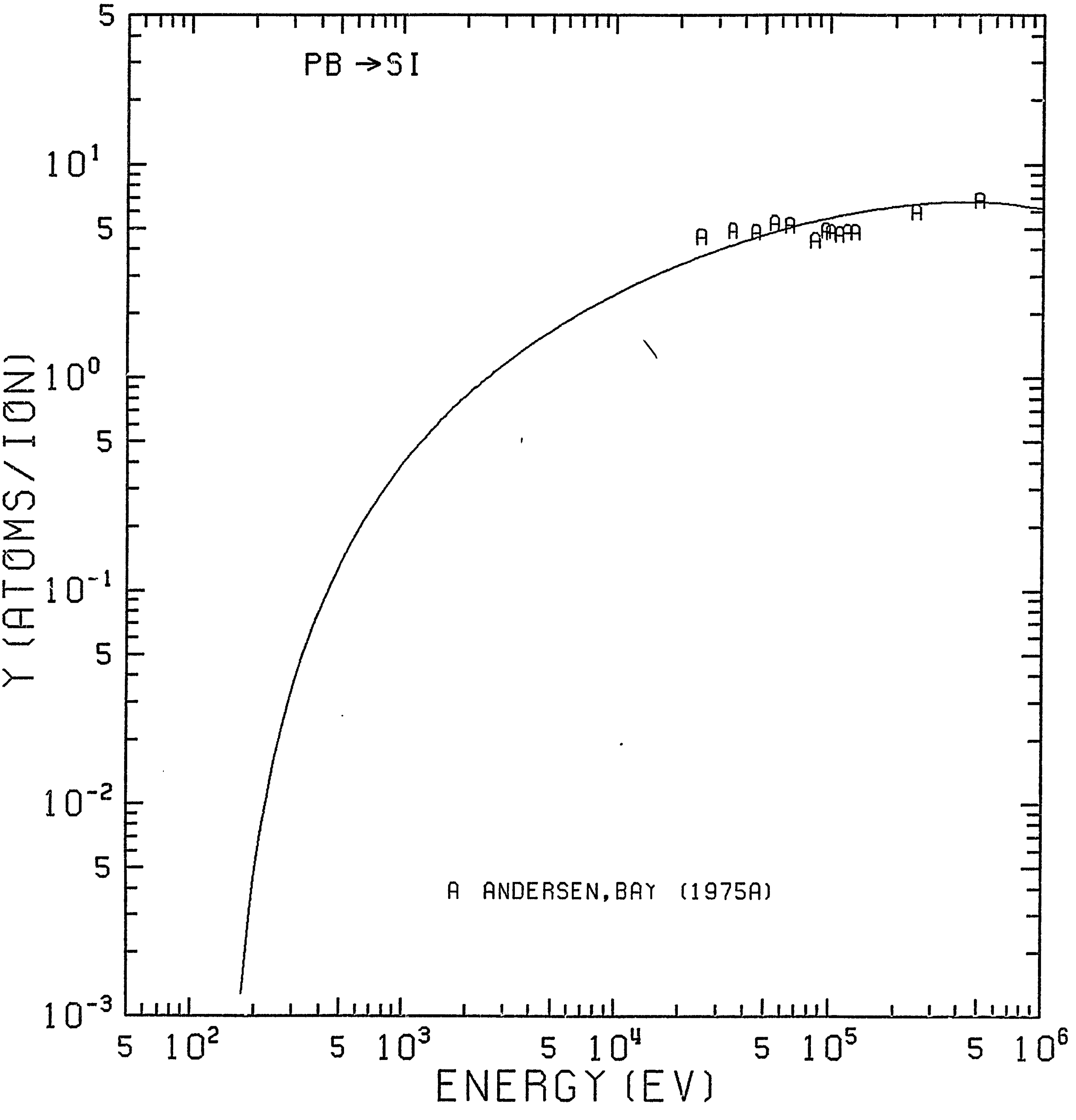


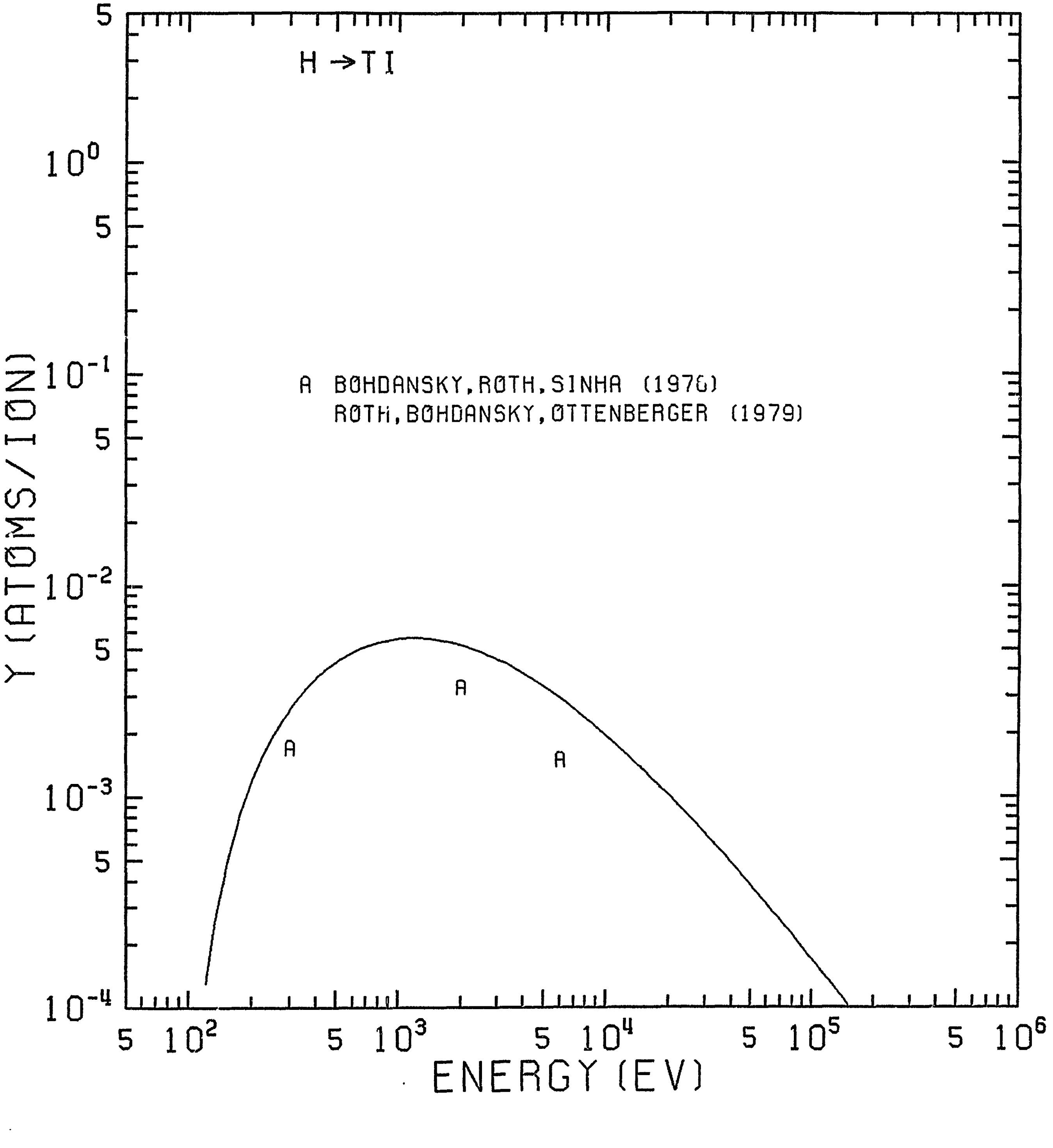
AR → SI
Y (ATOMS/ION)
ENERGY (EV)
10^1
10^0
10^-1
10^-2
10^-3
5
5 10^2 5 10^3 5 10^4 5 10^5 5 10^6
A LAEGREID, WEHNER (1959, 1961)
B EERNISSE (1971)
C SOMMERFELDT, MASHKOVA, MOLCHANOV (1972)
D ANDERSEN, BAY (1975A)
E POATE, BROWN, HOMER (1976)
F COBURN, WINTERS, CHUANG (1977)
G KANG, SHIMIZU, OKUTANI (1979)

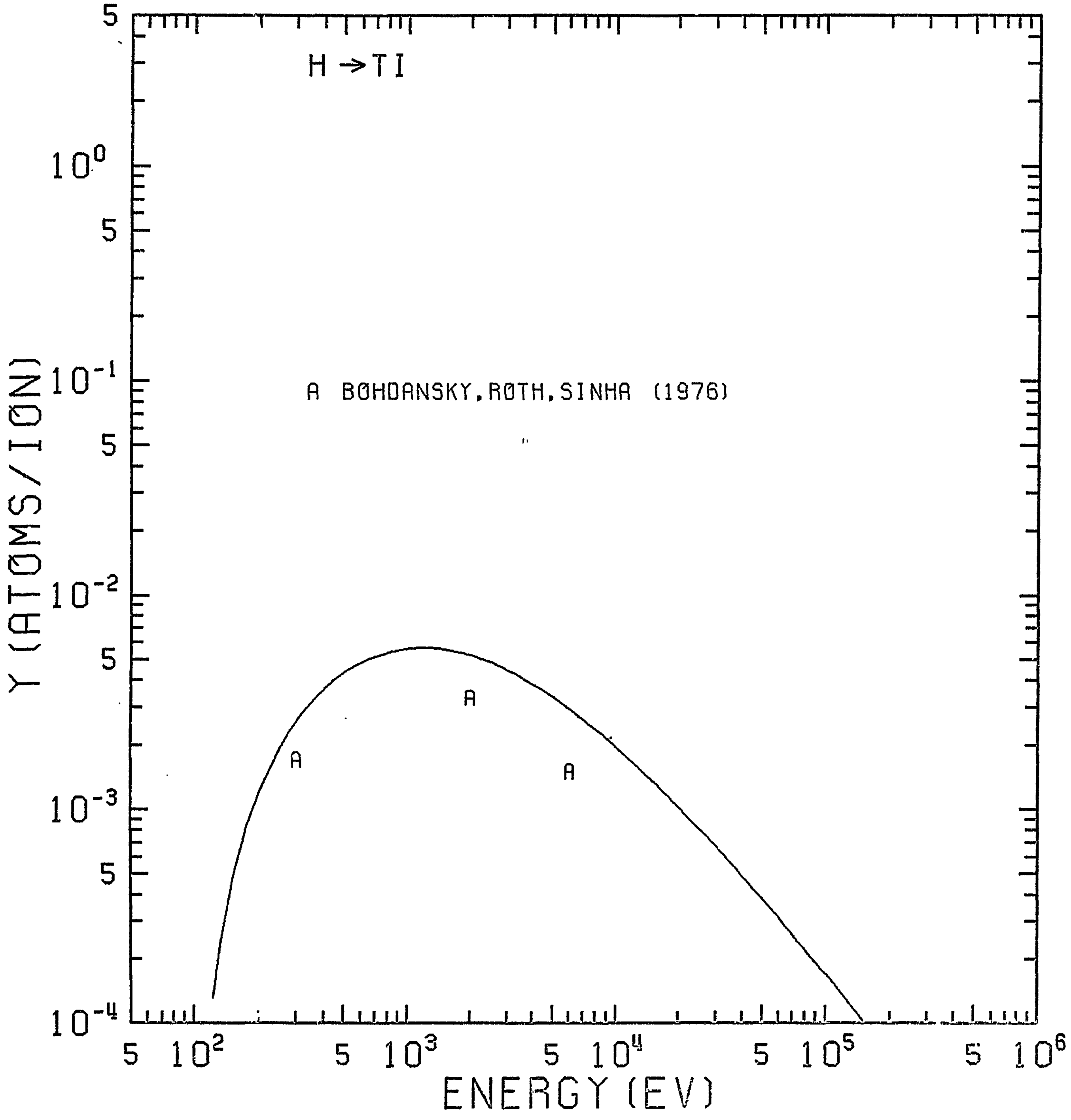

KR →SI
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961B)
B ROSENBERG, WEHNER (1962)
C EERNISSE (1971)
D ANDERSEN, BAY (1975A)
A
B
C
D

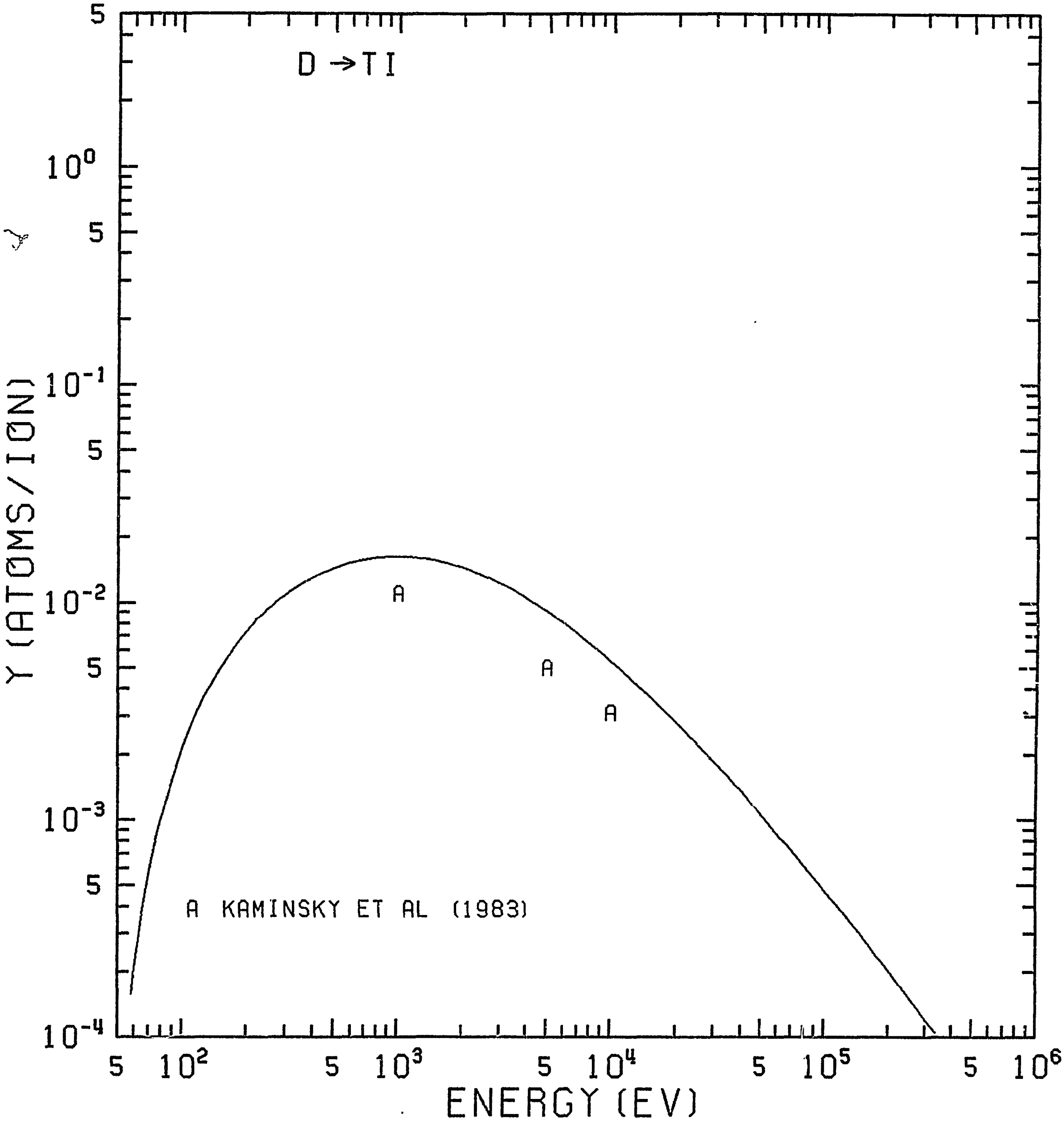

XE →SI
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5 10^2
5 10^3
5 10^4
5 10^5
5 10^6
A ROSENBERG, WEHNER (1962)
B EERNISSE (1971)
C ANDERSEN, BAY (1975A)

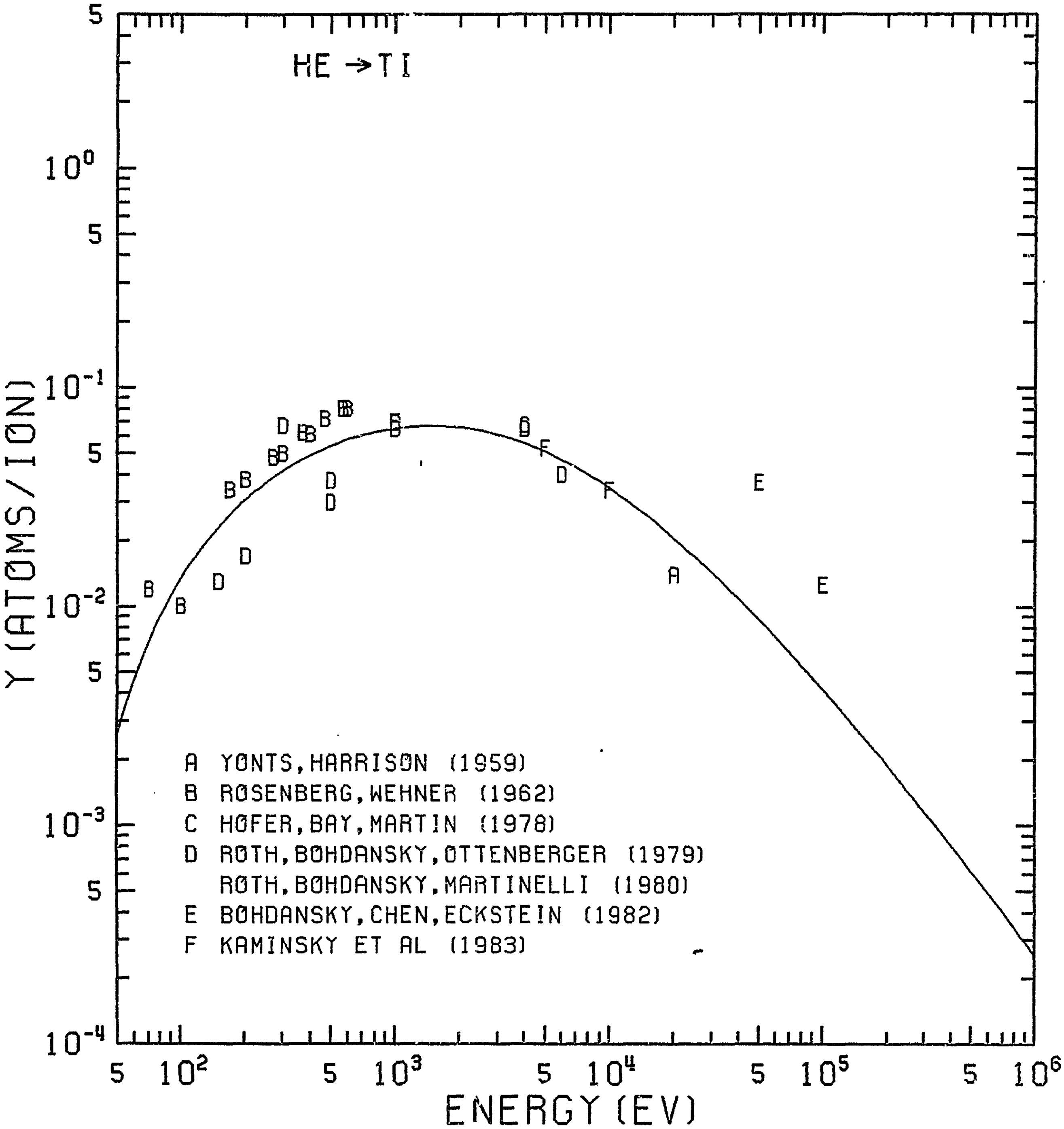

HG → SI
Y (ATØMS/IØN)
ENERGY (EV)
A WEHNER (1957)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

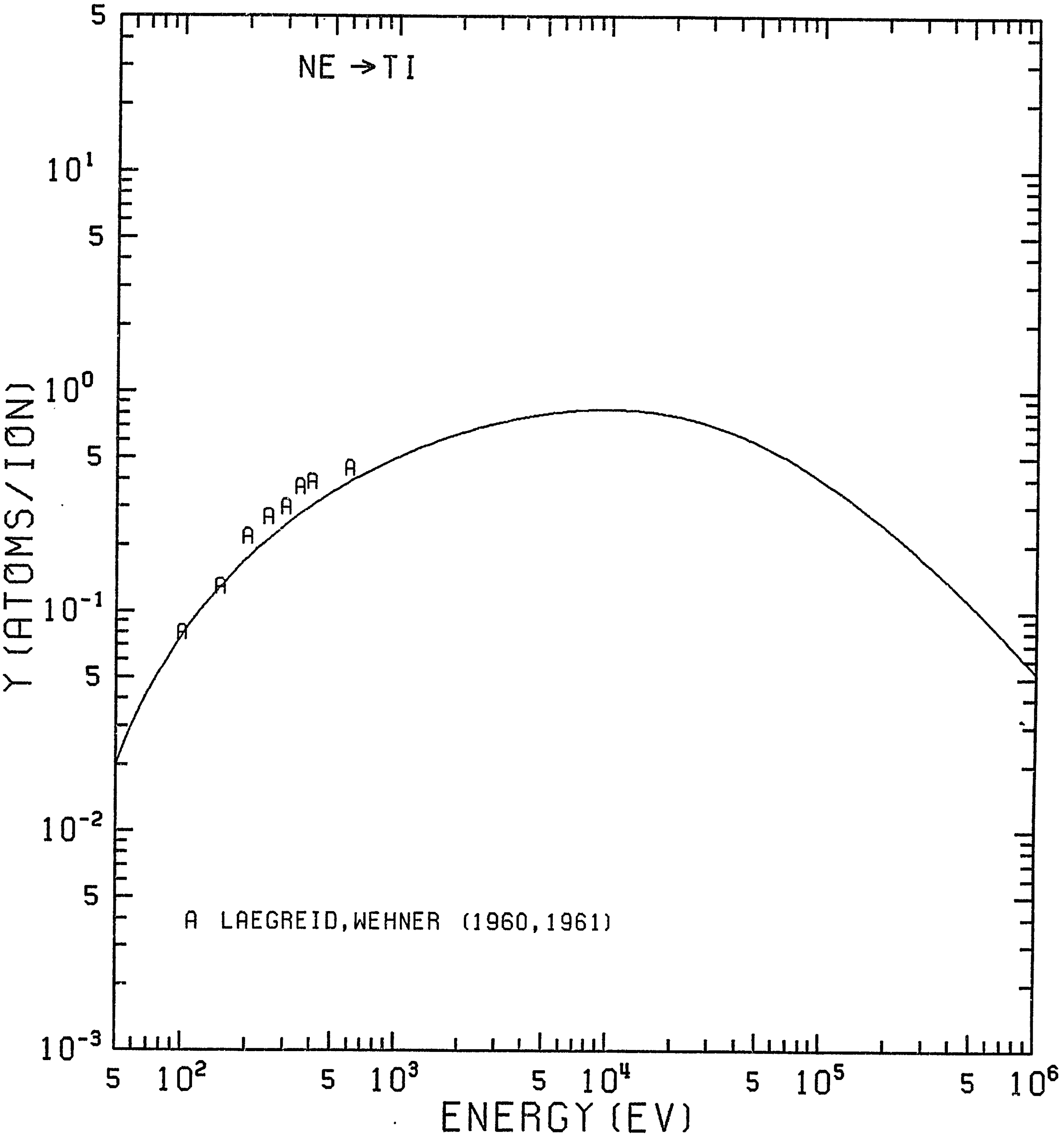

PB →SI
Y (ATOMS/ION)
ENERGY (EV)
A ANDERSEN, BAY (1975A)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A

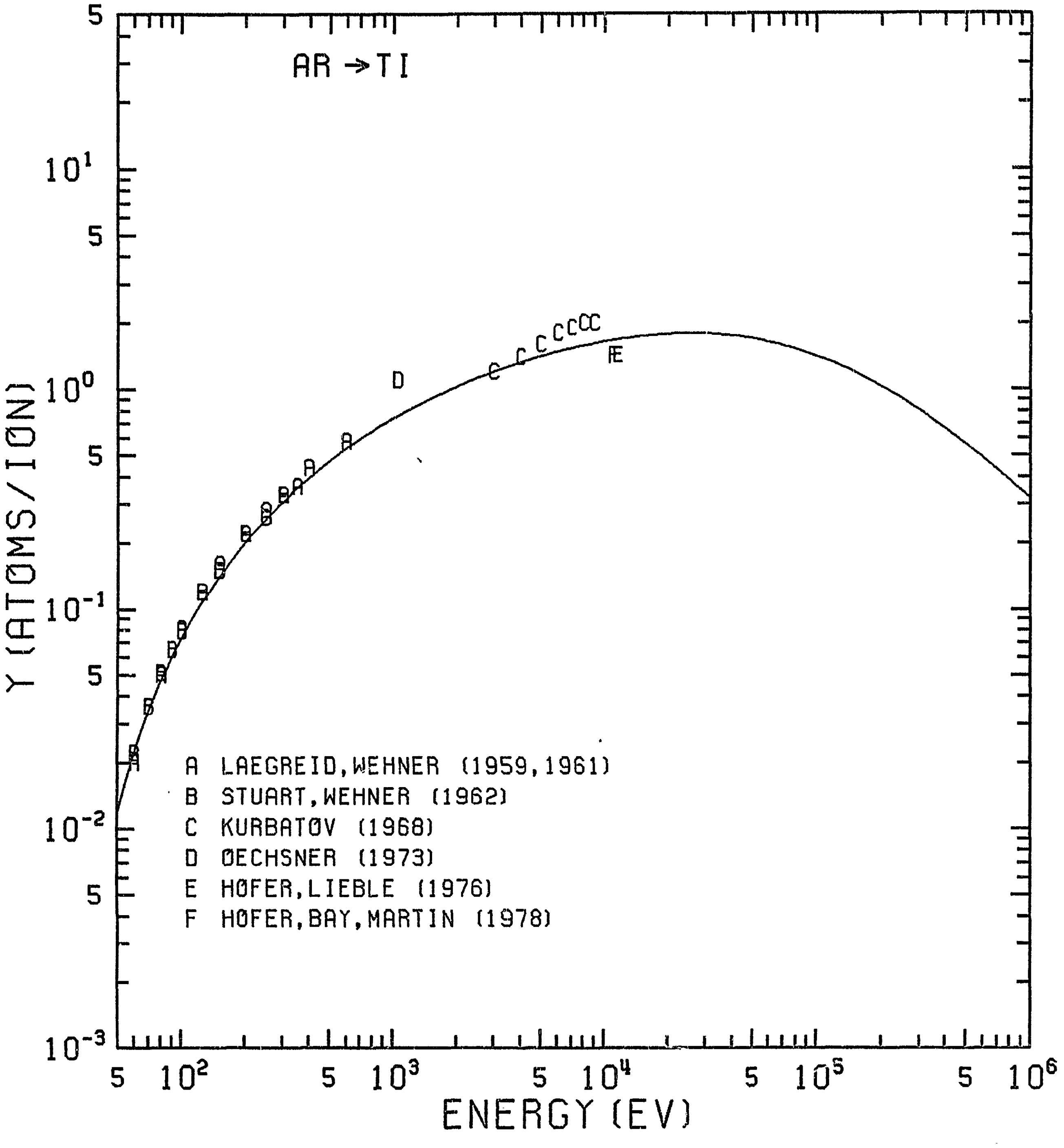

H →TI
A BOHDANSKY, ROTH, SINHA (1976)
ROTH, BOHDANSKY, OTTENBERGER (1979)
Y (ATOMS/ION)
5
10^{0}
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^{2}
5
10^{3}
5
10^{4}
5
10^{5}
5
10^{6}
ENERGY (EV)
A
A
A

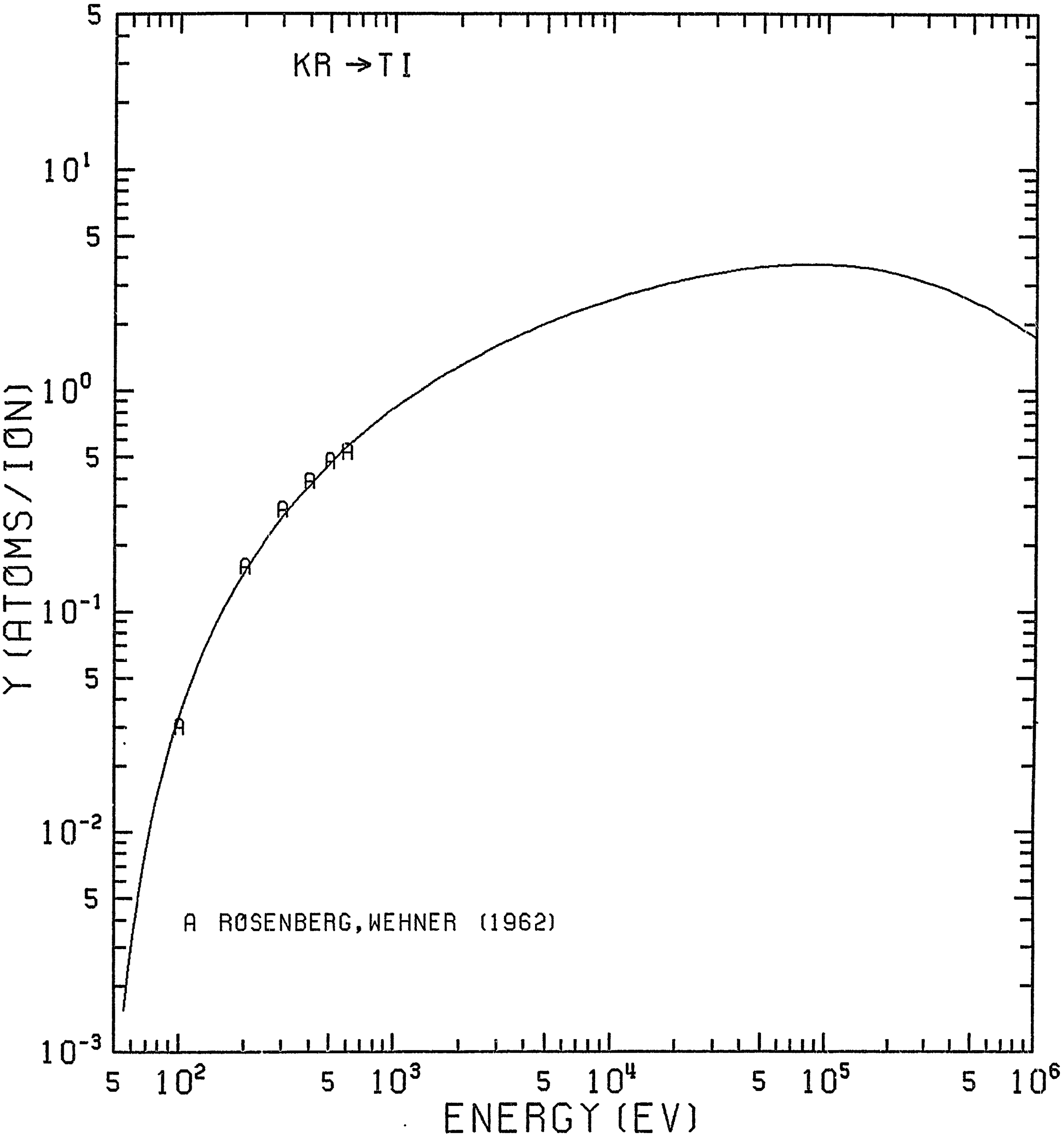

H → TI
A BOHDANSKY, ROTH, SINHA (1976)
A
A
A
Y (ATOMS/ION)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)

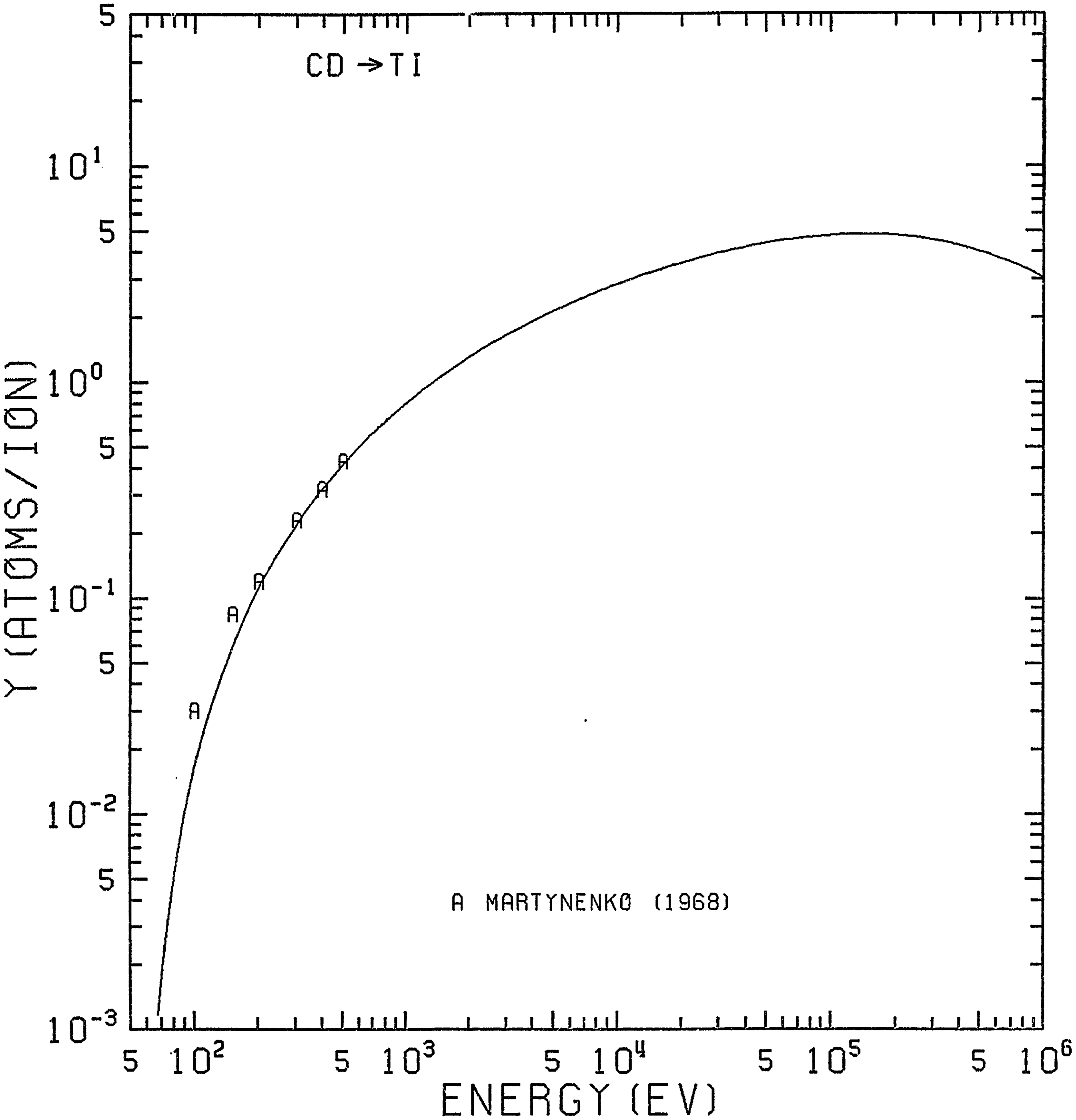

D →TI
Y (ATOMS/ION)
ENERGY (EV)
A KAMINSKY ET AL (1983)
A
A
A
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶

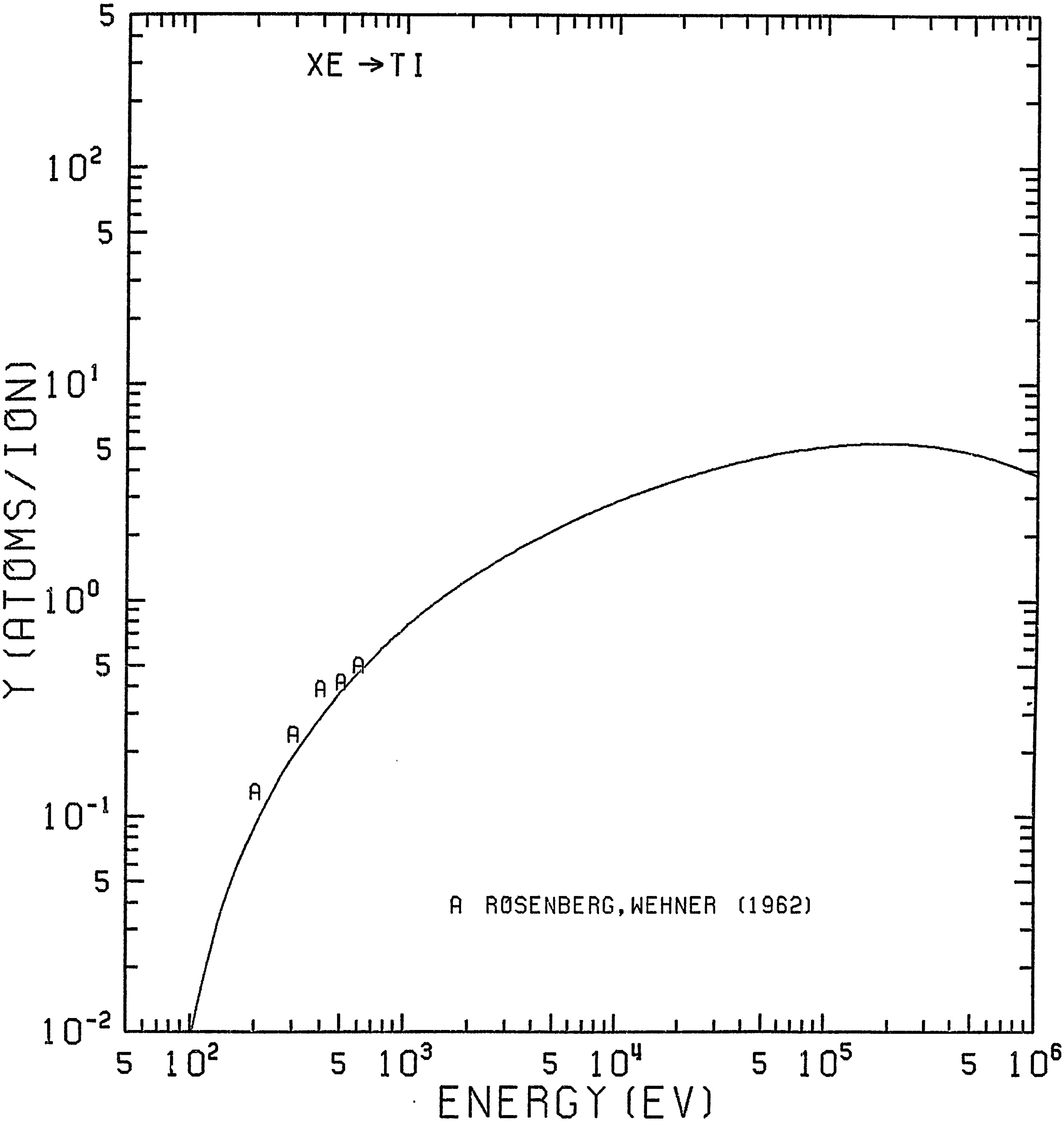

HE → TI
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
Y (ATOMS/ION)
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A YONTS, HARRISON (1959)
B ROSENBERG, WEHNER (1962)
C HOFER, BAY, MARTIN (1978)
D ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, MARTINELLI (1980)
E BOHDANSKY, CHEN, ECKSTEIN (1982)
F KAMINSKY ET AL (1983)

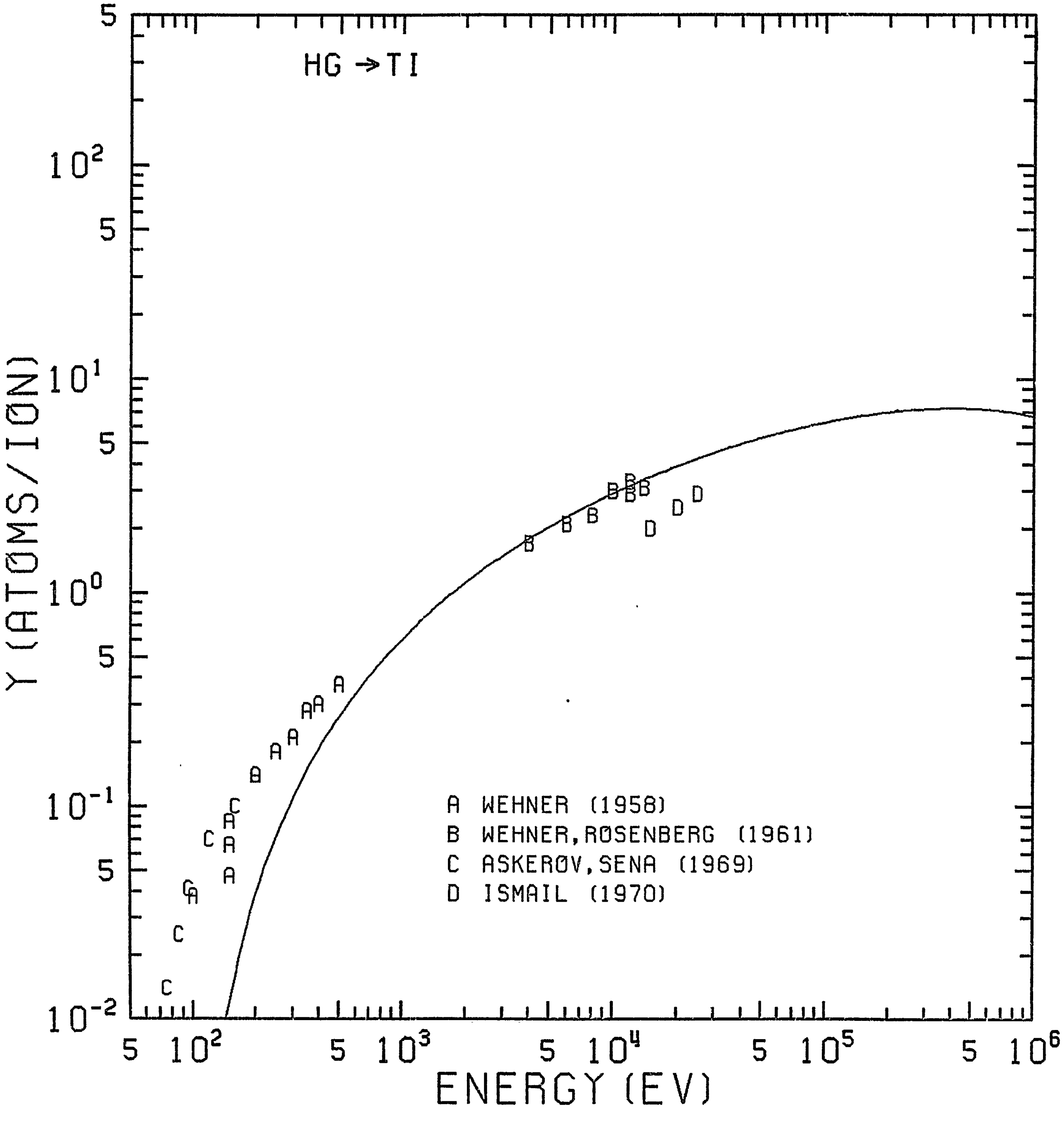

NE → TI
A LAEGREID, WEHNER (1960, 1961)
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

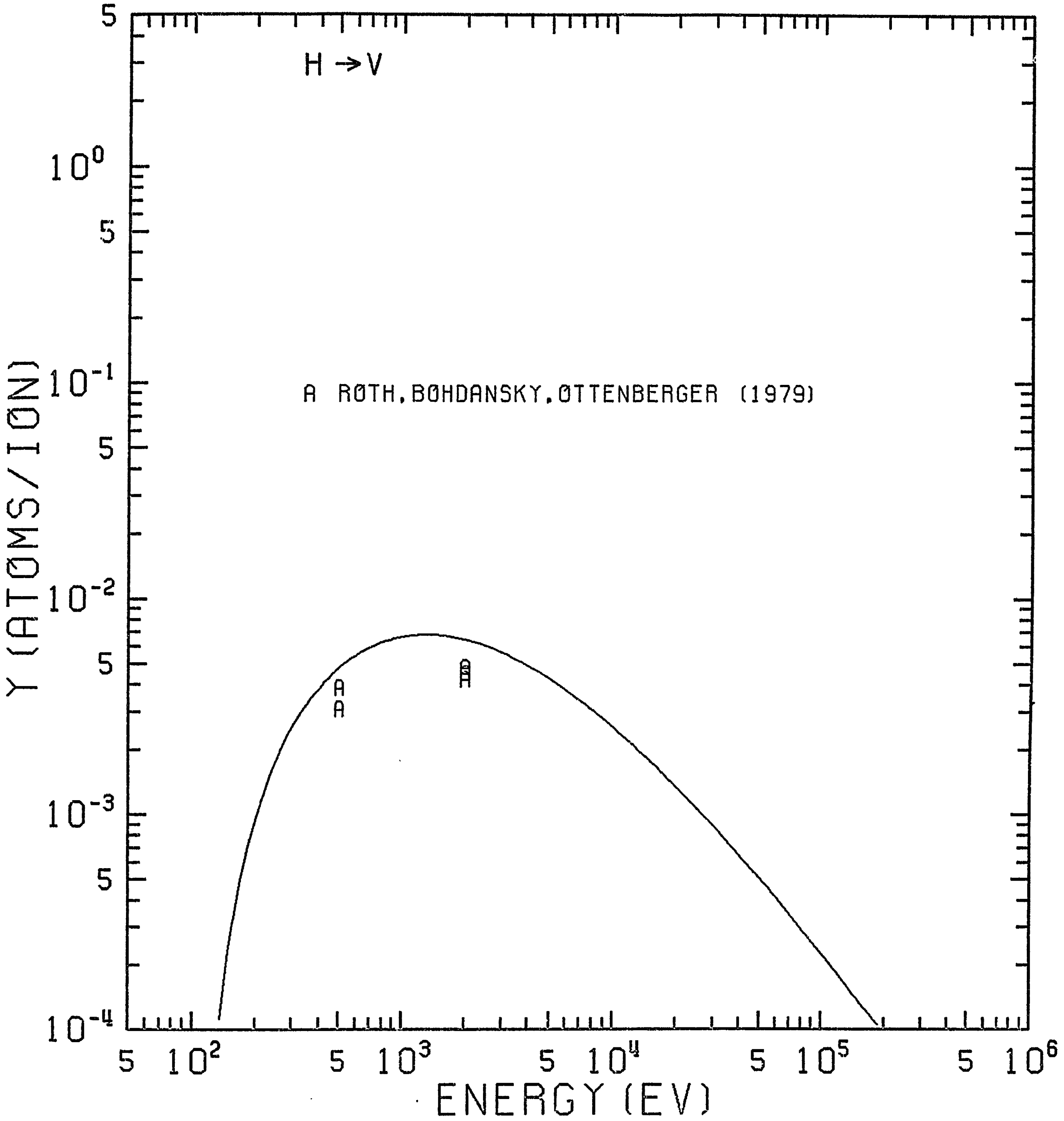

AR → TI
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A LAEGREID, WEHNER (1959, 1961)
B STUART, WEHNER (1962)
C KURBATOV (1968)
D OECHSNER (1973)
E HOFER, LIEBLE (1976)
F HOFER, BAY, MARTIN (1978)

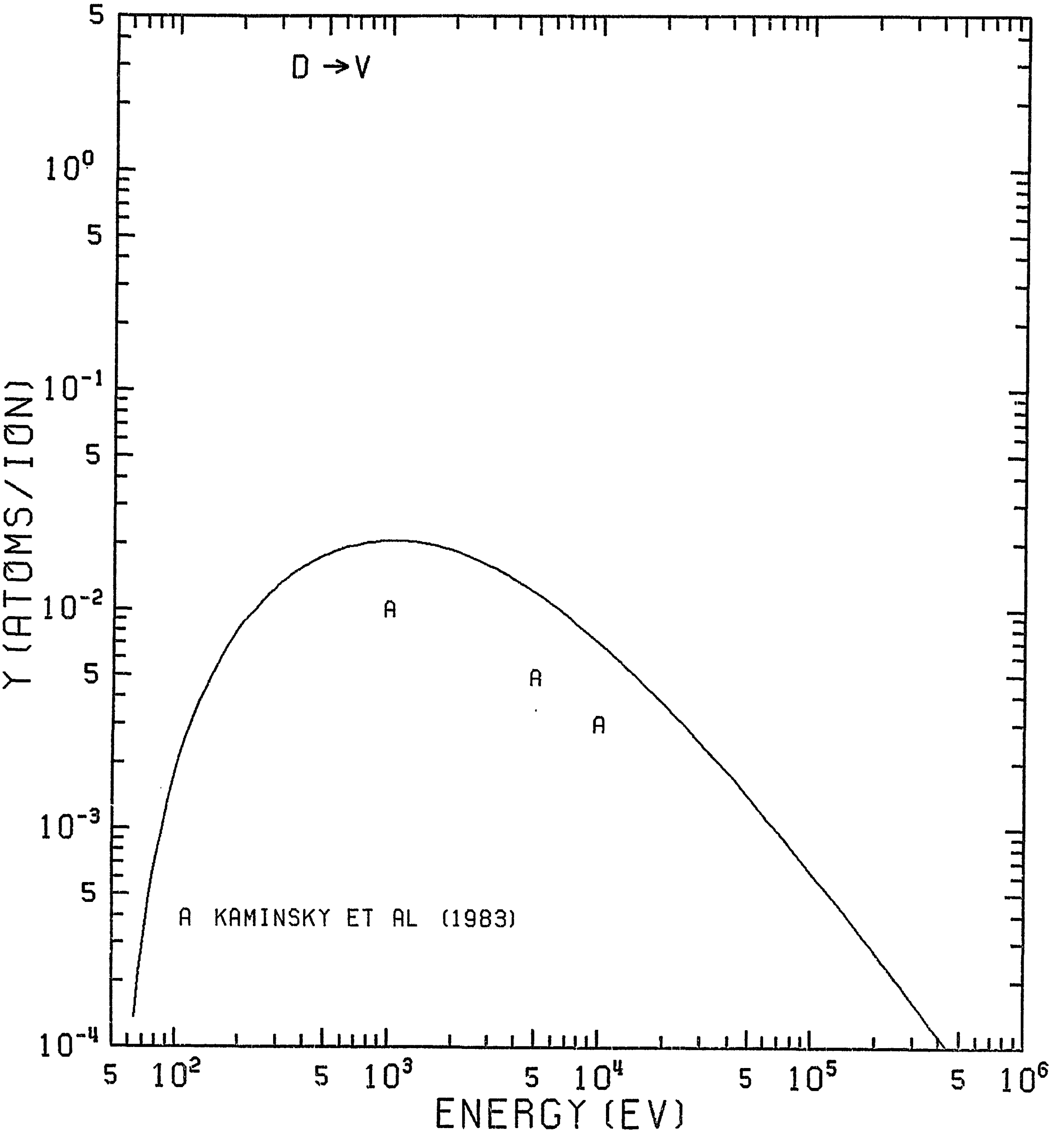

KR → TI
A ROSENBERG, WEHNER (1962)
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

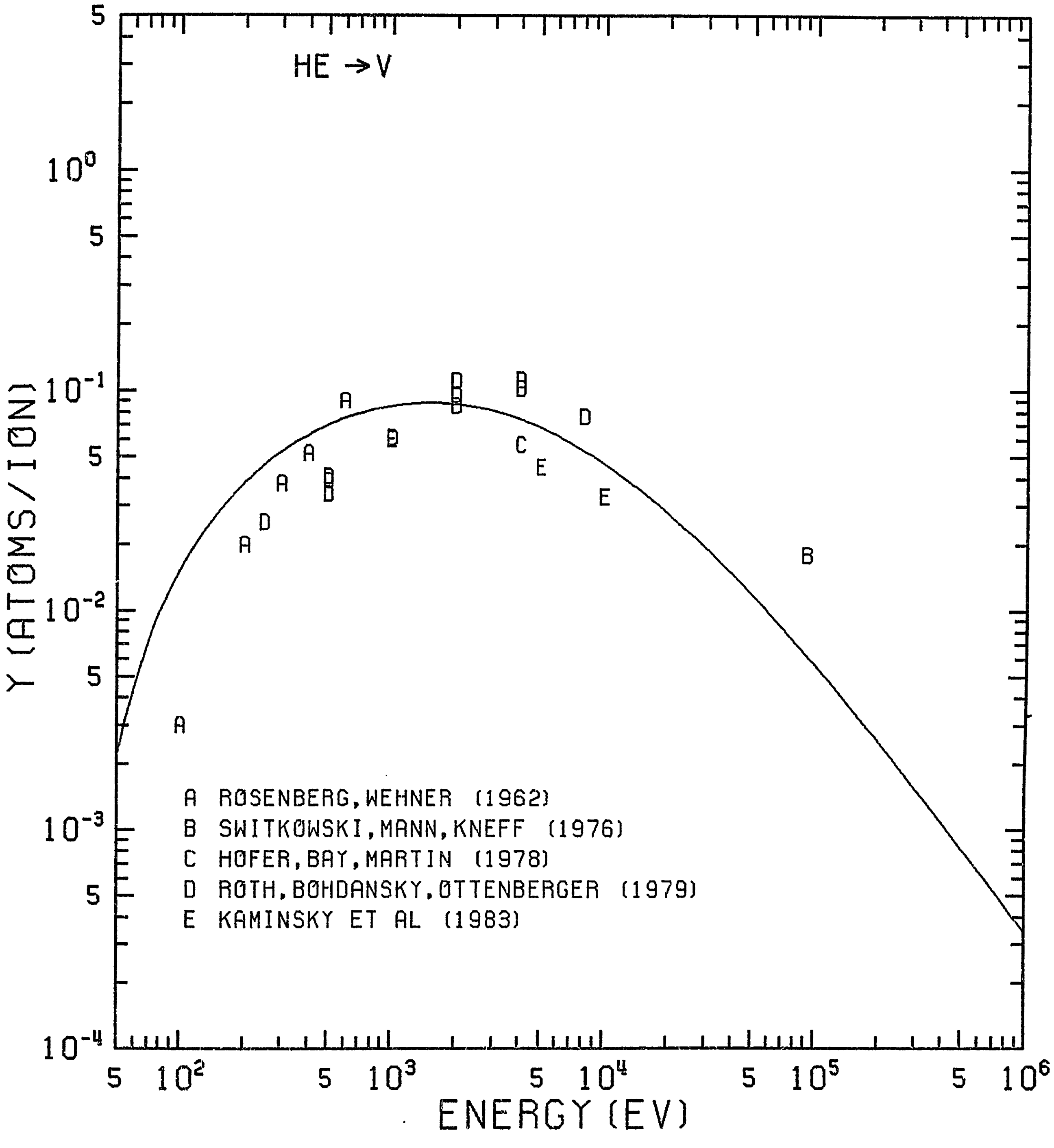

CD → TI
A MARTYNENKO (1968)
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

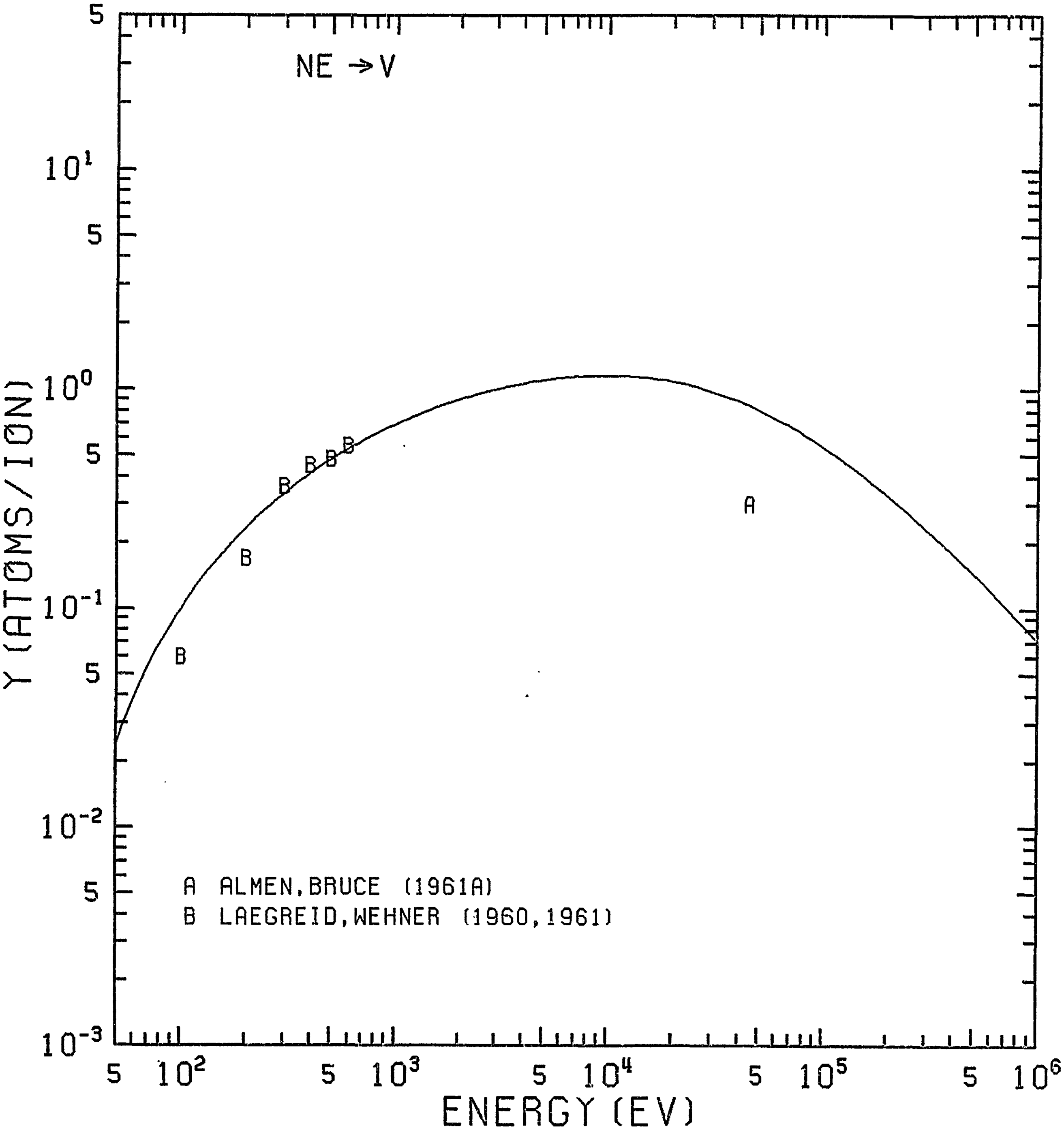

XE →TI
Y (ATOMS/ION)
ENERGY (EV)
A ROSENBERG,WEHNER (1962)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5 10^2 5 10^3 5 10^4 5 10^5 5 10^6
A
A
A
A
A

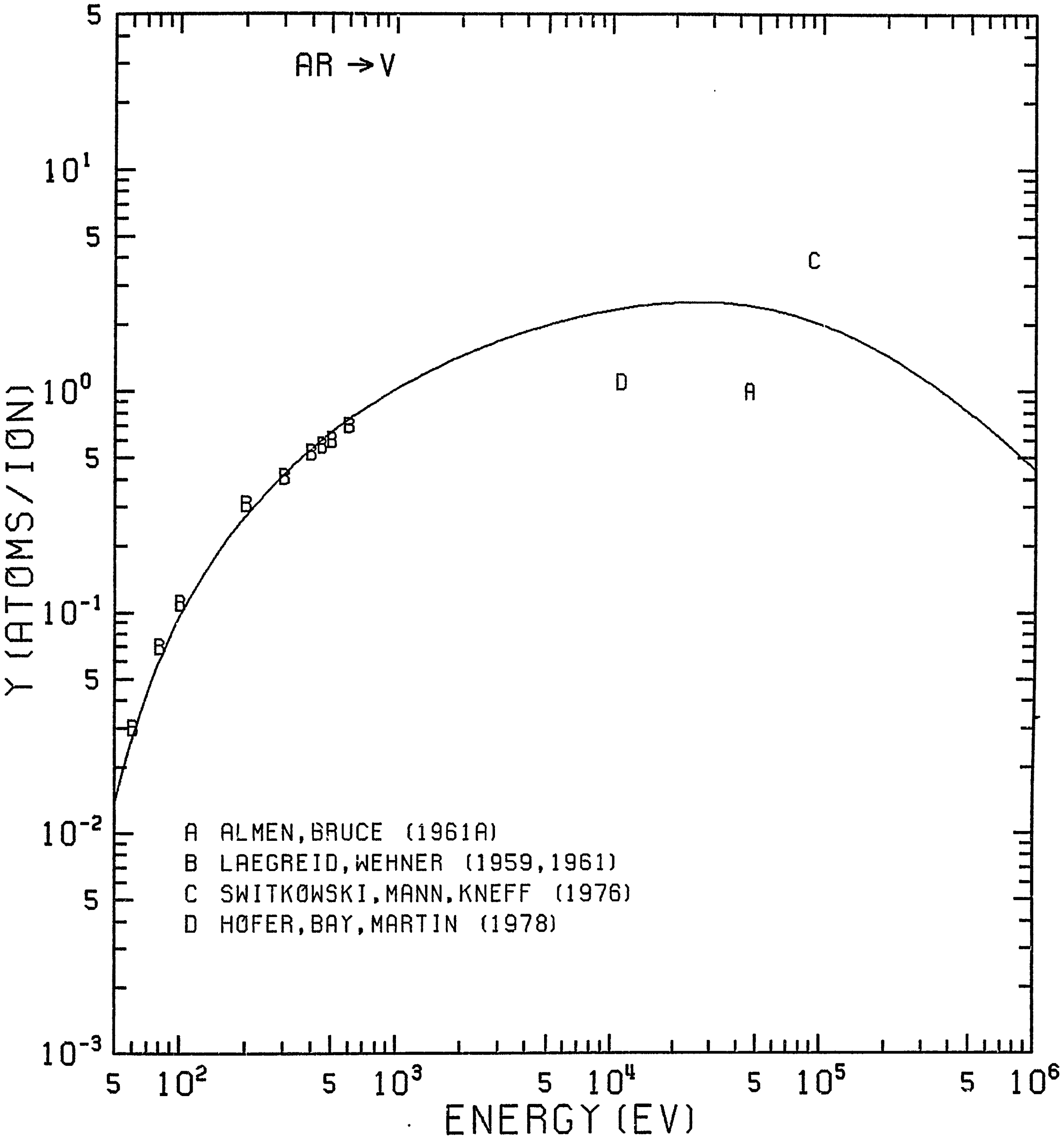

HG → TI
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A WEHNER (1958)
B WEHNER, ROSENBERG (1961)
C ASKEROV, SENA (1969)
D ISMAIL (1970)

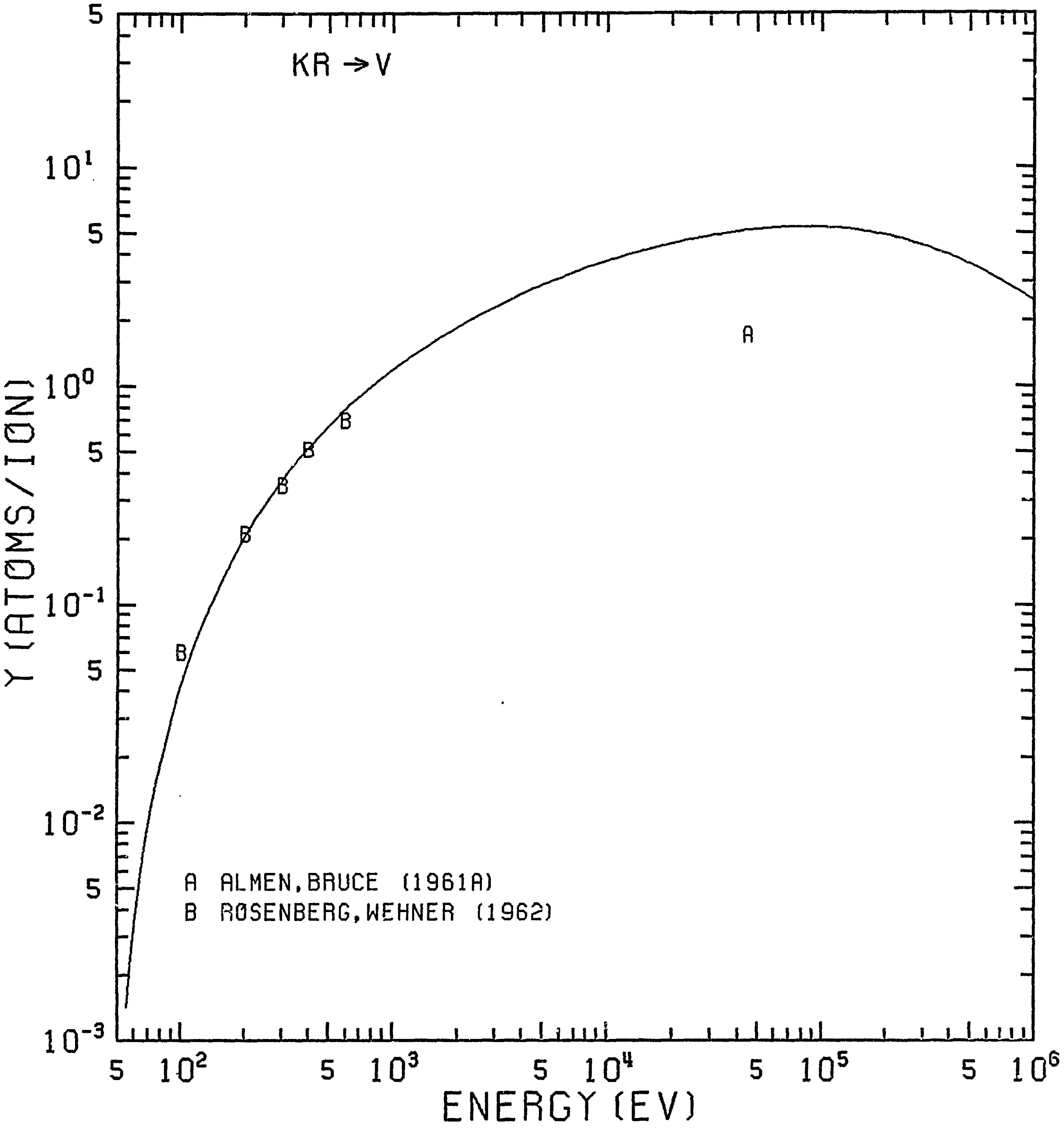

H → V
A ROTH, BOHDANSKY, OTTENBERGER (1979)
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A

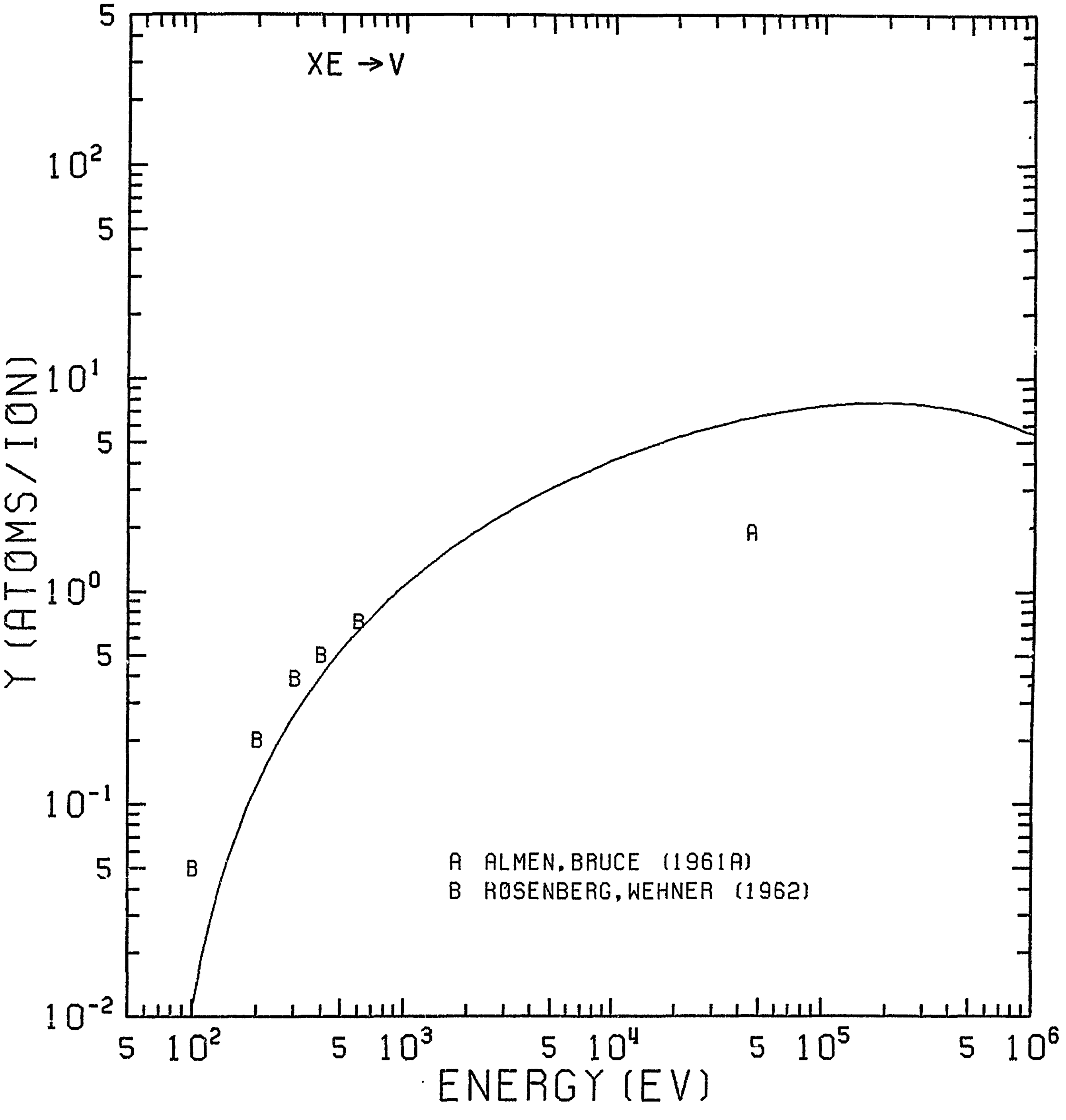

D →V
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
A KAMINSKY ET AL (1983)

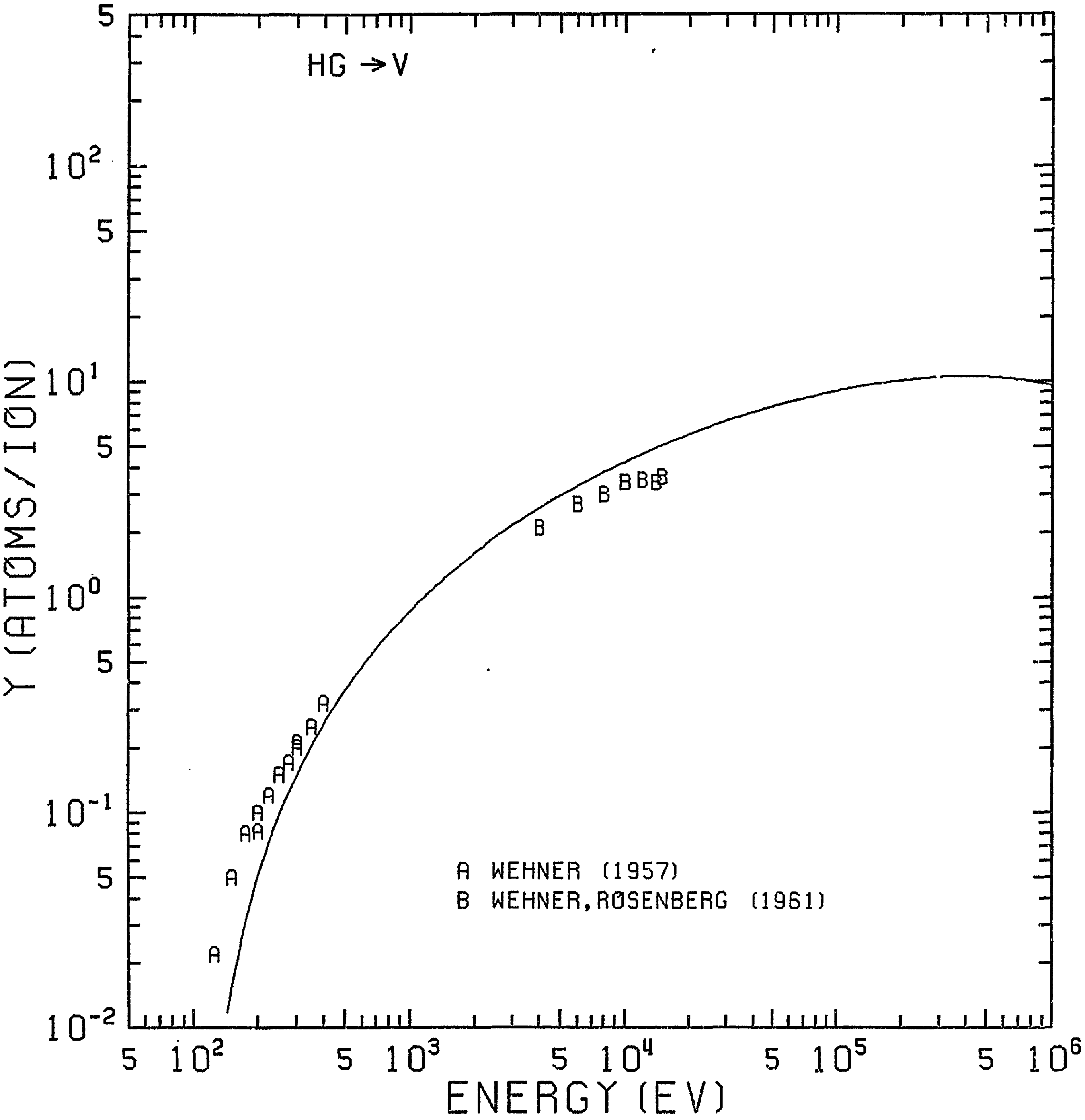

HE →V
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ROSENBERG, WEHNER (1962)
B SWITKOWSKI, MANN, KNEFF (1976)
C HOFER, BAY, MARTIN (1978)
D ROTH, BOHDANSKY, OTTENBERGER (1979)
E KAMINSKY ET AL (1983)

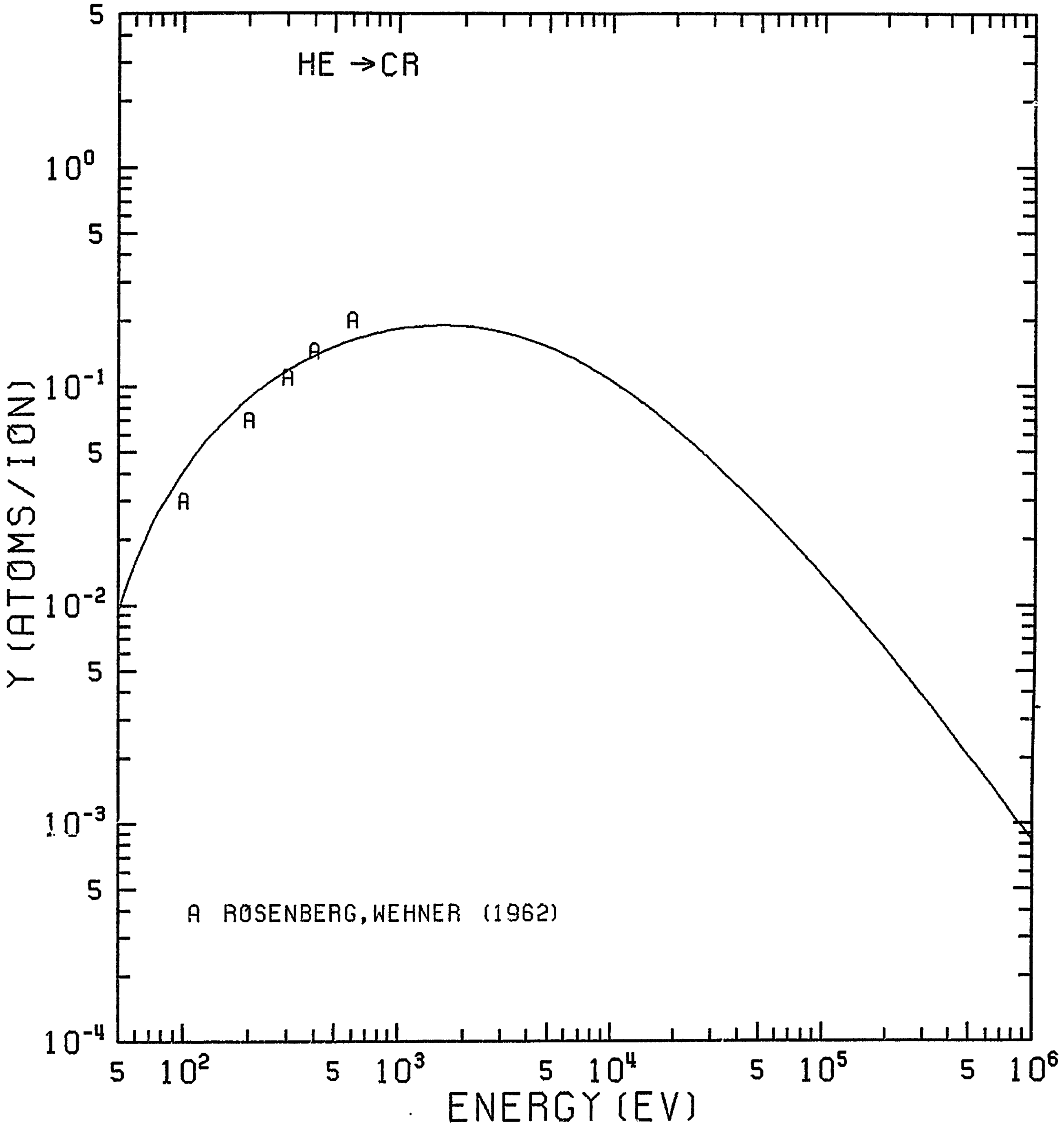

NE → V
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
B
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1960, 1961)

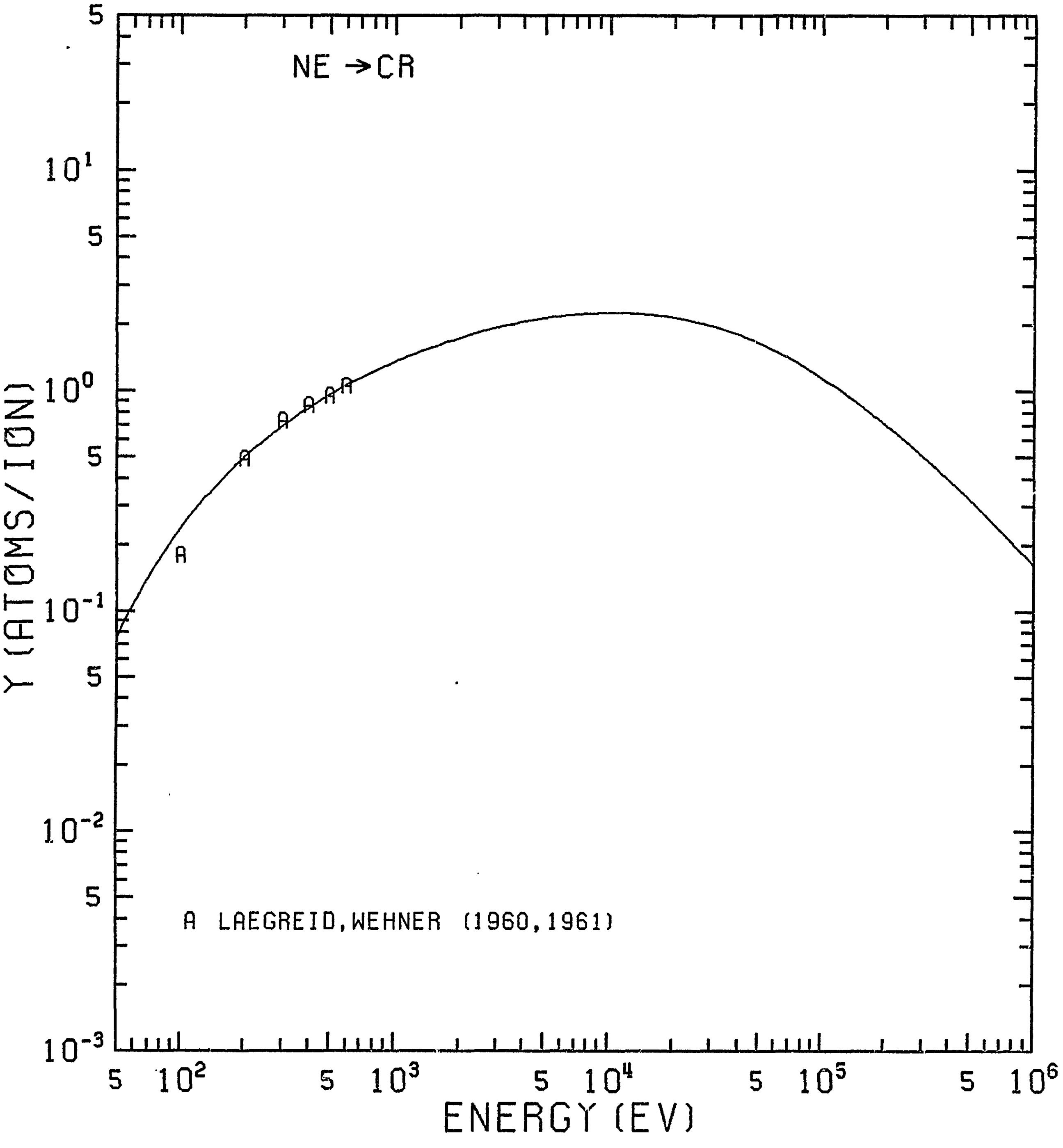

AR → V
Y (ATØMS/IØN)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1959, 1961)
C SWITKØWSKI, MANN, KNEFF (1976)
D HØFER, BAY, MARTIN (1978)
A
B
C
D


KR → V
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
B
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)

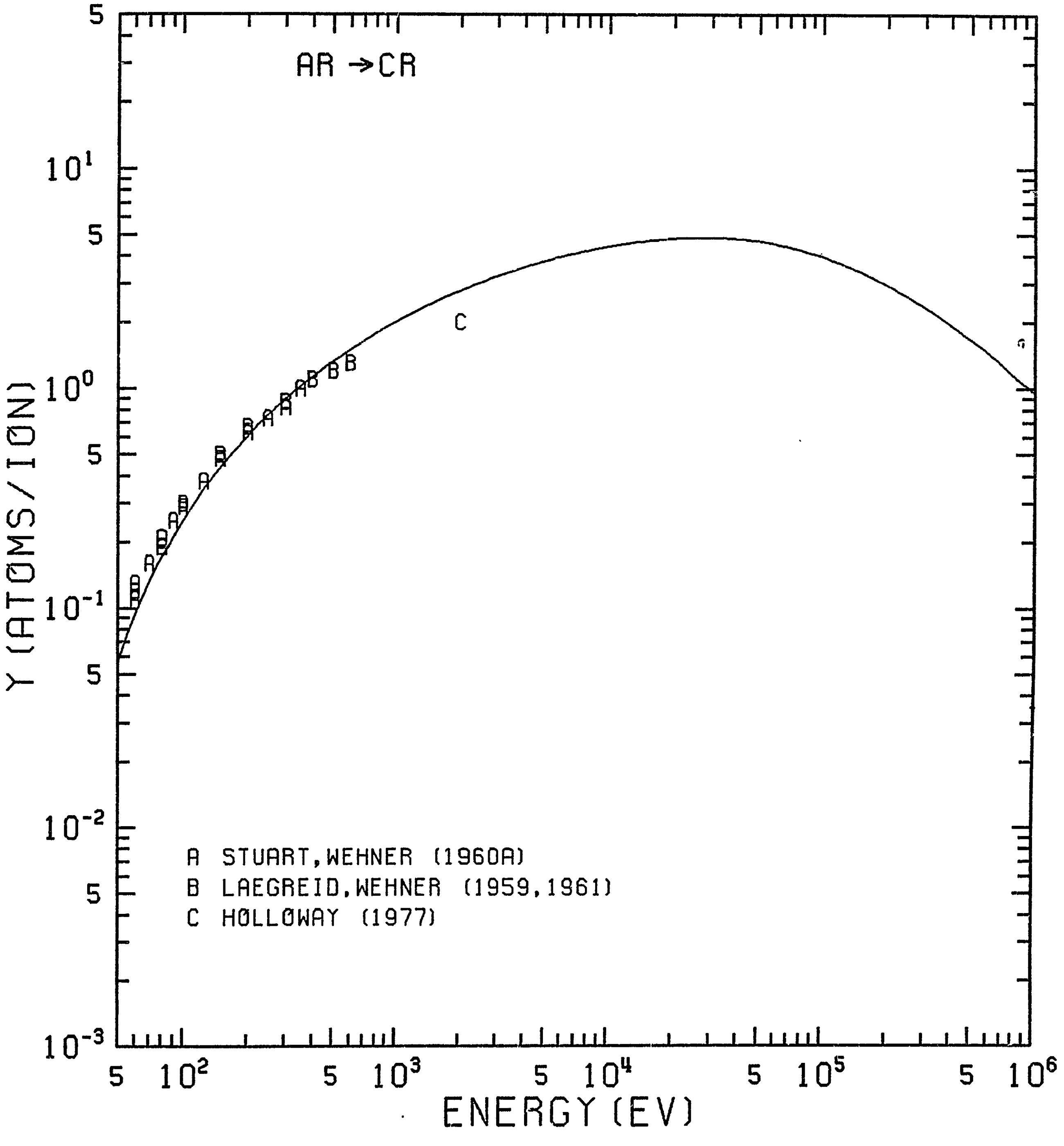

XE → V
Y (ATOMS/ION)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A
B
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)

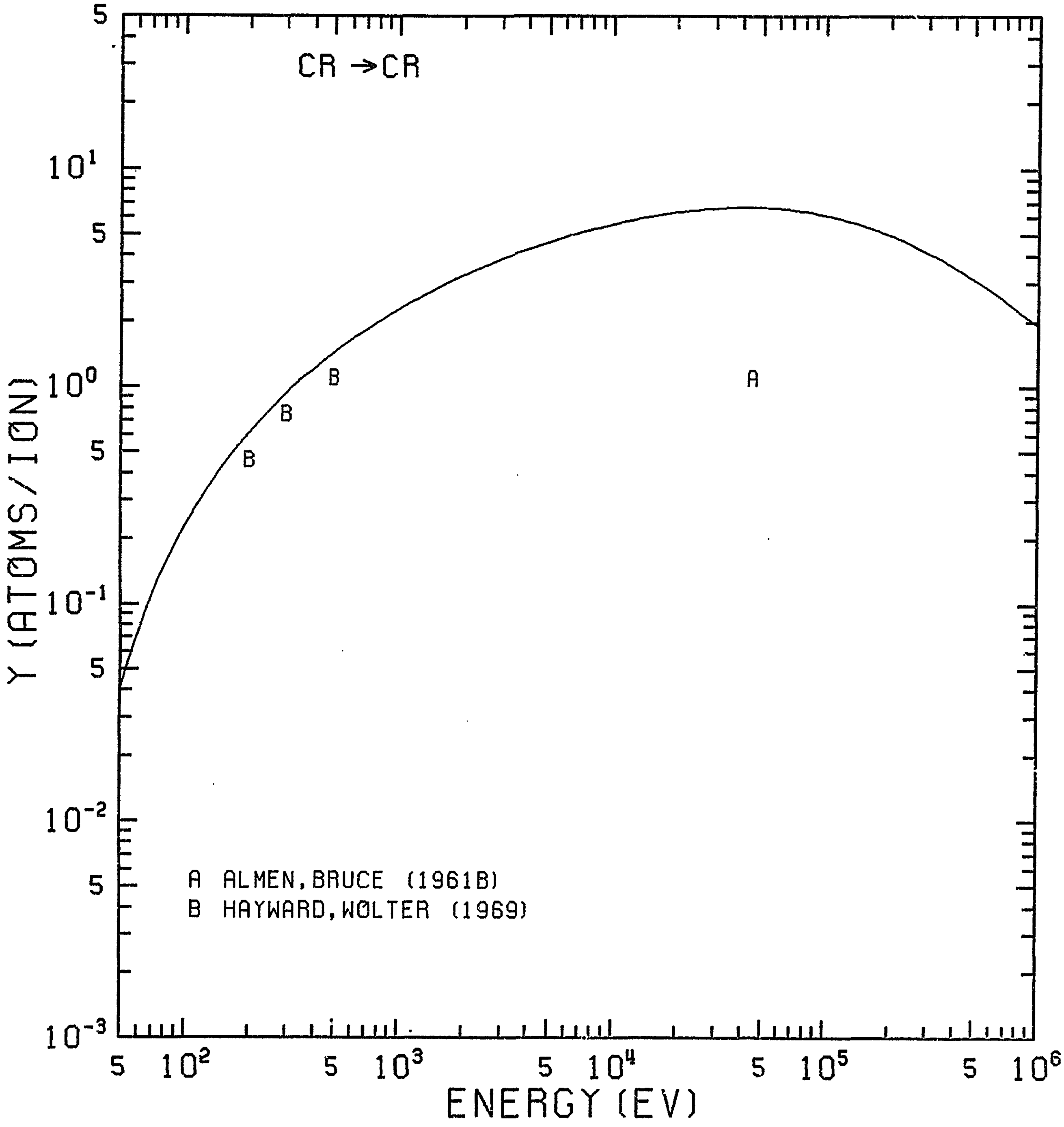

HG → V
Y (ATØMS/IØN)
ENERGY (EV)
A WEHNER (1957)
B WEHNER, RØSENBERG (1961)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

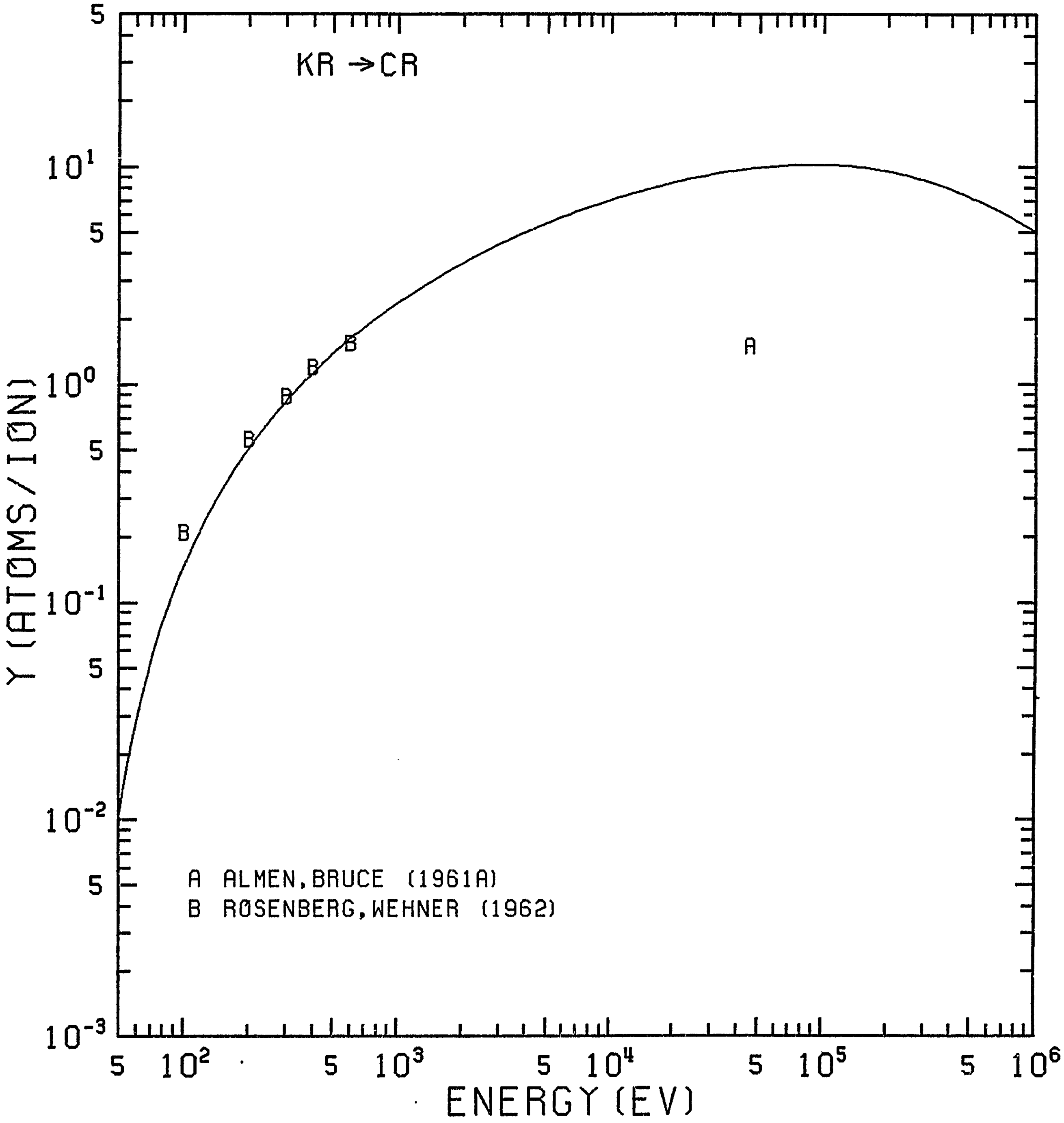

HE → CR
Y (ATOMS/ION)
ENERGY (EV)
A ROSENBERG, WEHNER (1962)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
A
A

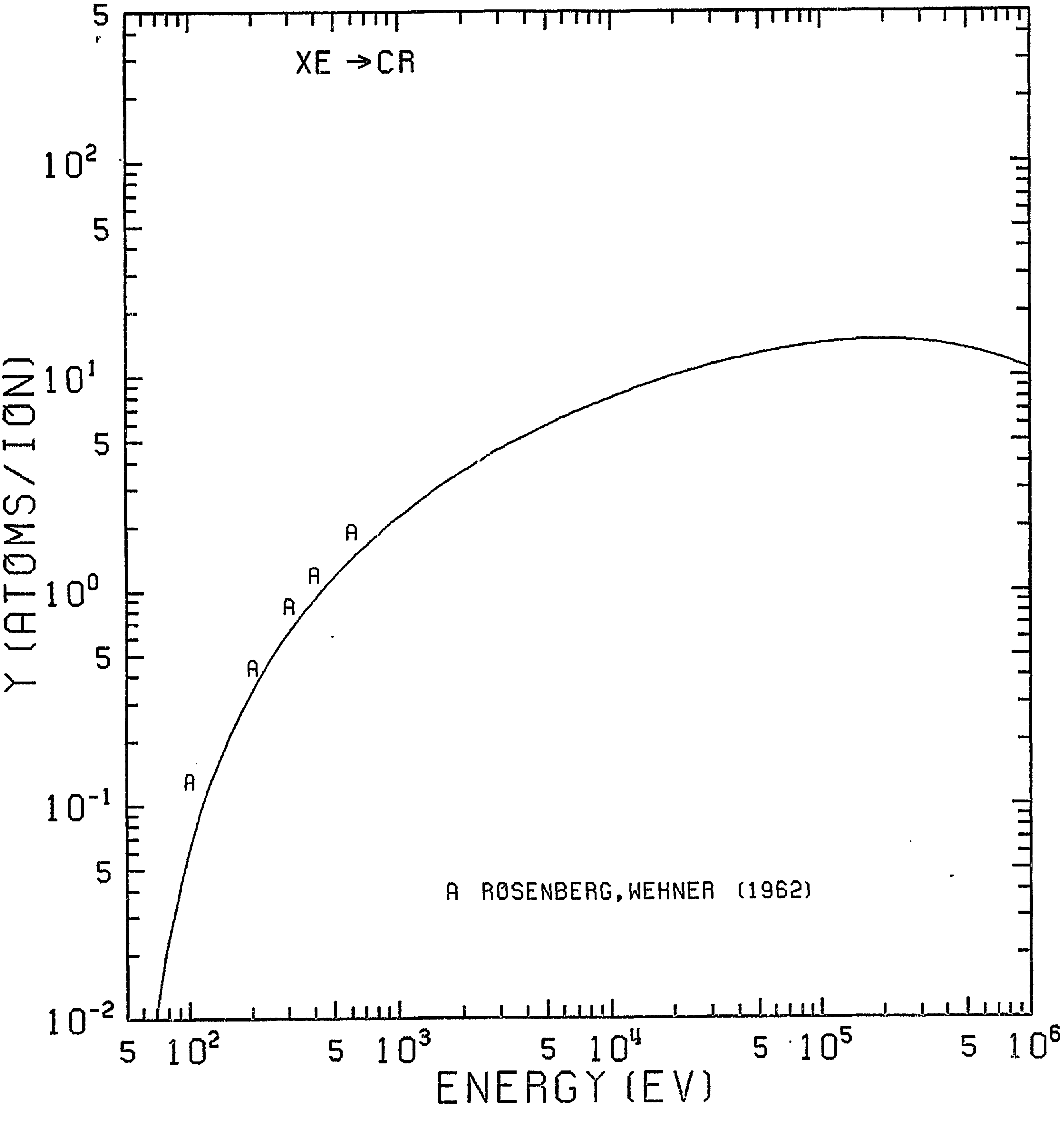


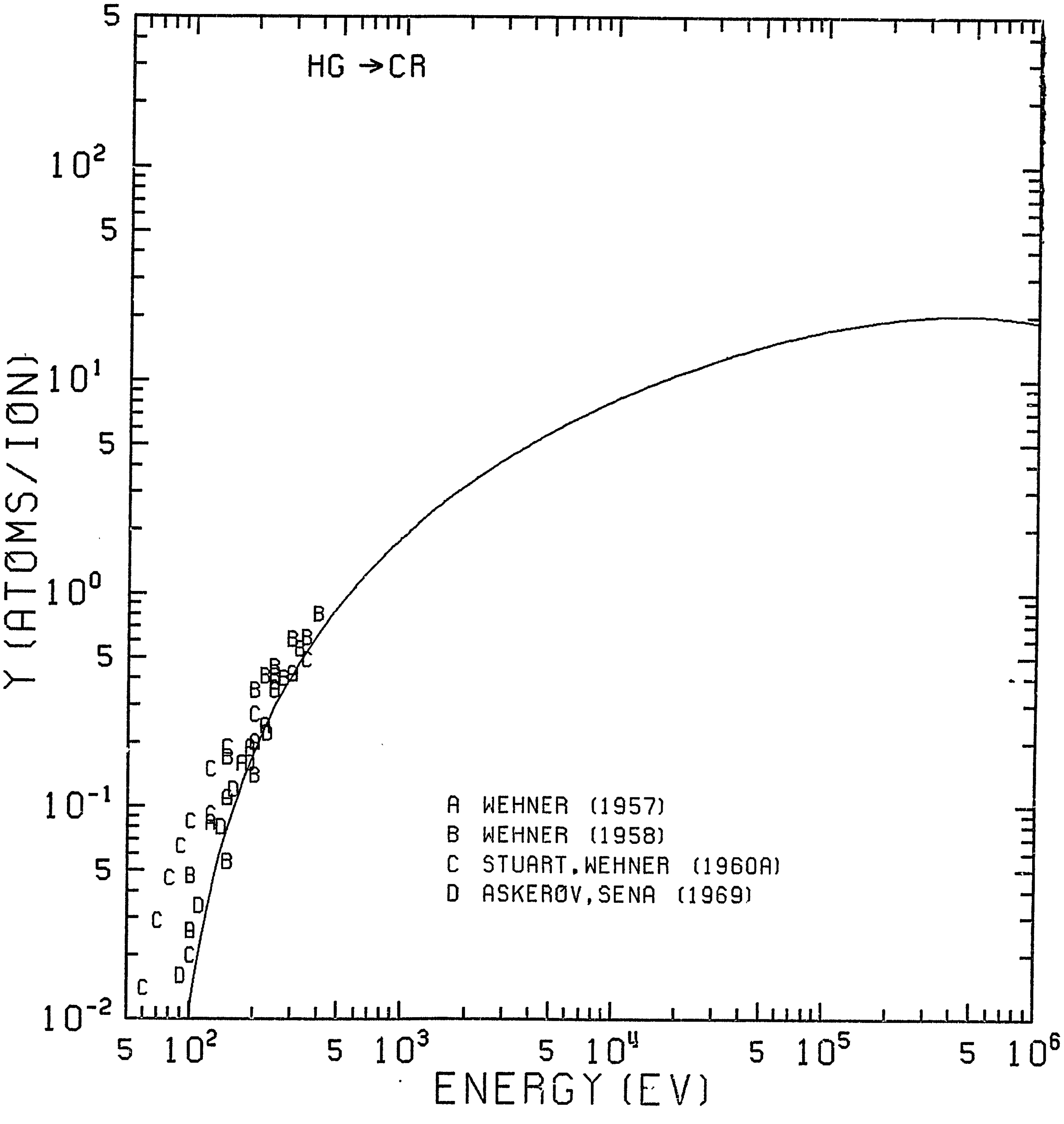
NE → CR
A LAEGREID, WEHNER (1960, 1961)
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A

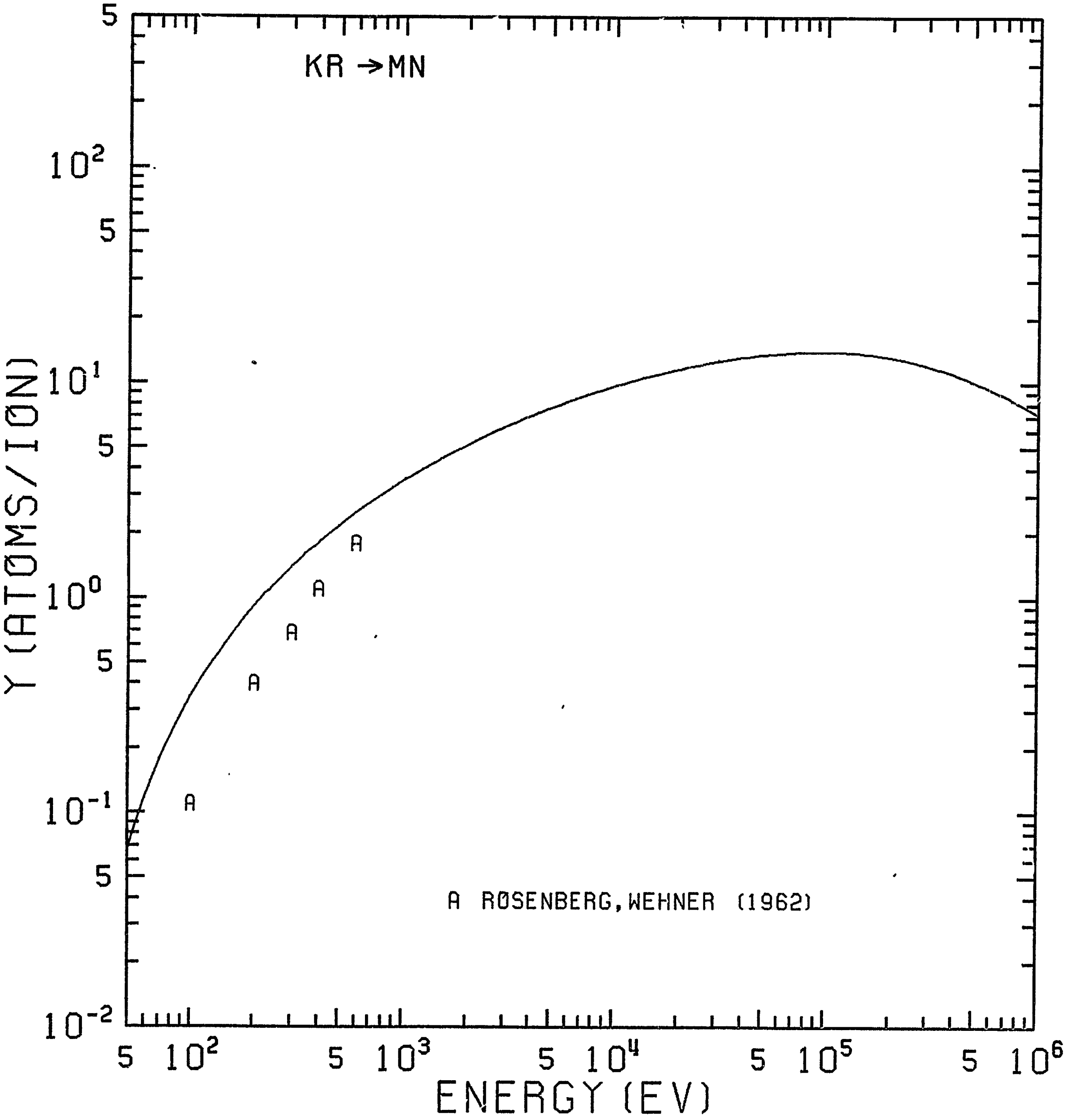

AR →CR
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A STUART, WEHNER (1960A)
B LAEGREID, WEHNER (1959, 1961)
C HOLLOWAY (1977)

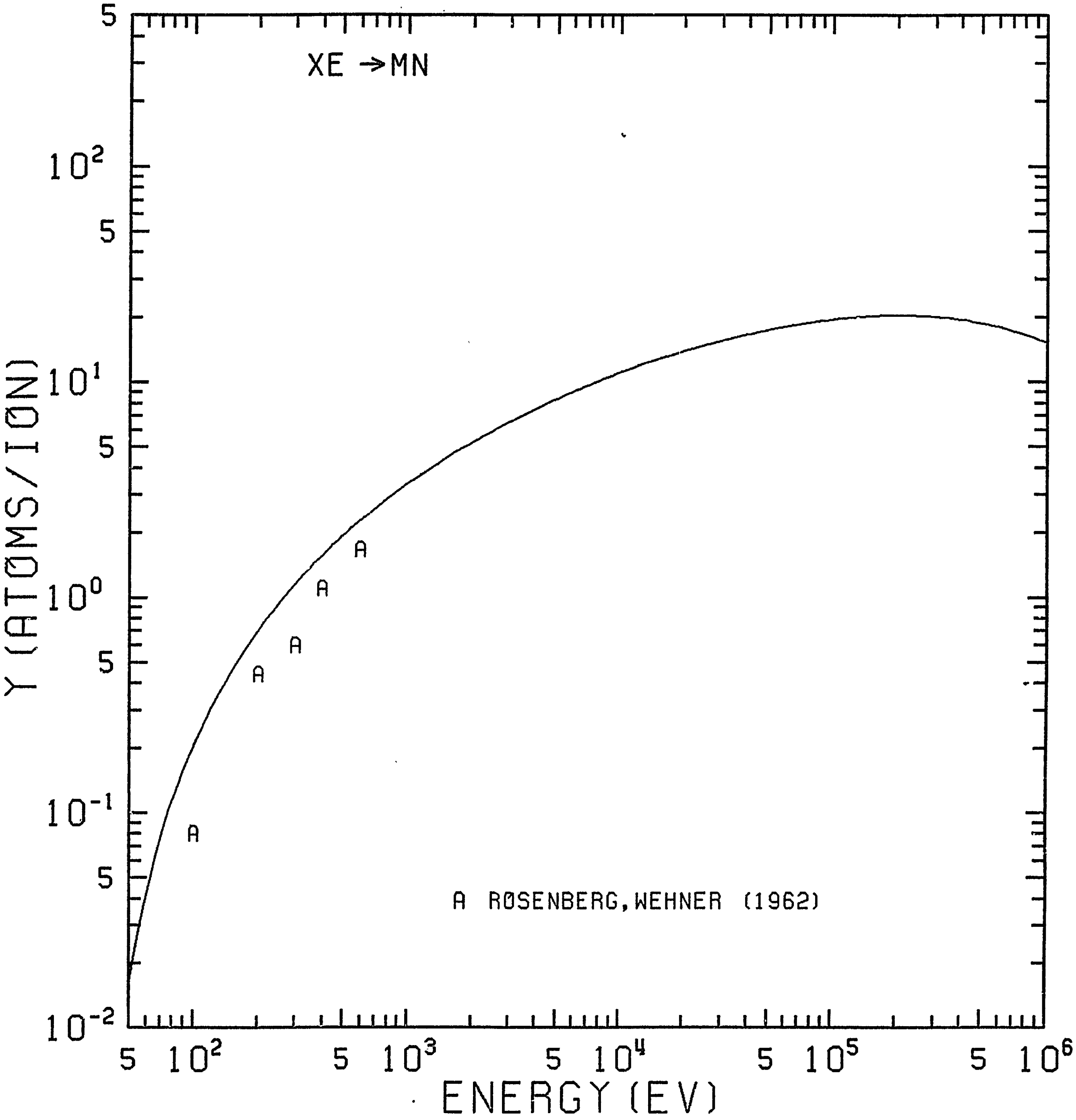

CR →CR
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B
B
B
A ALMEN, BRUCE (1961B)
B HAYWARD, WOLTER (1969)

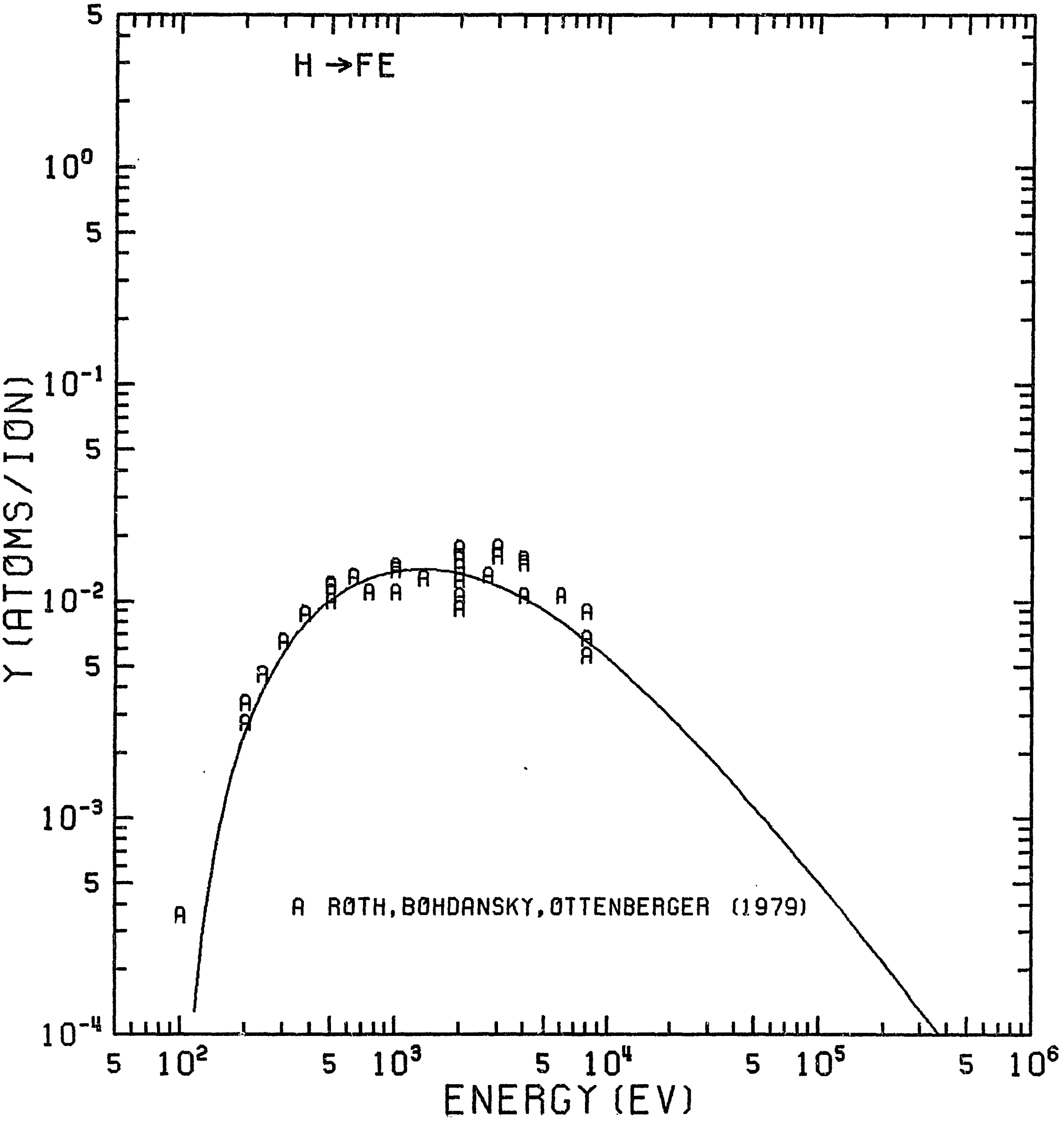

KR →CR
Y (ATOMS/ION)
ENERGY (EV)
5
10^{1}
5
10^{0}
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{2}
5
10^{3}
5
10^{4}
5
10^{5}
5
10^{6}
A
B
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)

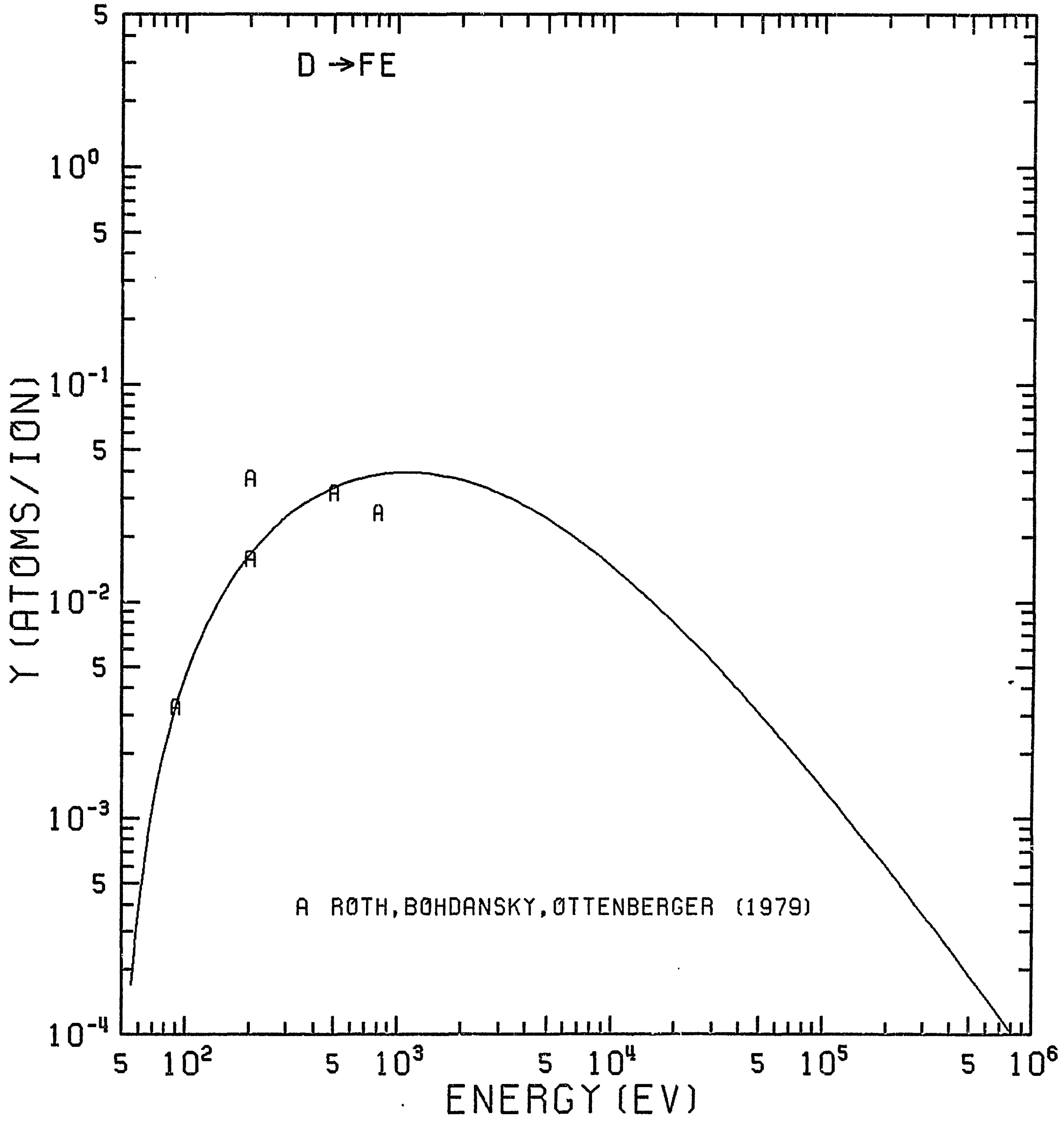

XE →CR
Y (ATOMS/ION)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A
A ROSENBERG,WEHNER (1962)

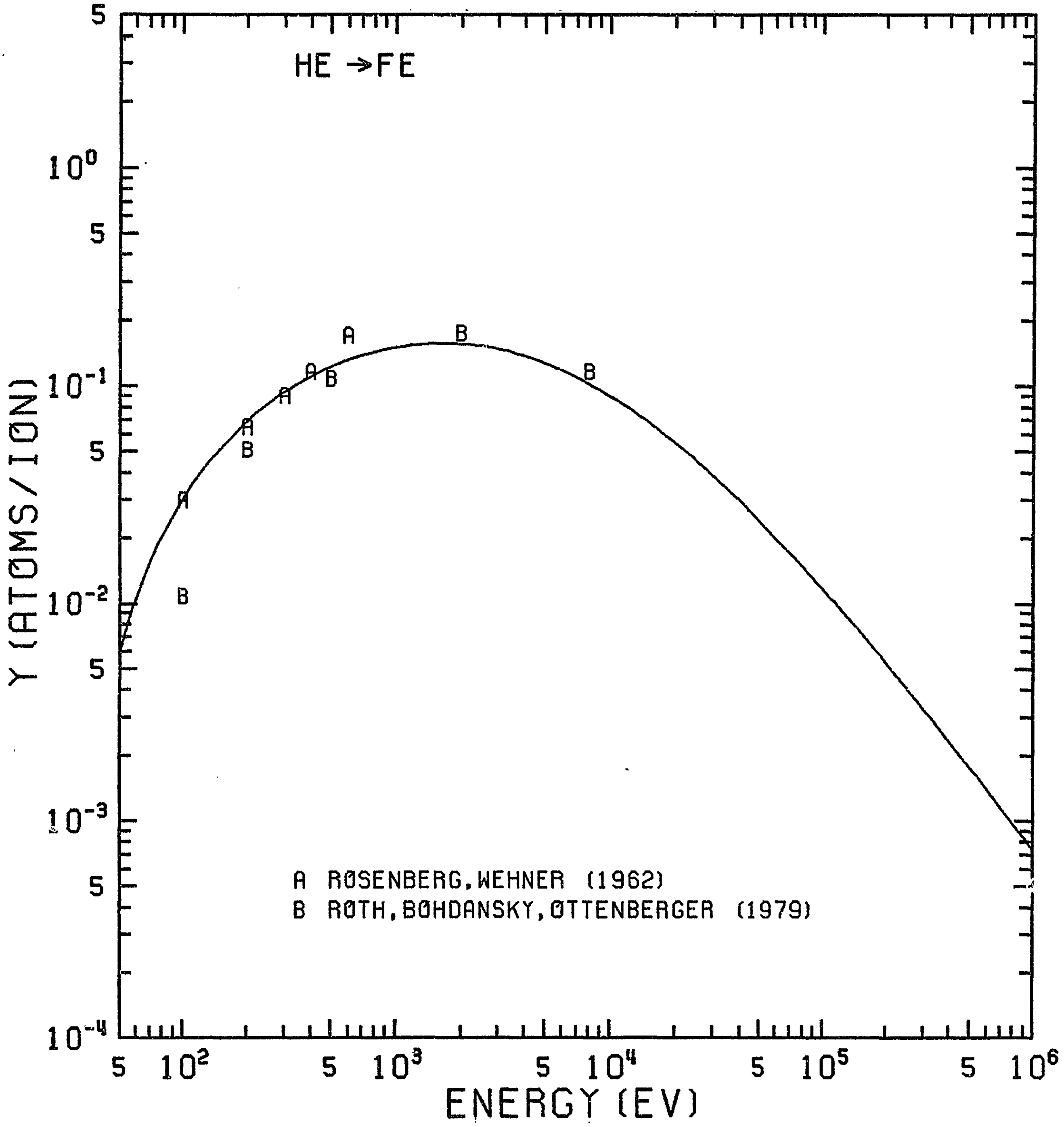

HG →CR
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A WEHNER (1957)
B WEHNER (1958)
C STUART, WEHNER (1960A)
D ASKEROV, SENA (1969)

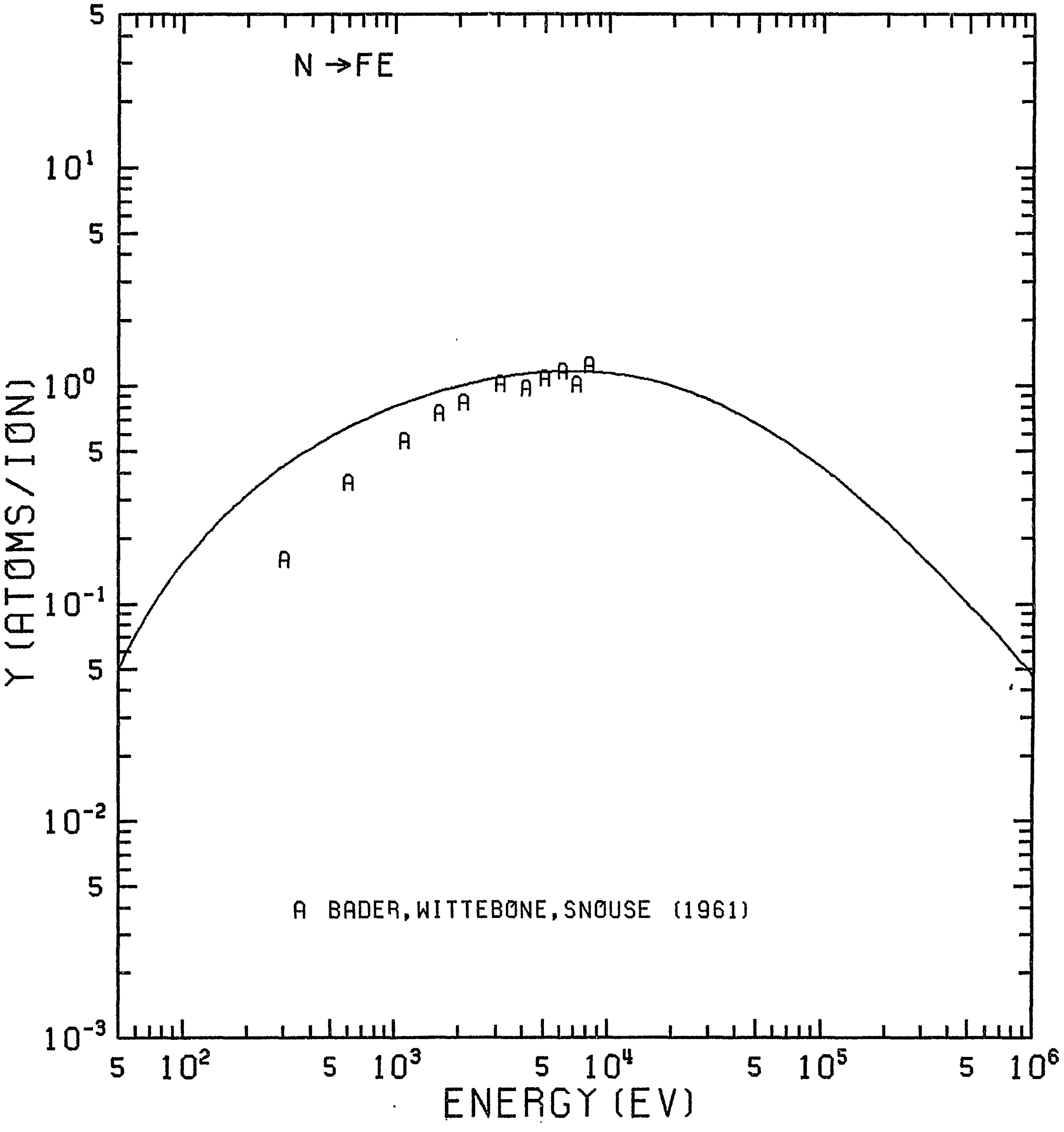

KR →MN
Y (ATOMS/ION)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A ROSENBERG, WEHNER (1962)

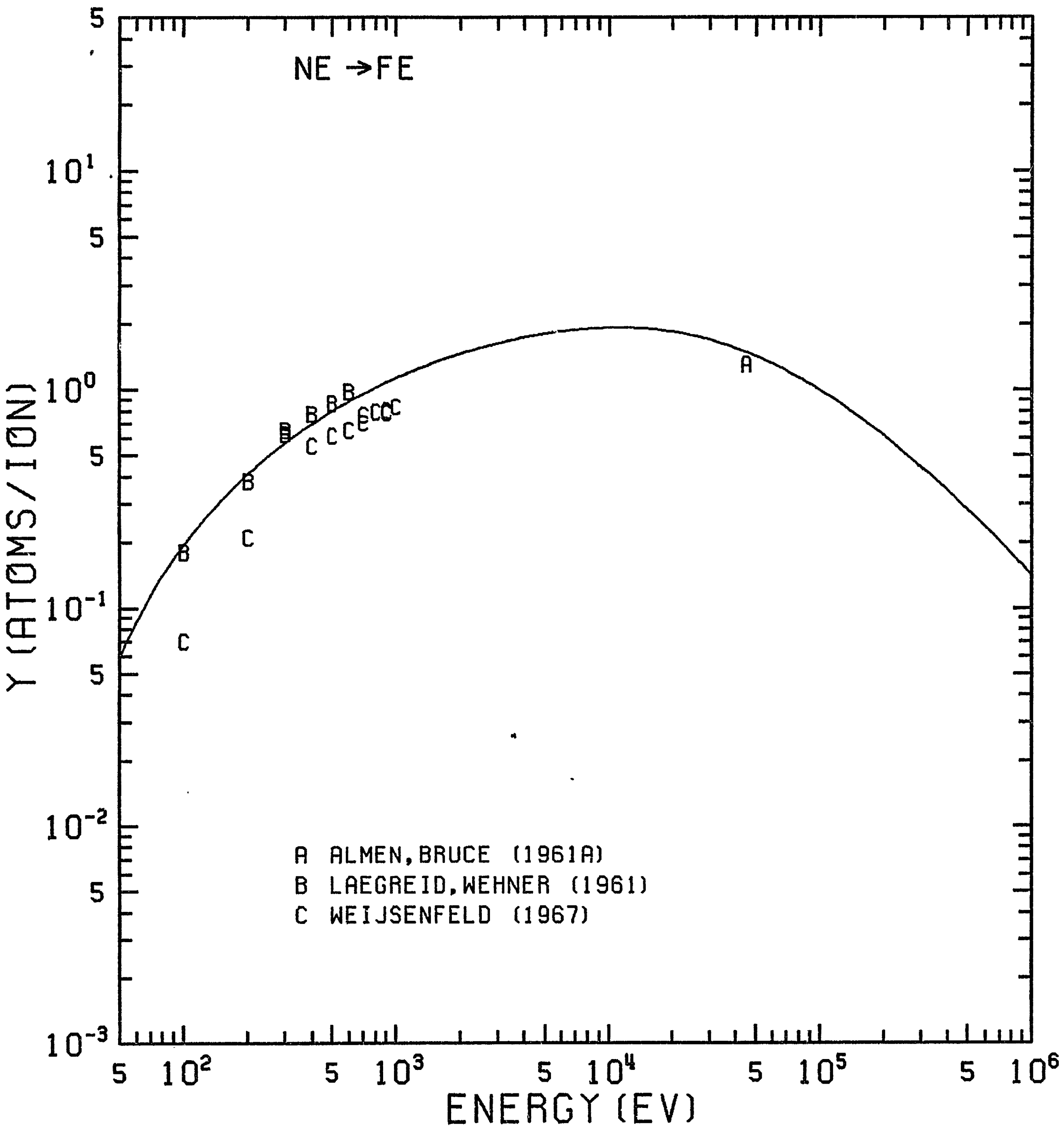

XE →MN
A ROSENBERG,WEHNER (1962)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A

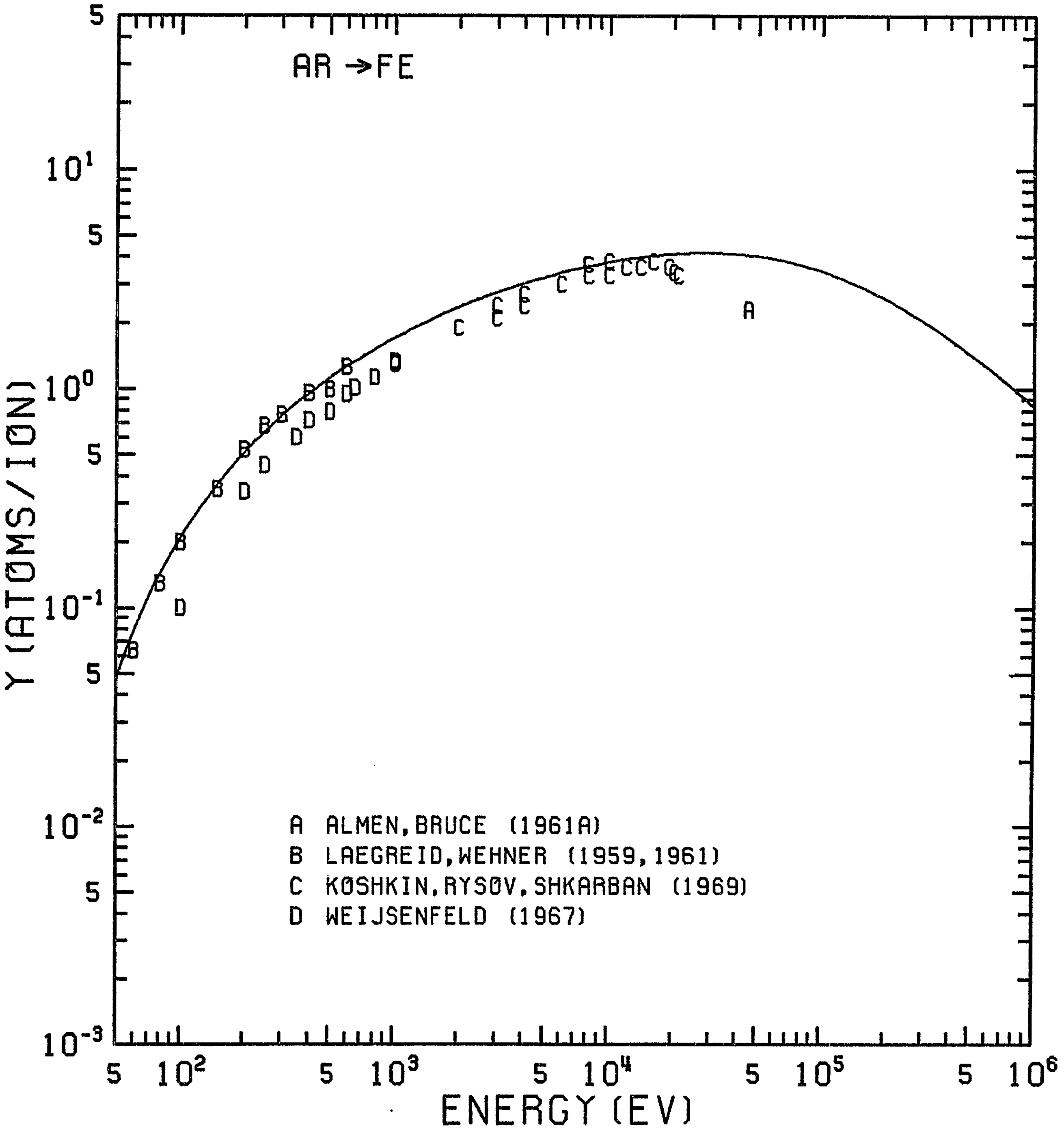

H →FE
Y (ATOMS/ION)
ENERGY (EV)
A ROTH, BOHDANSKY, OTTENBERGER (1979)
5
10^{0}
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^{2}
5
10^{3}
5
10^{4}
5
10^{5}
5
10^{6}

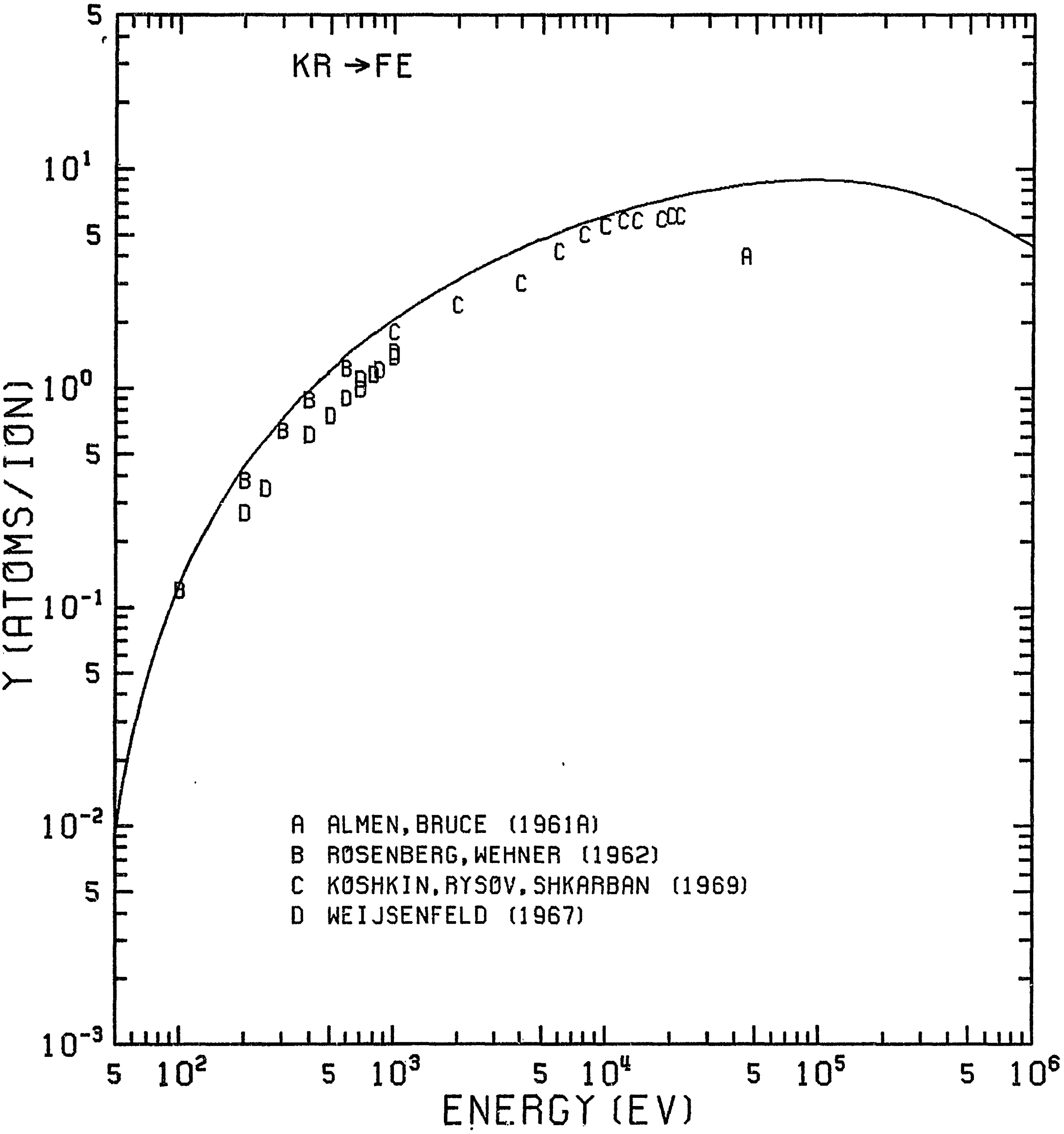

D →FE
Y (ATOMS/ION)
ENERGY (EV)
A ROTH, BOHDANSKY, OTTENBERGER (1979)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
A
A

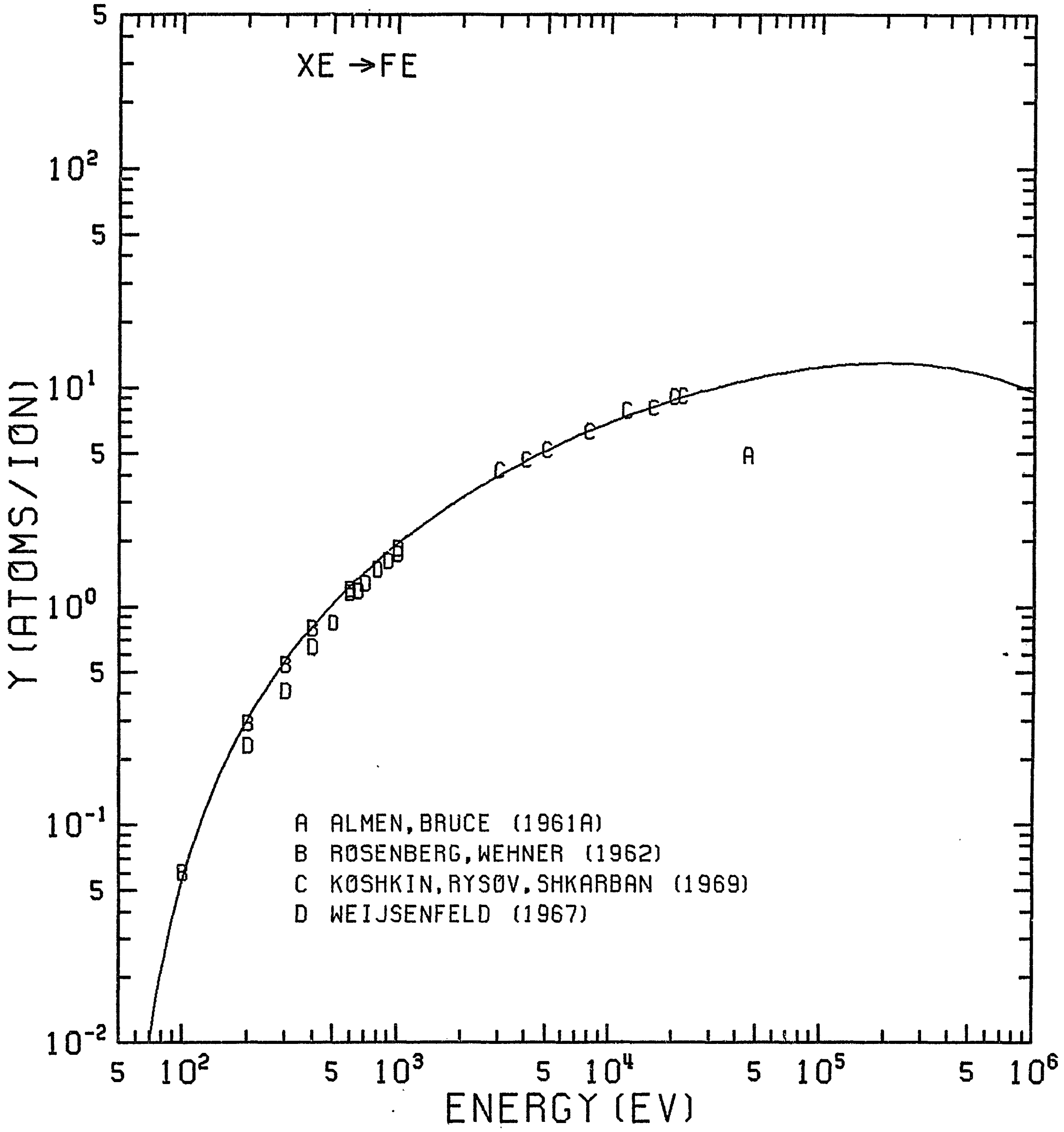

HE →FE
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ROSENBERG, WEHNER (1962)
B ROTH, BOHDANSKY, OTTENBERGER (1979)

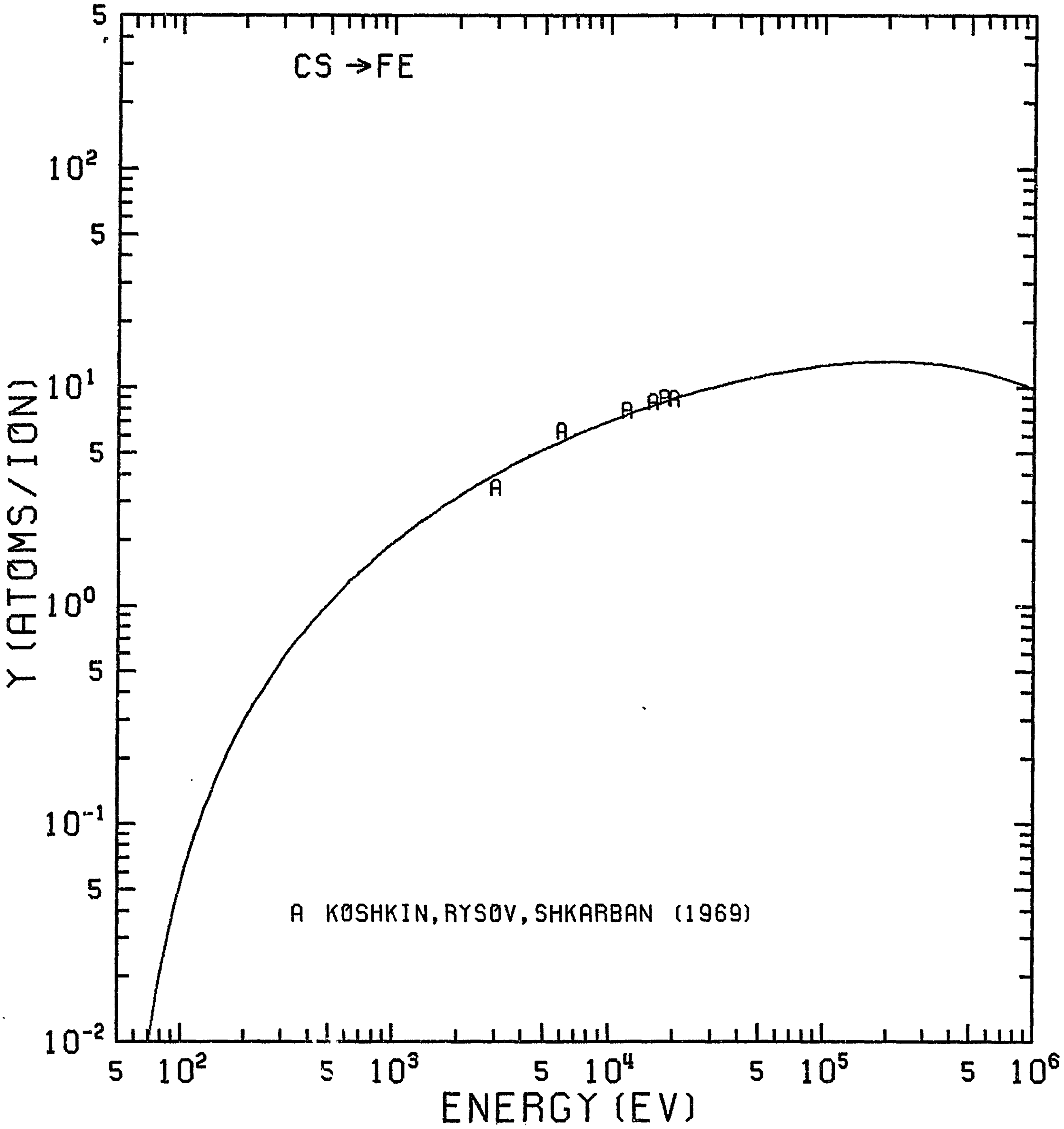

N →FE
Y (ATOMS/ION)
ENERGY (EV)
A BADER, WITTEBONE, SNOUSE (1961)
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A

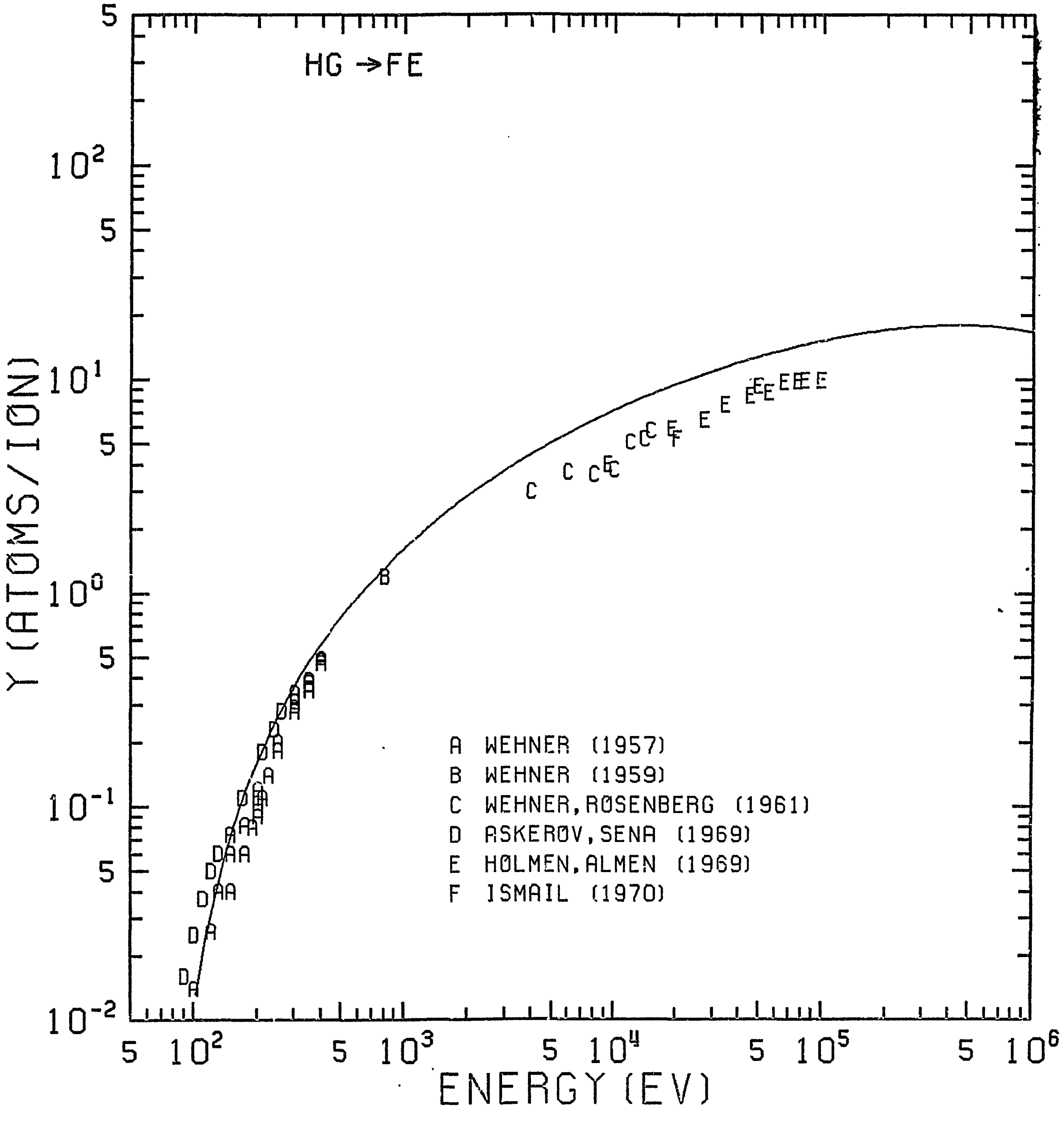

NE →FE
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1961)
C WEIJSENFELD (1967)

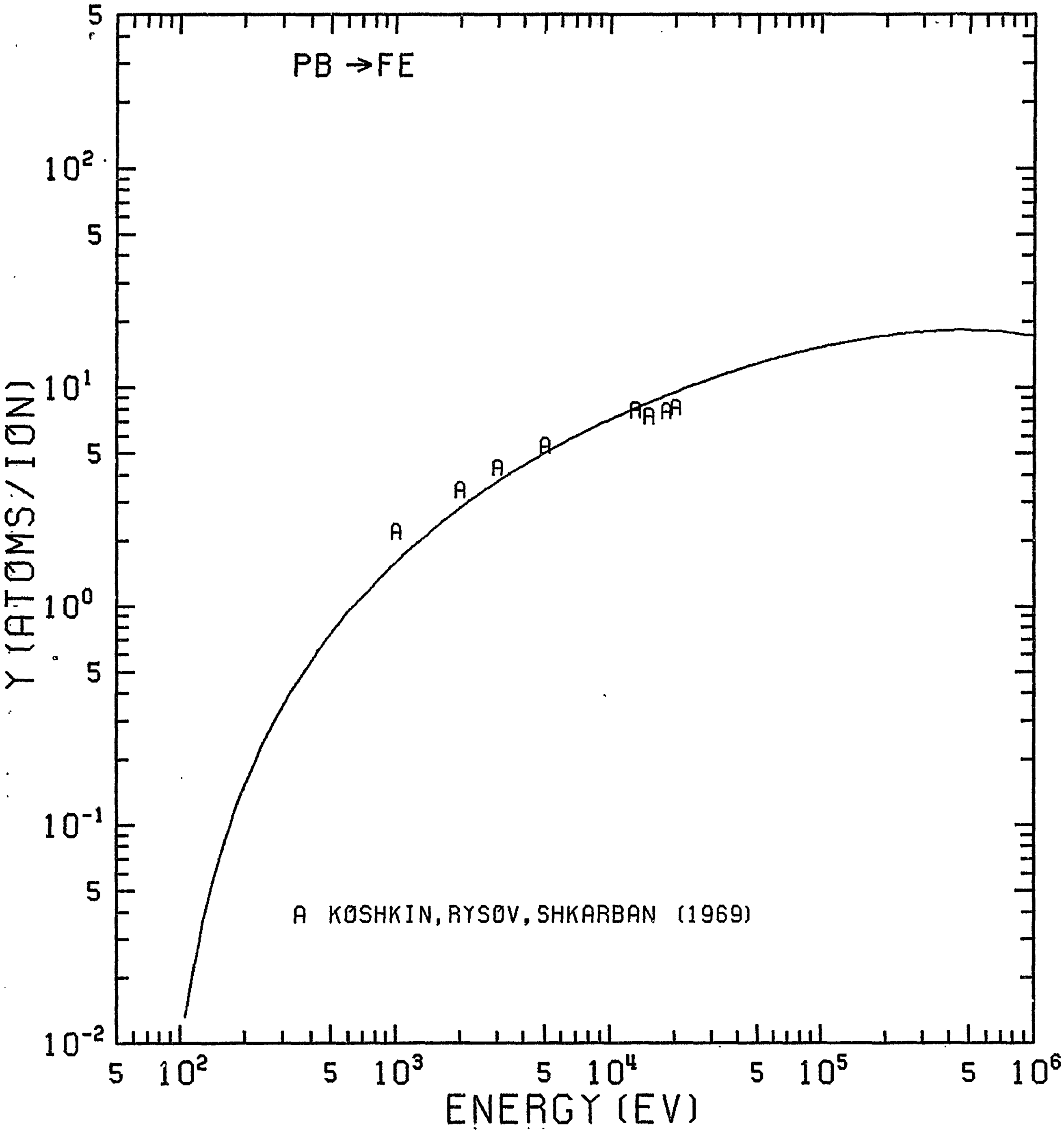

AR →FE
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1959, 1961)
C KOSHKIN, RYSOV, SHKARBAN (1969)
D WEIJSENFELD (1967)

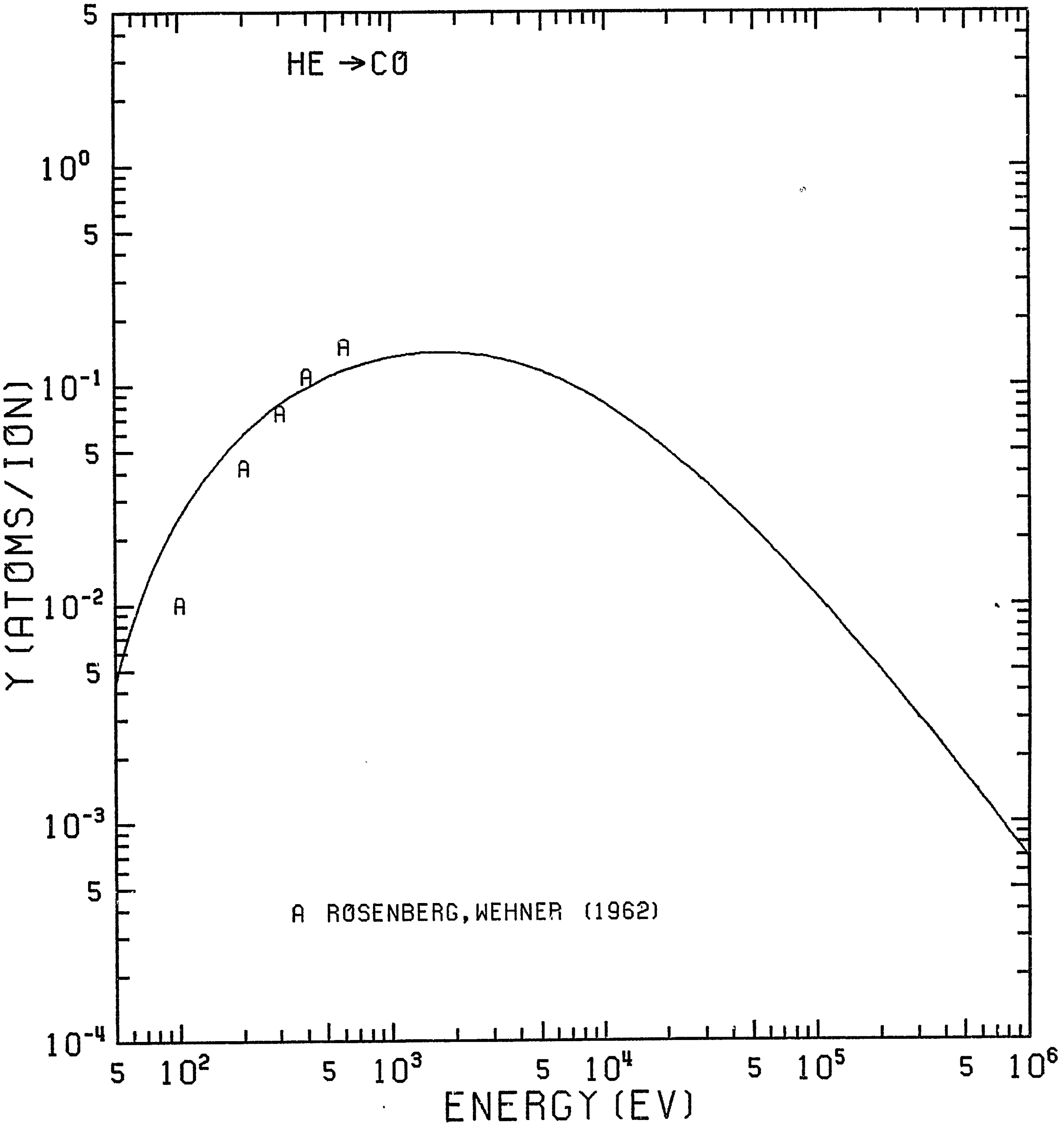

KR →FE
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)
C KOSHKIN, RYSOV, SHKARBAN (1969)
D WEIJSENFELD (1967)

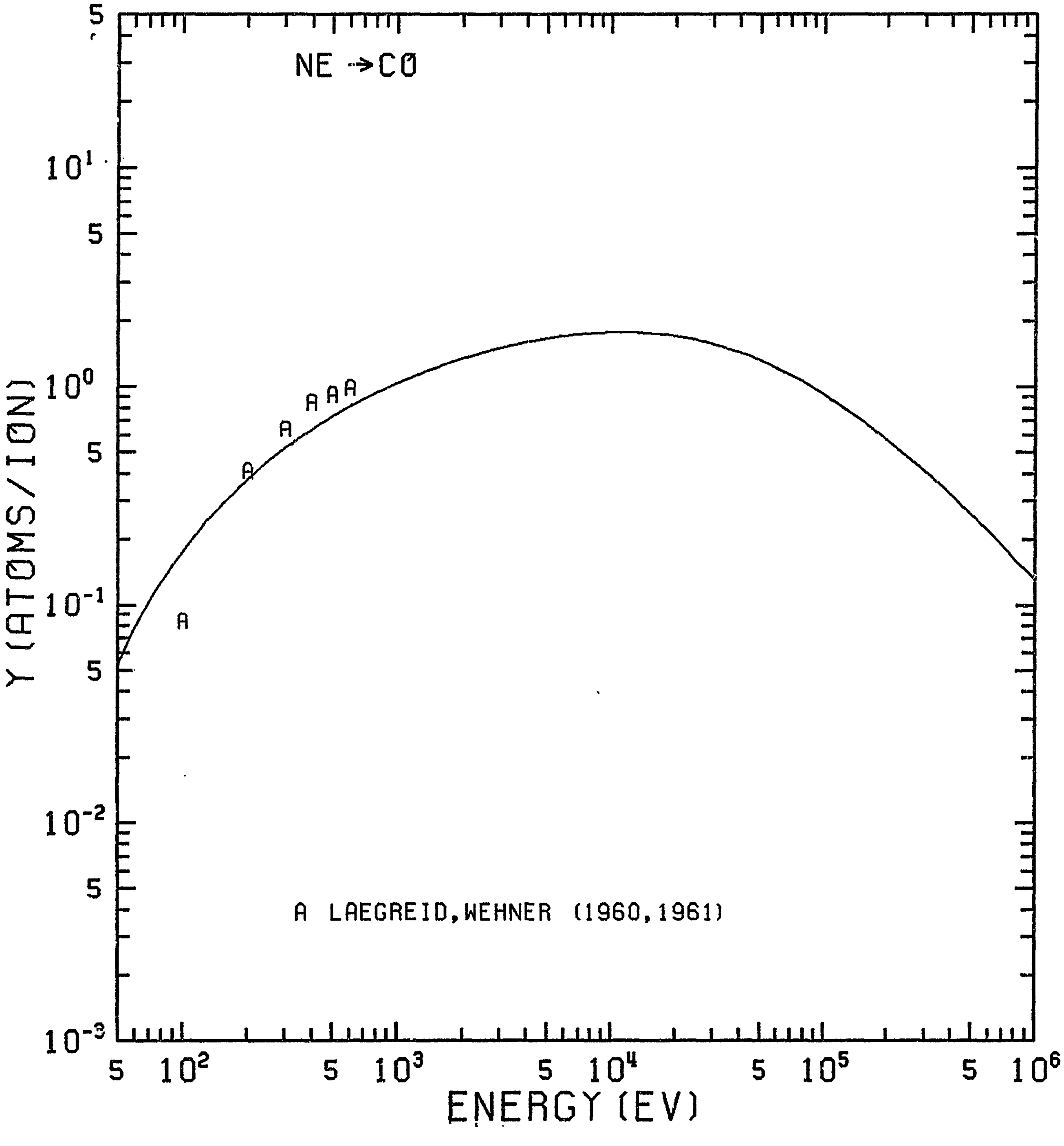

XE →FE
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)
C KOSHKIN, RYSOV, SHKARBAN (1969)
D WEIJSENFELD (1967)

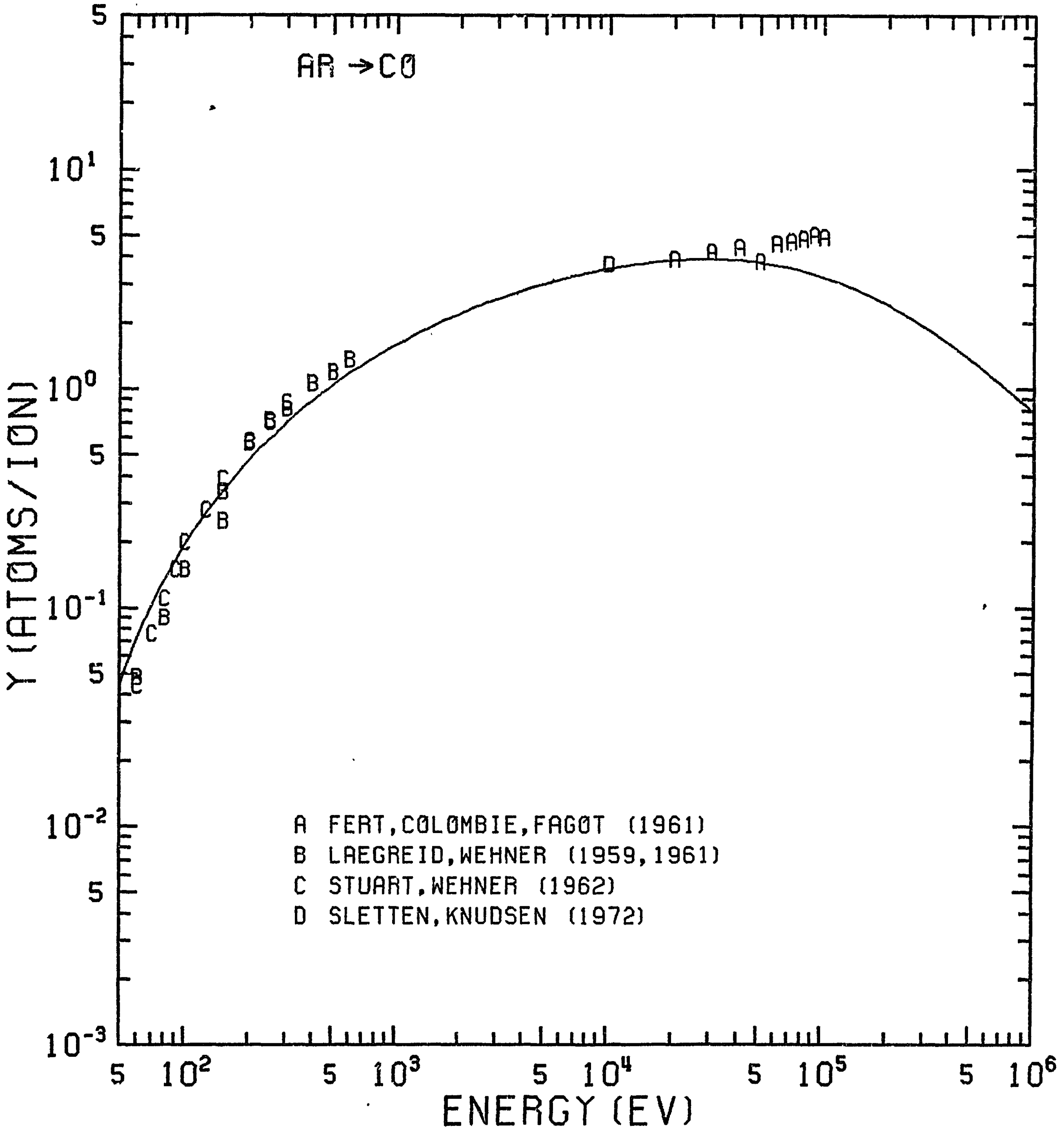

CS →FE
A KOSHKIN,RYSOV,SHKARBAN (1969)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

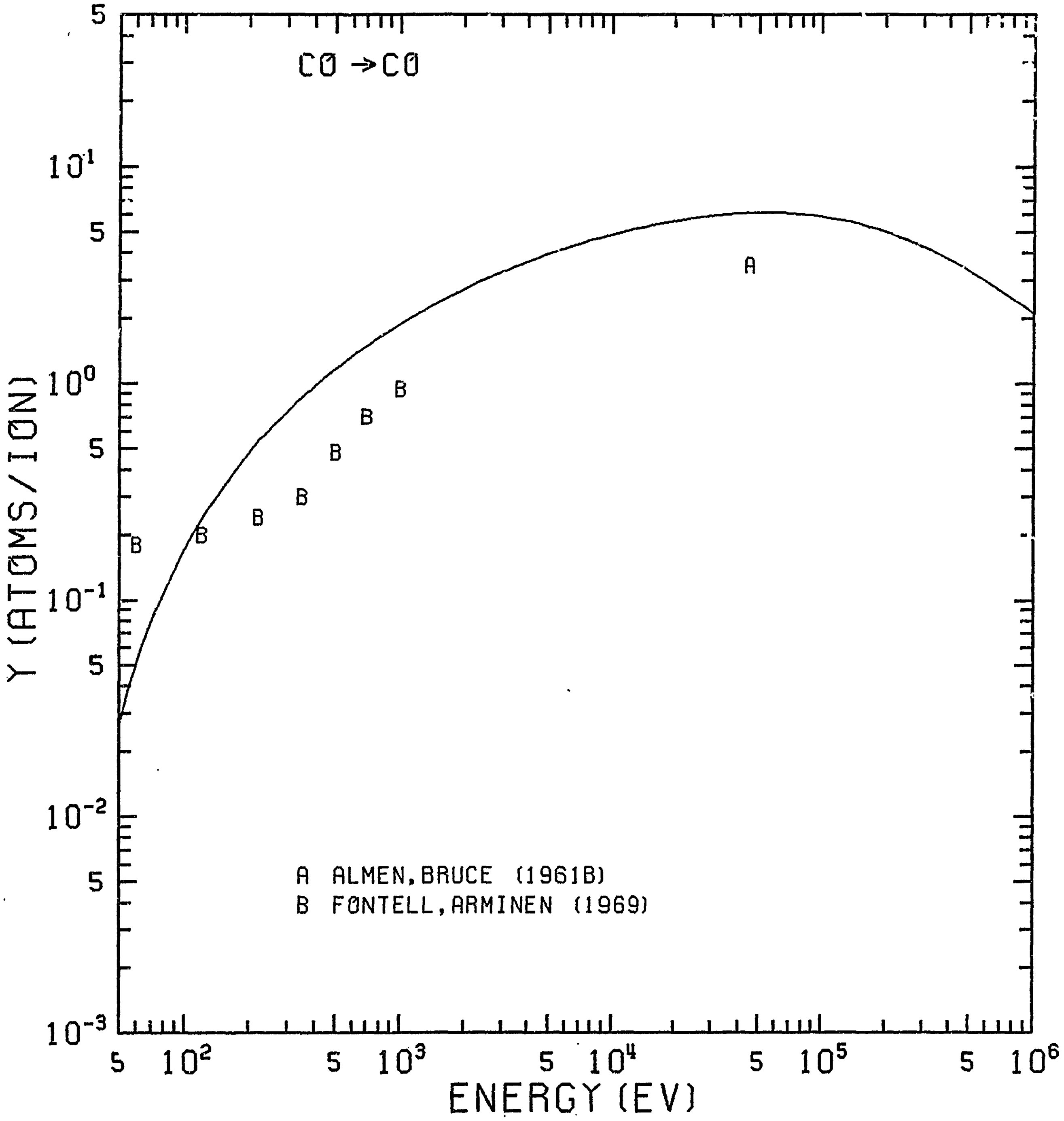

HG →FE
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A WEHNER (1957)
B WEHNER (1959)
C WEHNER, ROSENBERG (1961)
D ASKEROV, SENA (1969)
E HOLMEN, ALMEN (1969)
F ISMAIL (1970)

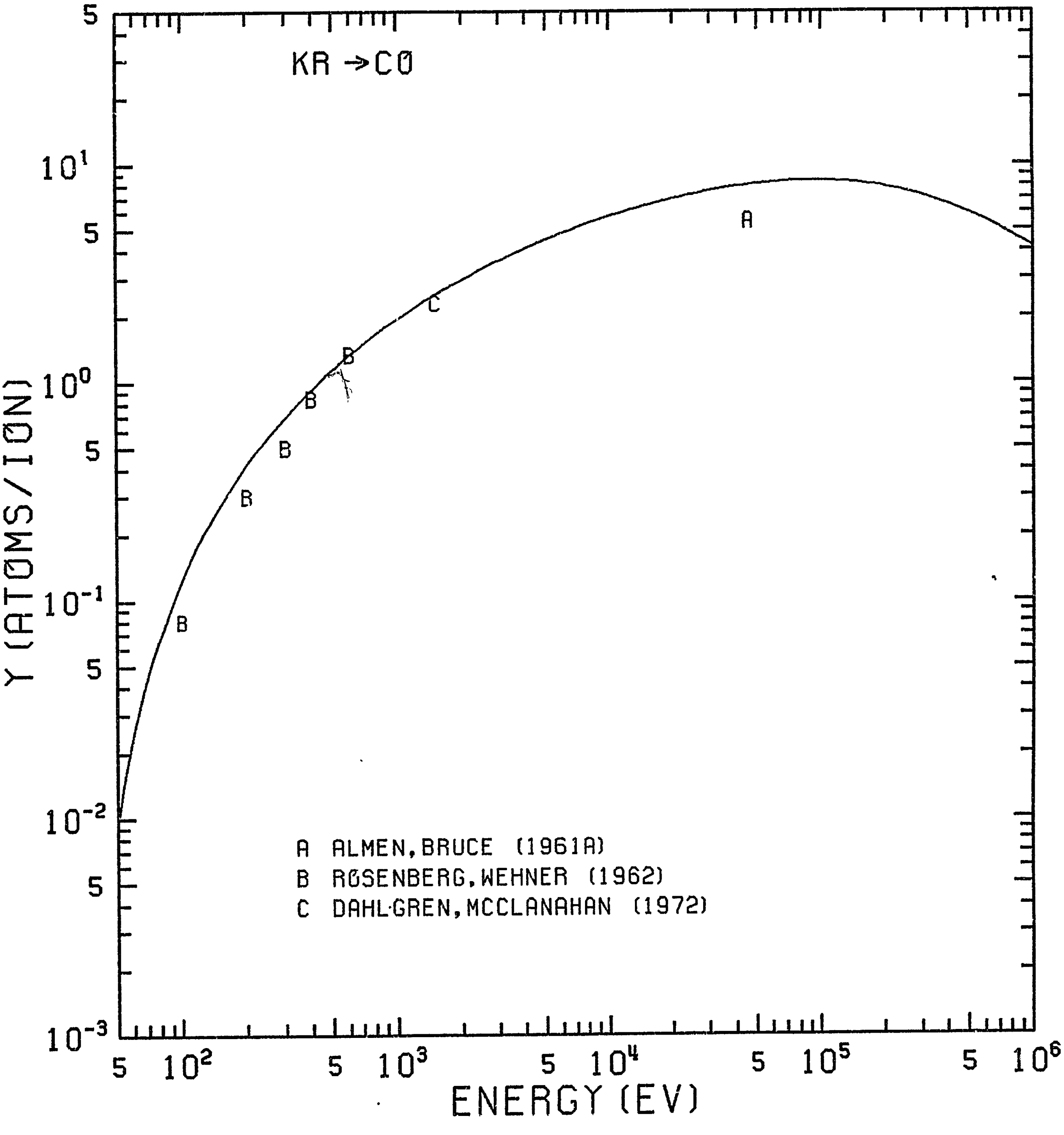

PB →FE
Y (ATOMS/ION)
ENERGY (EV)
A KOSHKIN, RYSOV, SHKARBAN (1969)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5 10^2 5 10^3 5 10^4 5 10^5 5 10^6

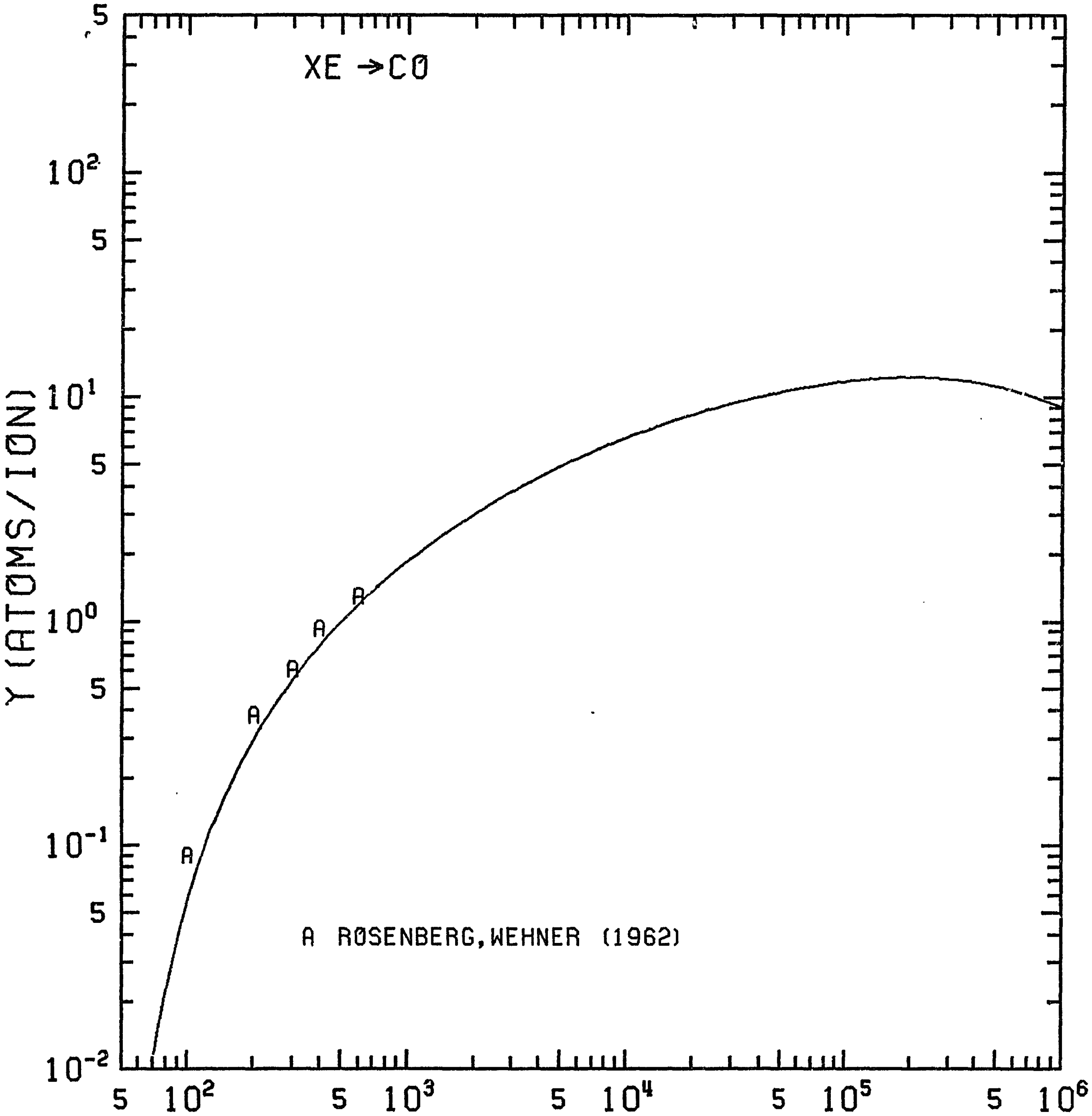

HE →CO
A ROSENBERG,WEHNER (1962)
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶

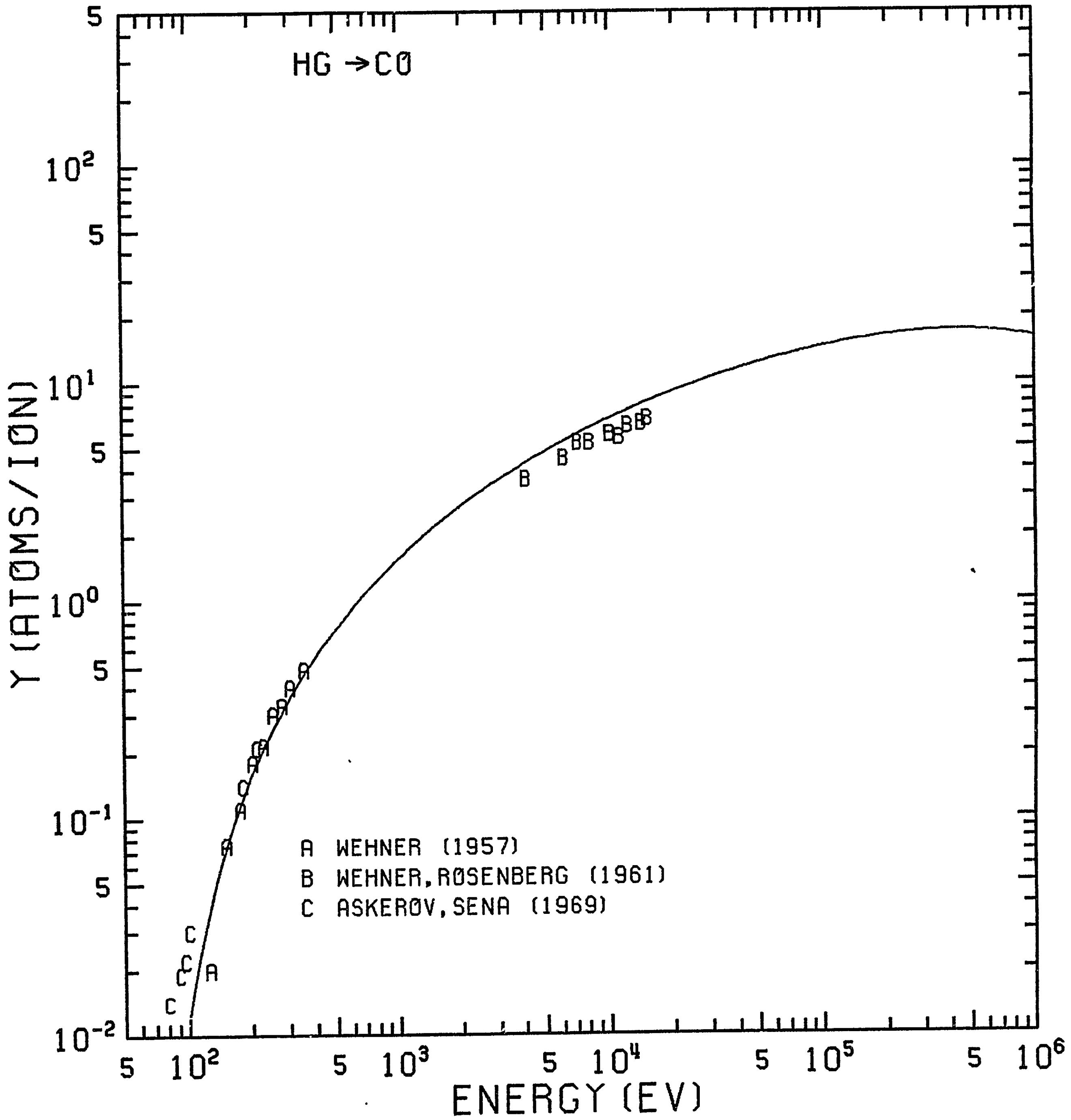

NE → CO
Y (ATOMS/ION)
ENERGY (EV)
A LAEGREID, WEHNER (1960, 1961)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A

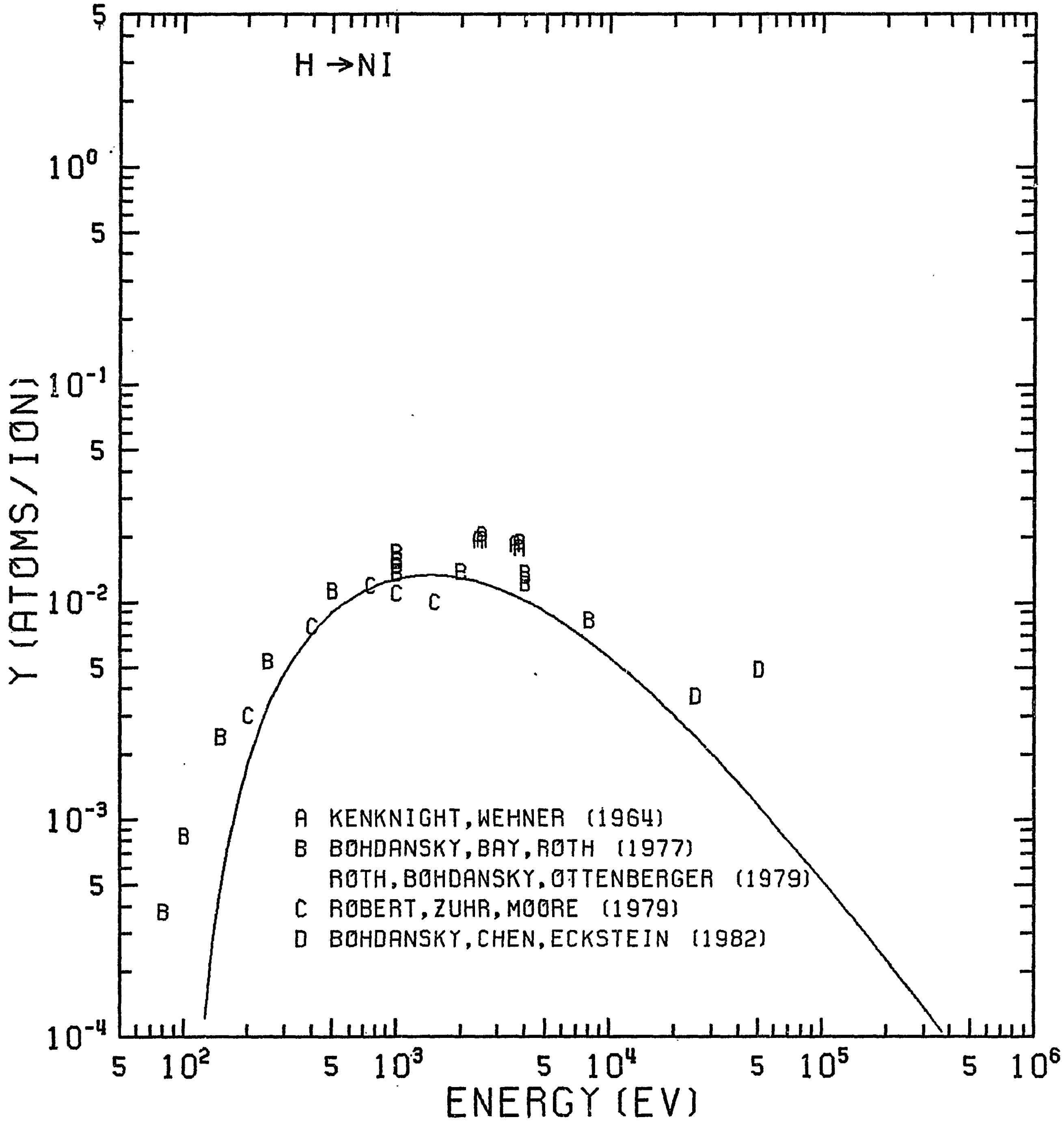

AR →CO
A FERT,COLOMBIE,FAGOT (1961)
B LAEGREID,WEHNER (1959,1961)
C STUART,WEHNER (1962)
D SLETTEN,KNUDSEN (1972)
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5 10²
5 10³
5 10⁴
5 10⁵
5 10⁶

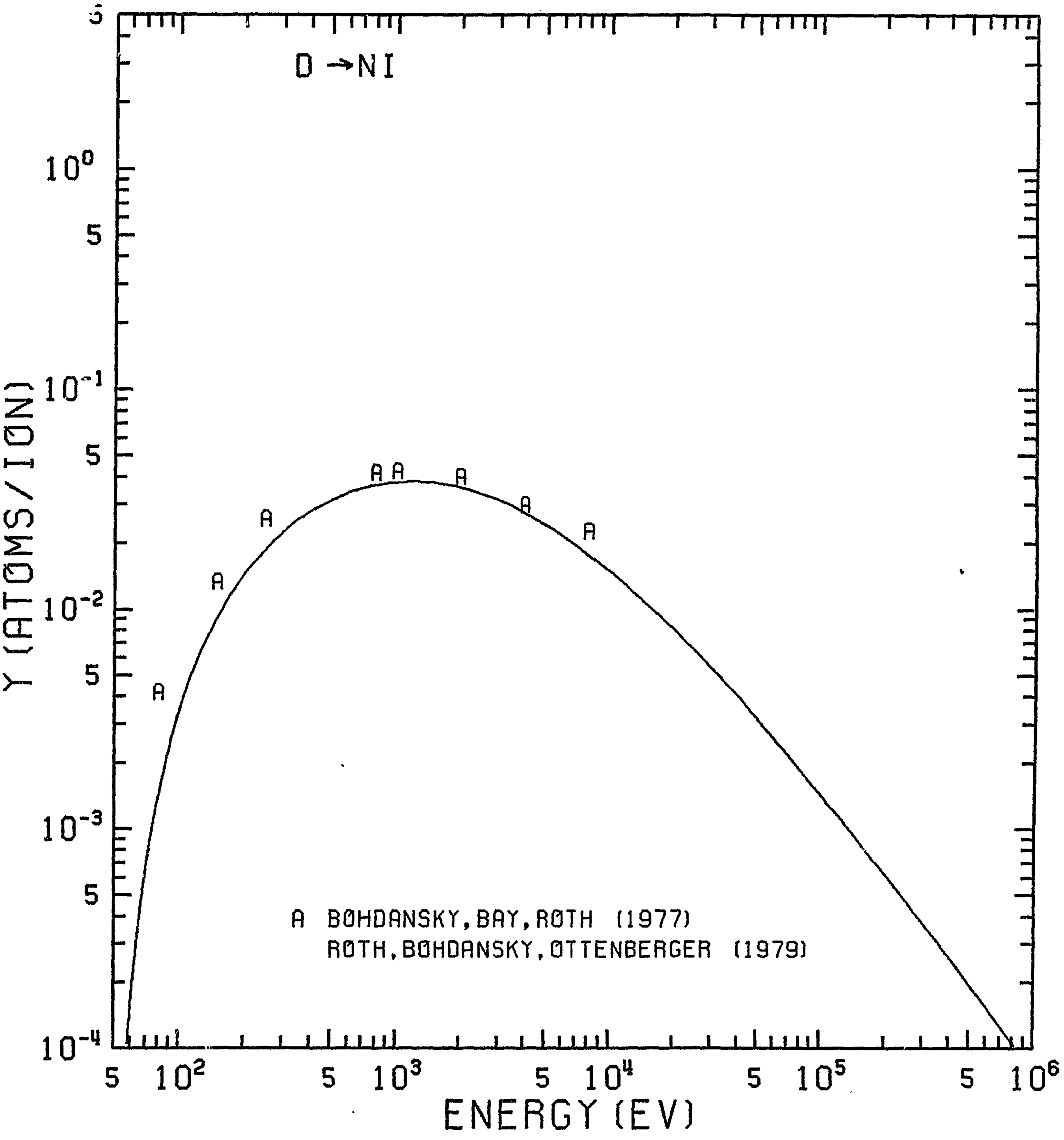

CO →CO
Y (ATOMS/ION)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
A
B
A ALMEN, BRUCE (1961B)
B FONTELL, ARMINEN (1969)
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)

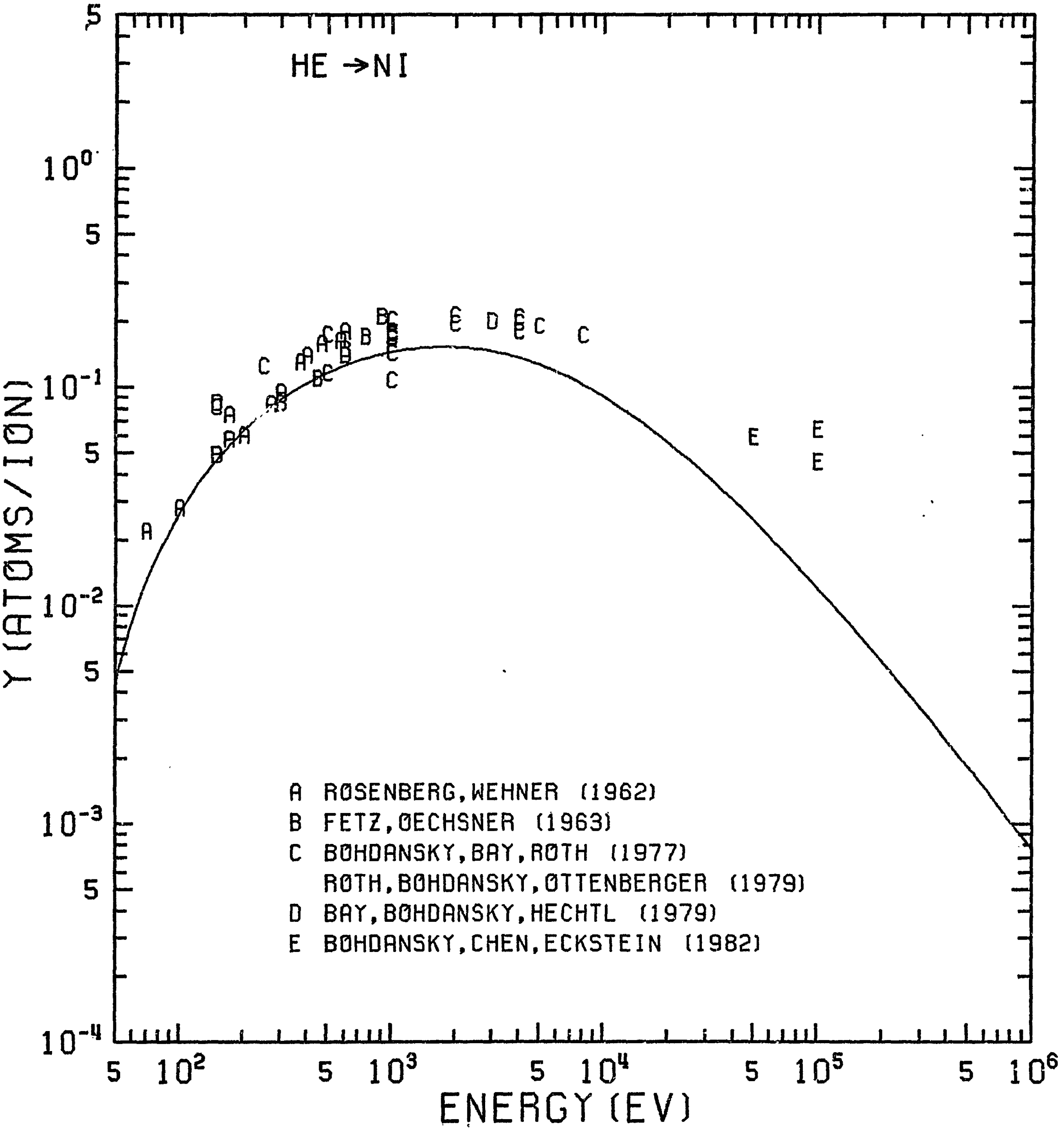

KR →CO
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)
C DAHLGREN, MCCLANAHAN (1972)
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B
C

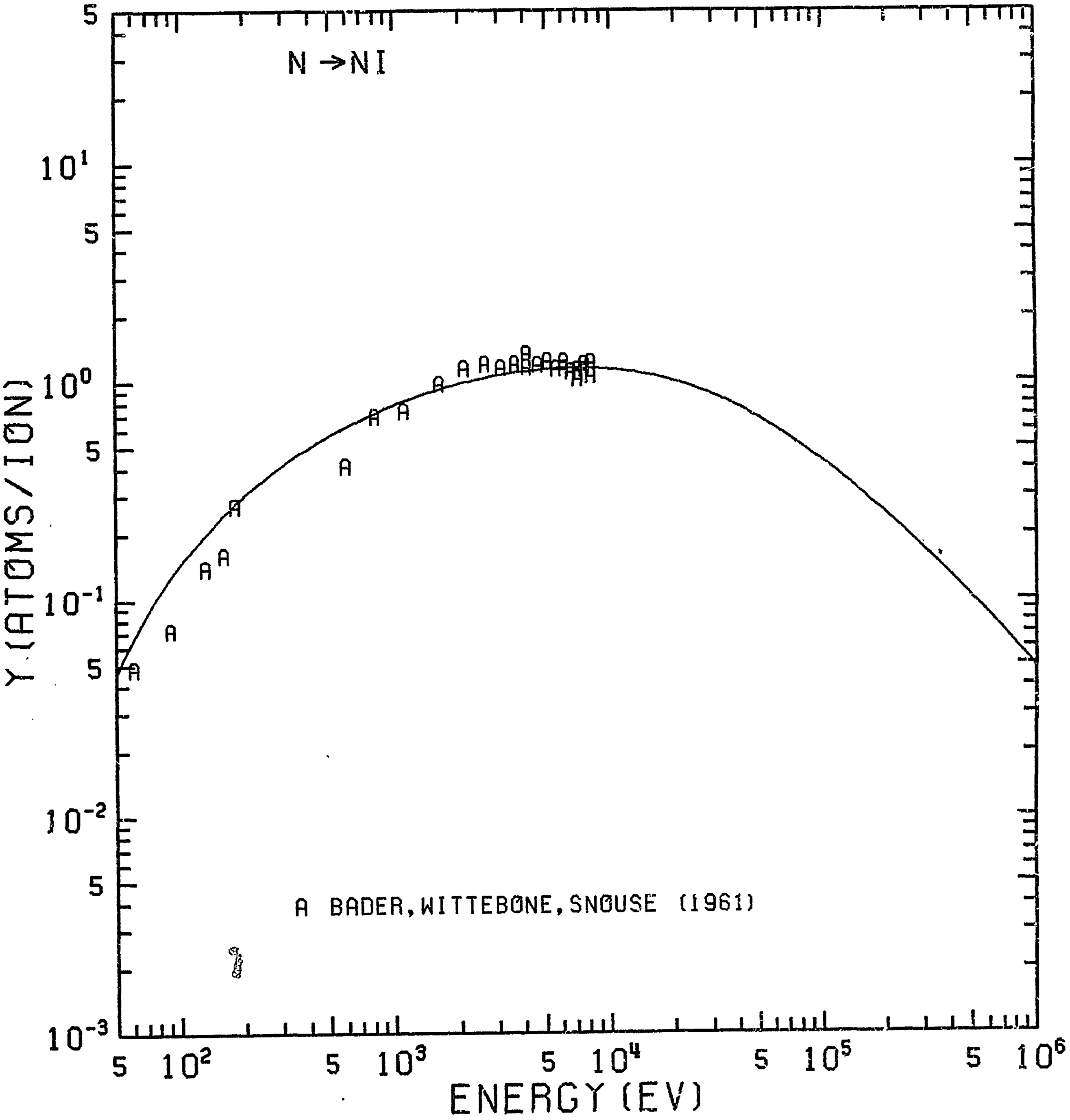

XE →C0
A ROSENBERG, WEHNER (1962)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
A
A
A

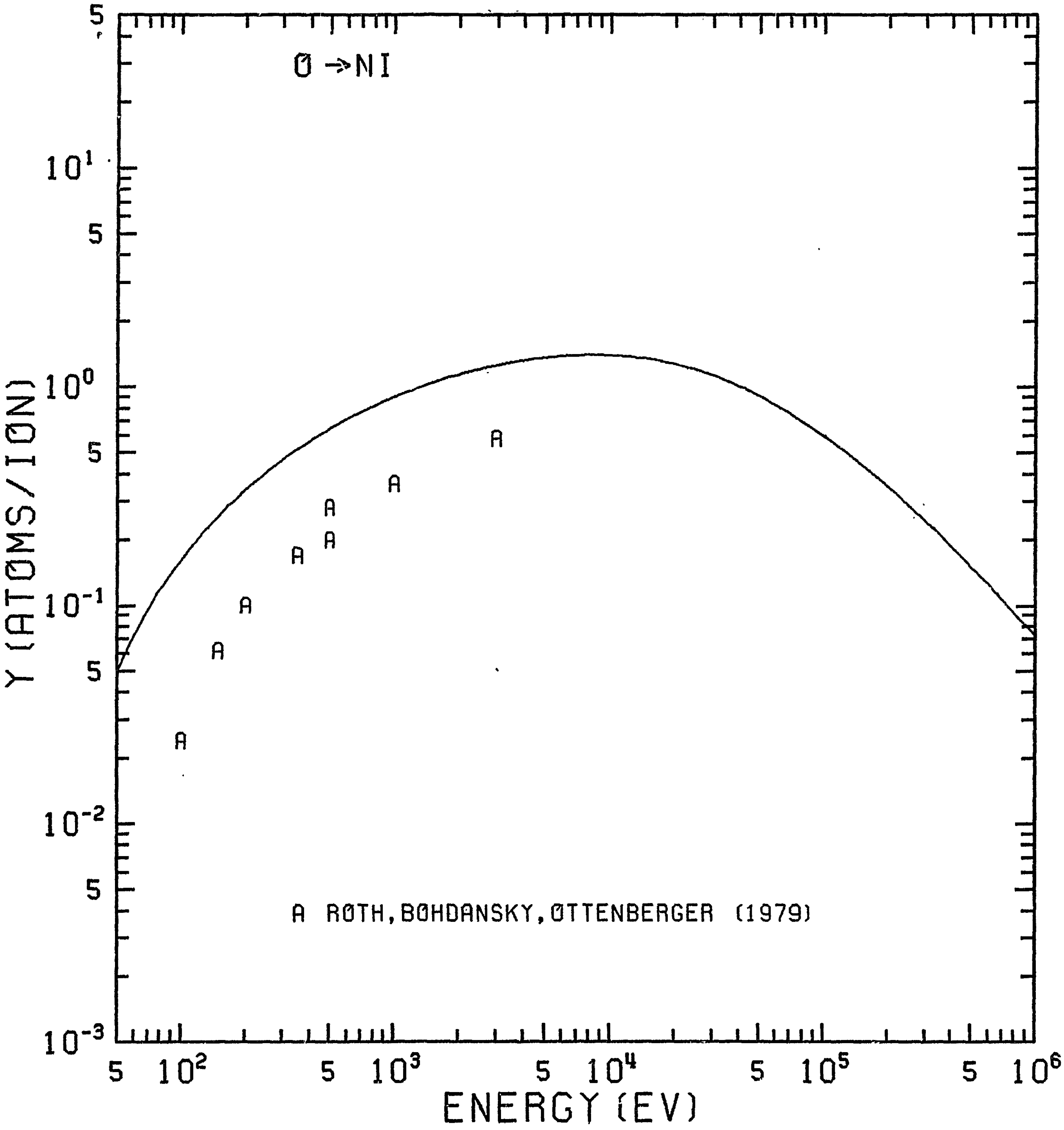

HG →C0
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A WEHNER (1957)
B WEHNER, ROSENBERG (1961)
C ASKEROV, SENA (1969)

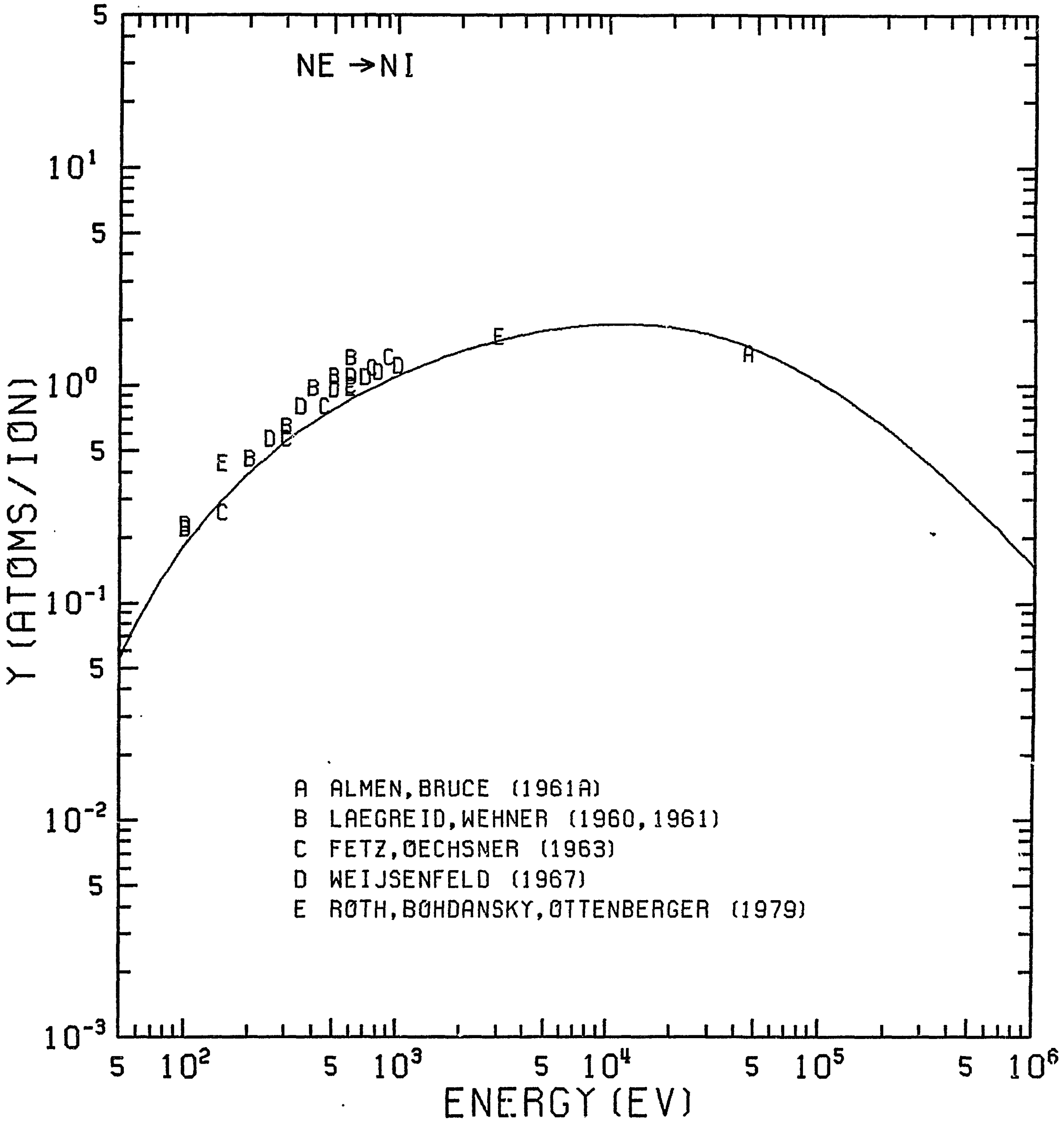

H →NI
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A KENKNIGHT, WEHNER (1964)
B BOHDANSKY, BAY, ROTH (1977)
ROTH, BOHDANSKY, OTTENBERGER (1979)
C ROBERT, ZUHR, MOORE (1979)
D BOHDANSKY, CHEN, ECKSTEIN (1982)

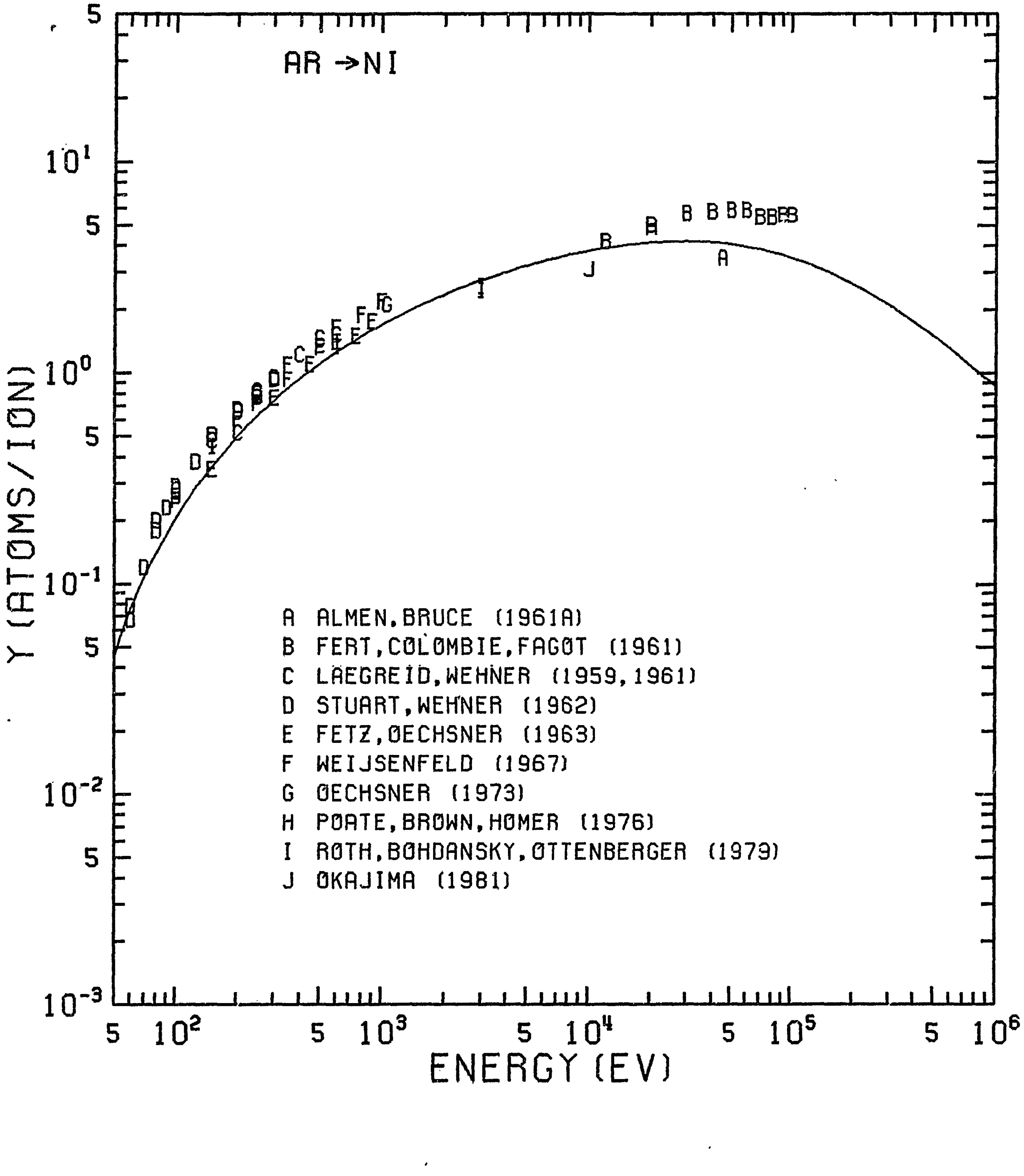
D →NI
Y (ATOMS/ION)
ENERGY (EV)
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A BOHDANSKY, BAY, ROTH (1977)
ROTH, BOHDANSKY, OTTENBERGER (1979)

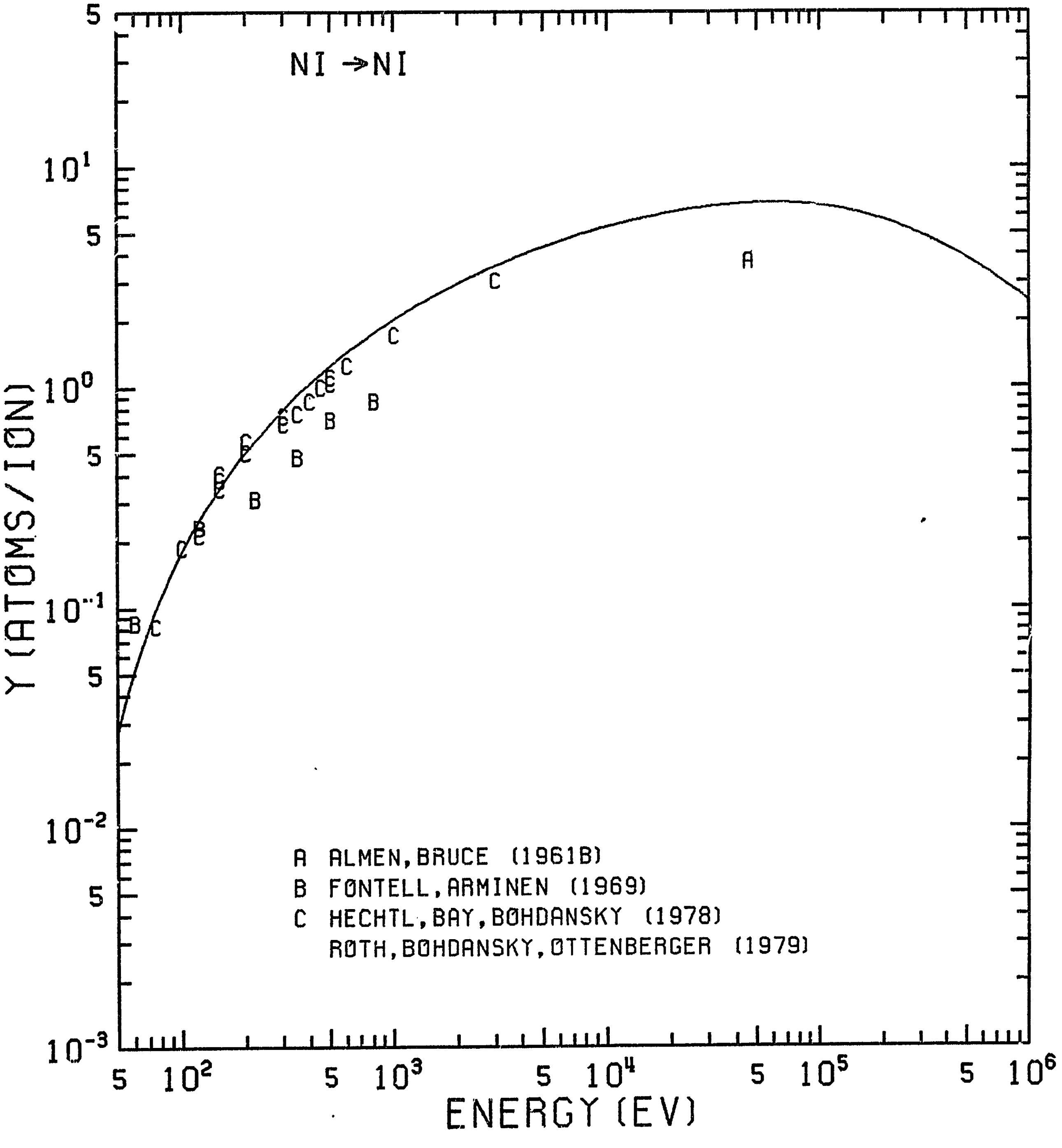

HE →NI
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ROSENBERG, WEHNER (1962)
B FETZ, OECHSNER (1963)
C BOHDANSKY, BAY, ROTH (1977)
ROTH, BOHDANSKY, OTTENBERGER (1979)
D BAY, BOHDANSKY, HECHTL (1979)
E BOHDANSKY, CHEN, ECKSTEIN (1982)

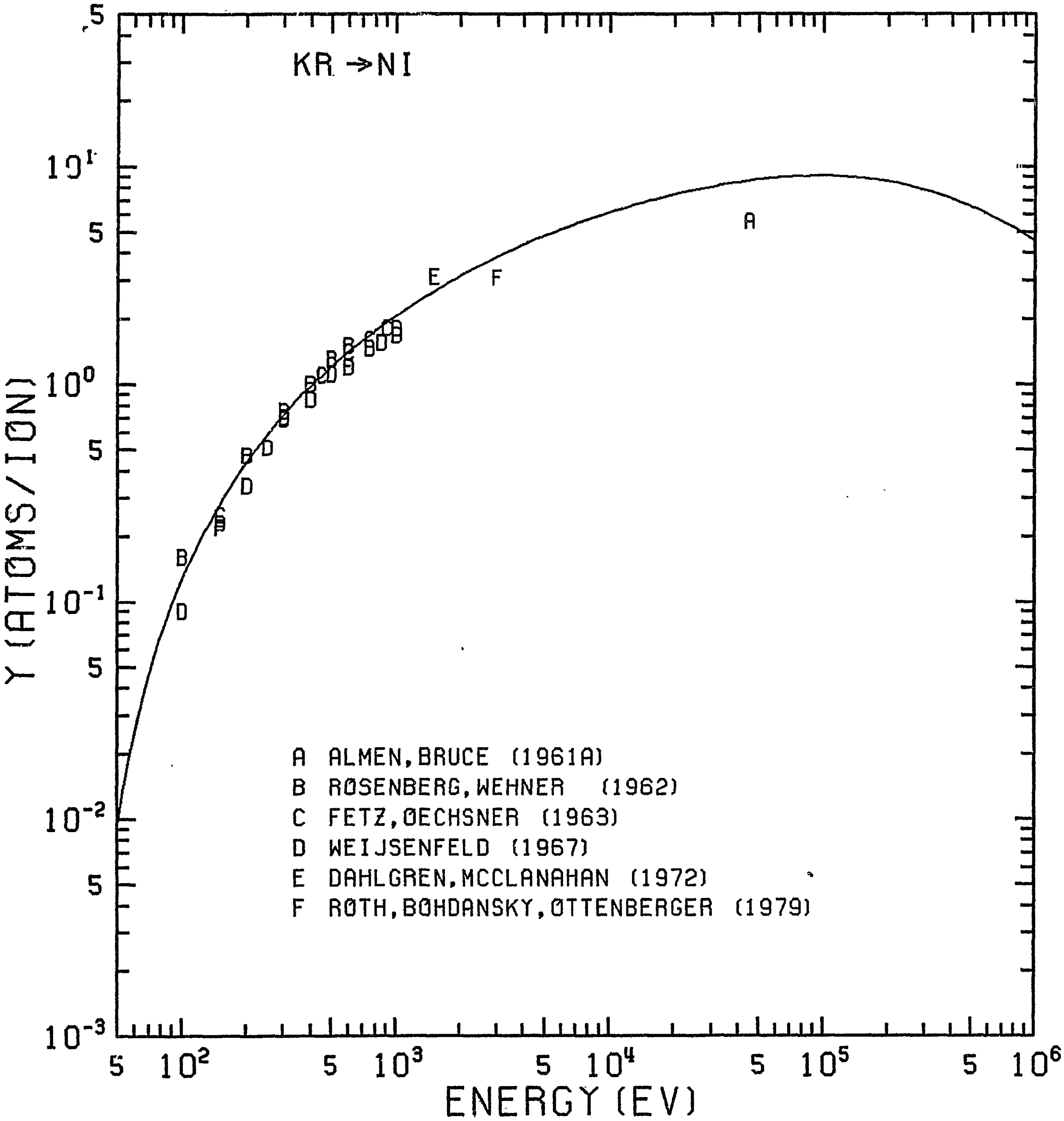

N →NI
Y (ATOMS/ION)
ENERGY (EV)
A BADER, WITTEBONE, SNOUSE (1961)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

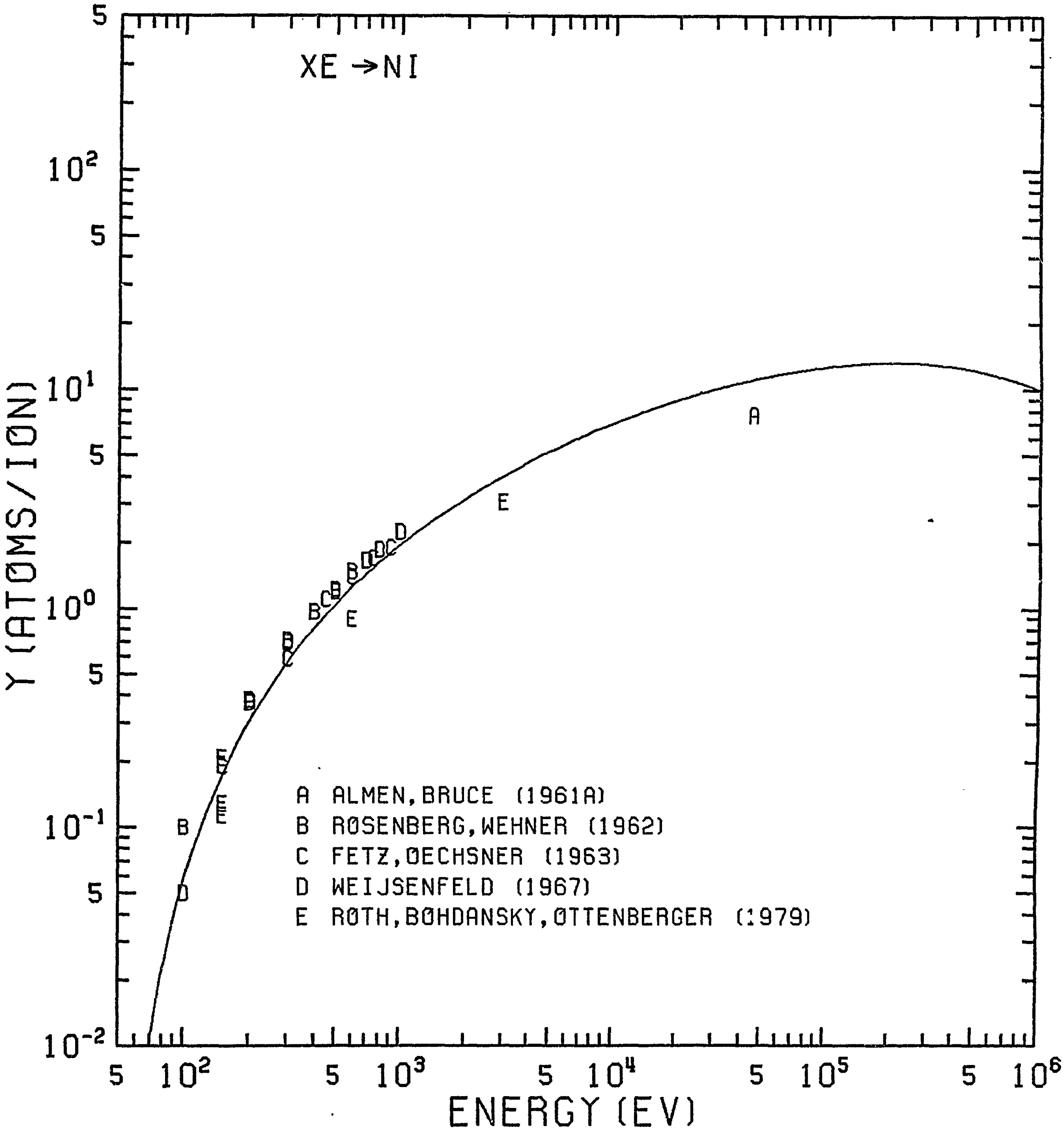

0 →NI
A ROTH, BOHDANSKY, OTTENBERGER (1979)
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

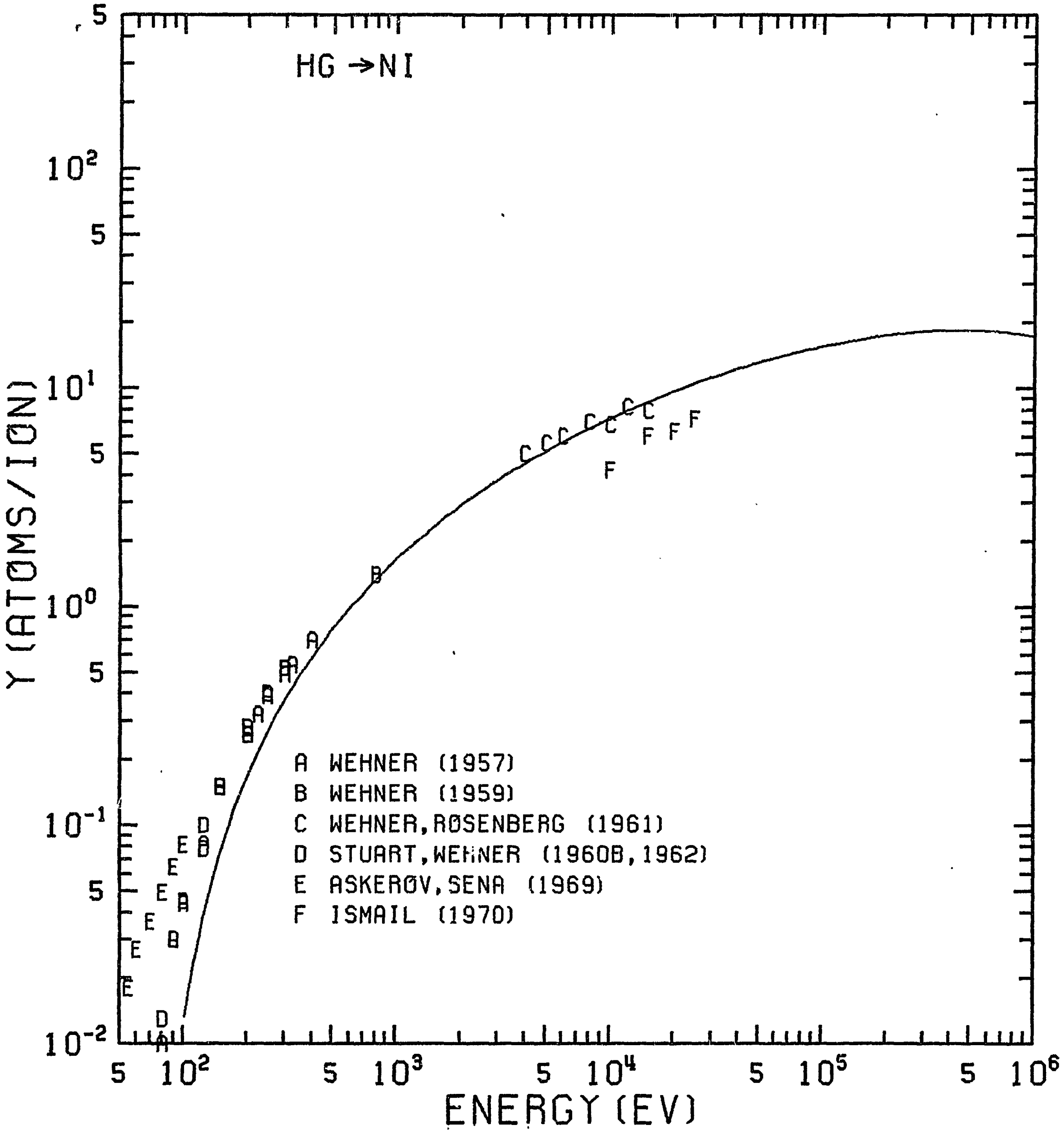

NE →NI
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1960, 1961)
C FETZ, OECHSNER (1963)
D WEIJSENFELD (1967)
E ROTH, BOHDANSKY, OTTENBERGER (1979)

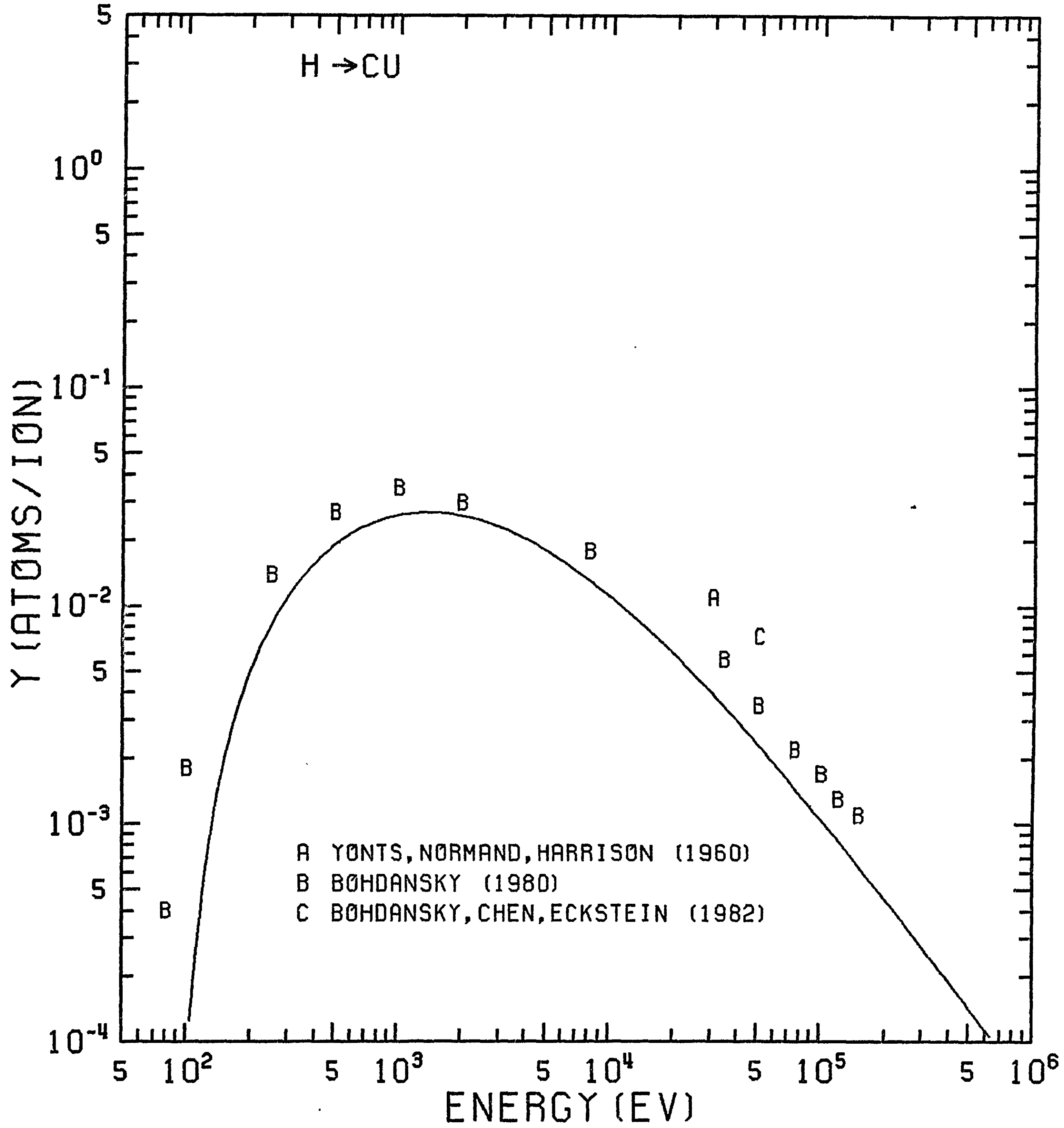

AR →NI
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961A)
B FERT, COLOMBIE, FAGOT (1961)
C LAEGREID, WEHNER (1959, 1961)
D STUART, WEHNER (1962)
E FETZ, OECHSNER (1963)
F WEIJSENFELD (1967)
G OECHSNER (1973)
H POATE, BROWN, HOMER (1976)
I ROTH, BOHDANSKY, OTTENBERGER (1979)
J OKAJIMA (1981)

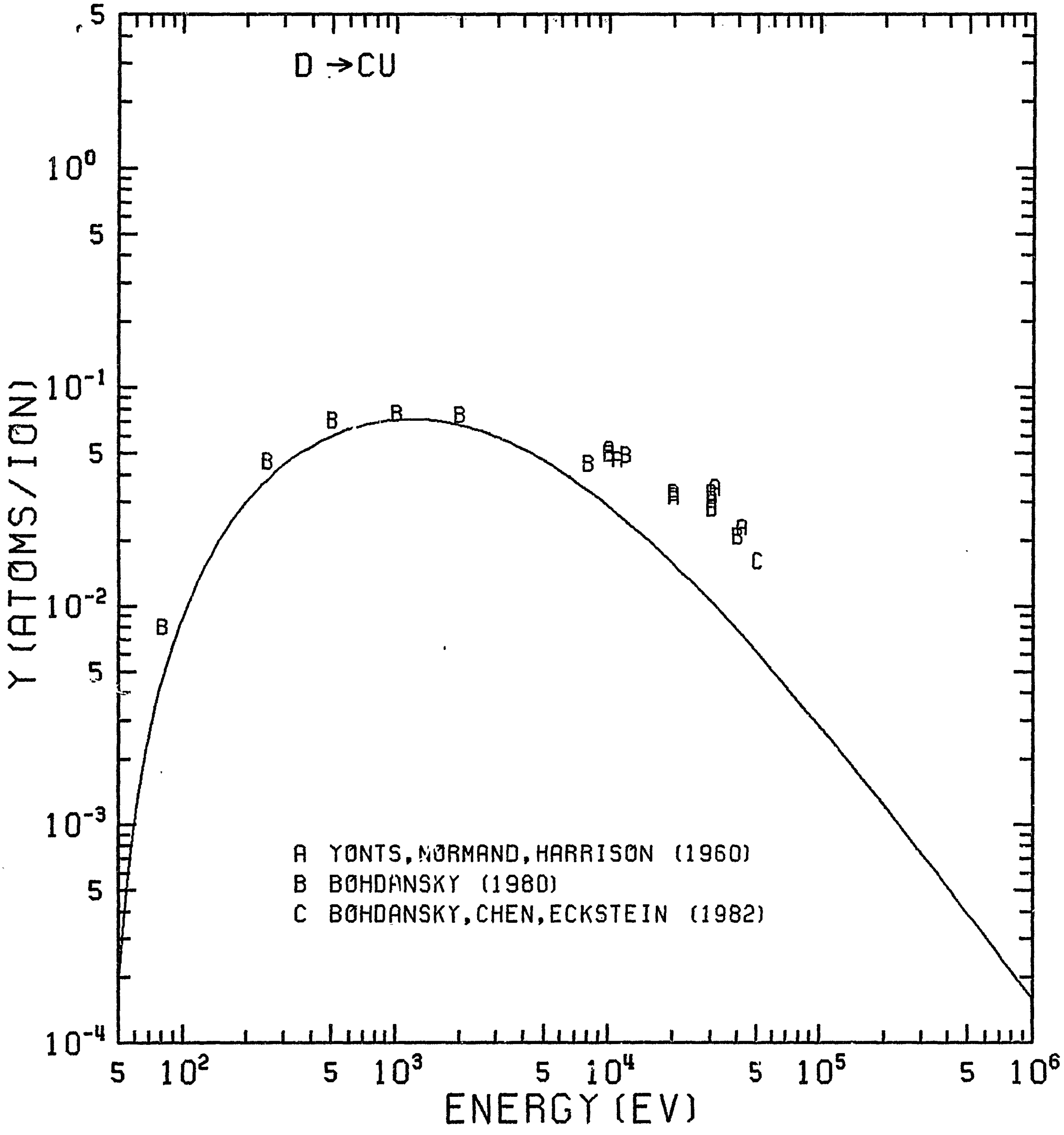

NI →NI
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961B)
B FONTELL, ARMINEN (1969)
C HECHTL, BAY, BOHDANSKY (1978)
ROTH, BOHDANSKY, OTTENBERGER (1979)

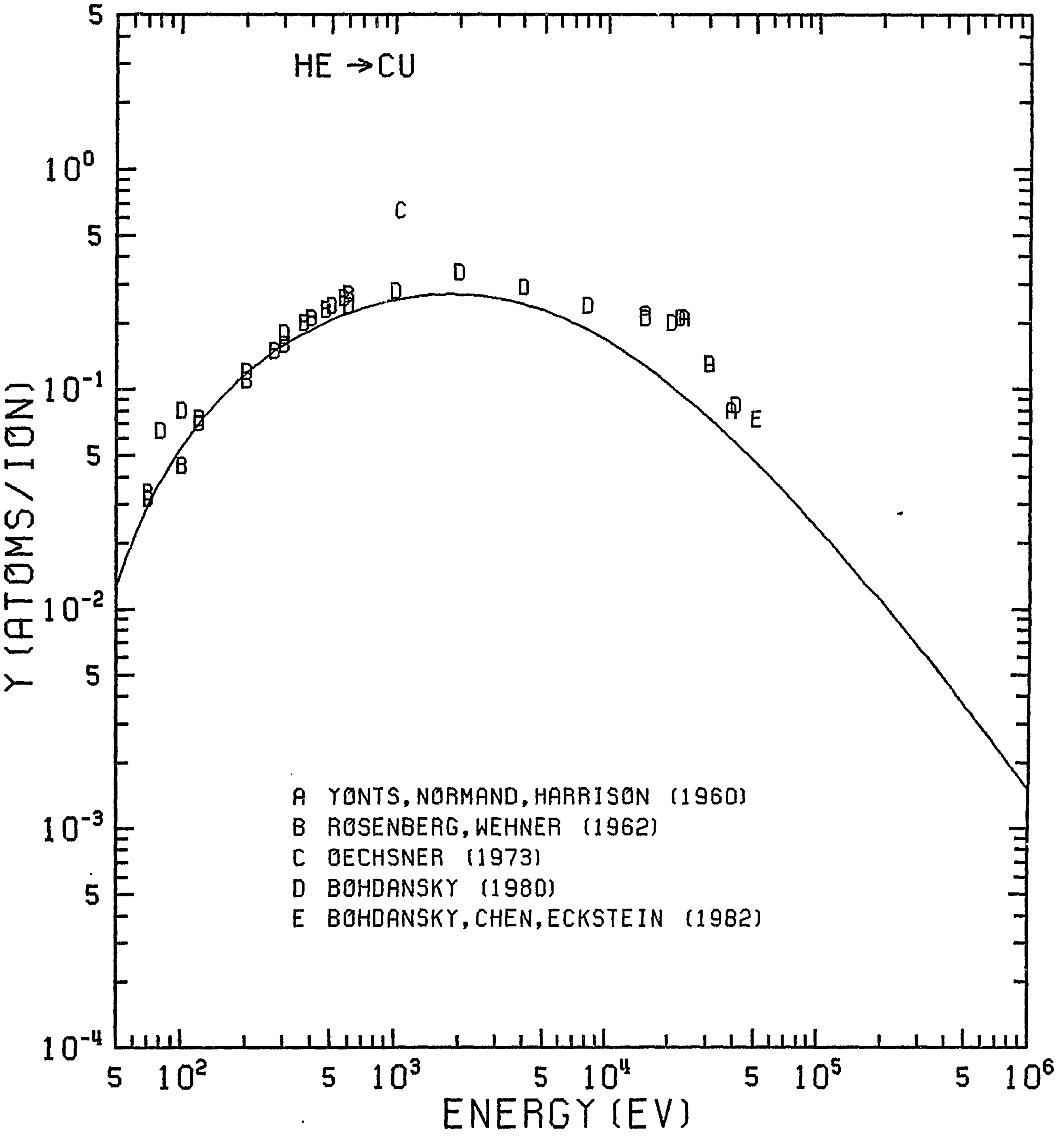

KR → NI
Y (ATOMS/ION)
ENERGY (EV)
10¹
10⁰
10⁻¹
10⁻²
10⁻³
5
5
10²
10³
10⁴
10⁵
10⁶
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)
C FETZ, OECHSNER (1963)
D WEIJSENFELD (1967)
E DAHLGREN, MCCLANAHAN (1972)
F ROTH, BOHDANSKY, OTTENBERGER (1979)

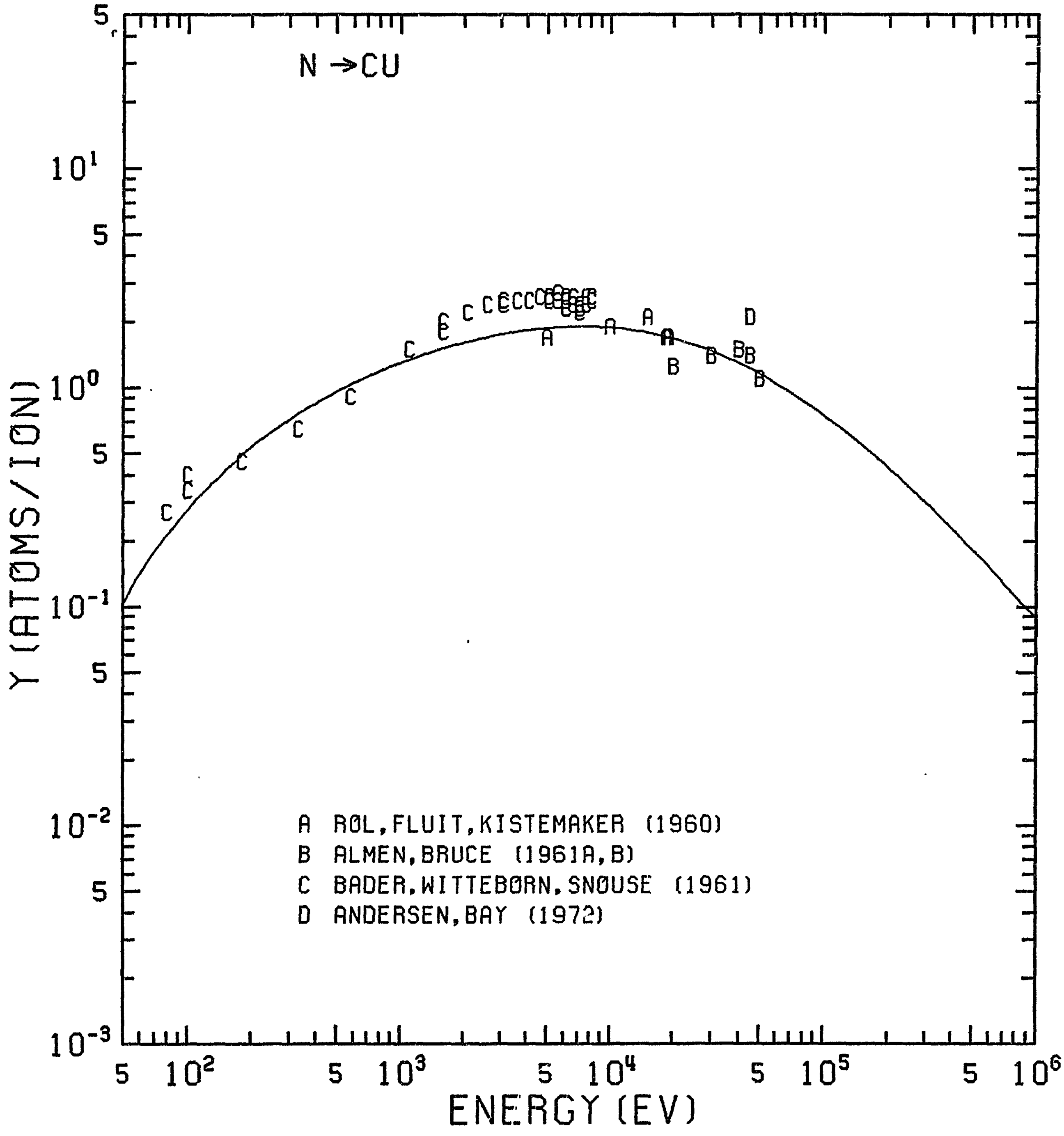

XE →NI
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)
C FETZ, OECHSNER (1963)
D WEIJSENFELD (1967)
E ROTH, BOHDANSKY, OTTENBERGER (1979)

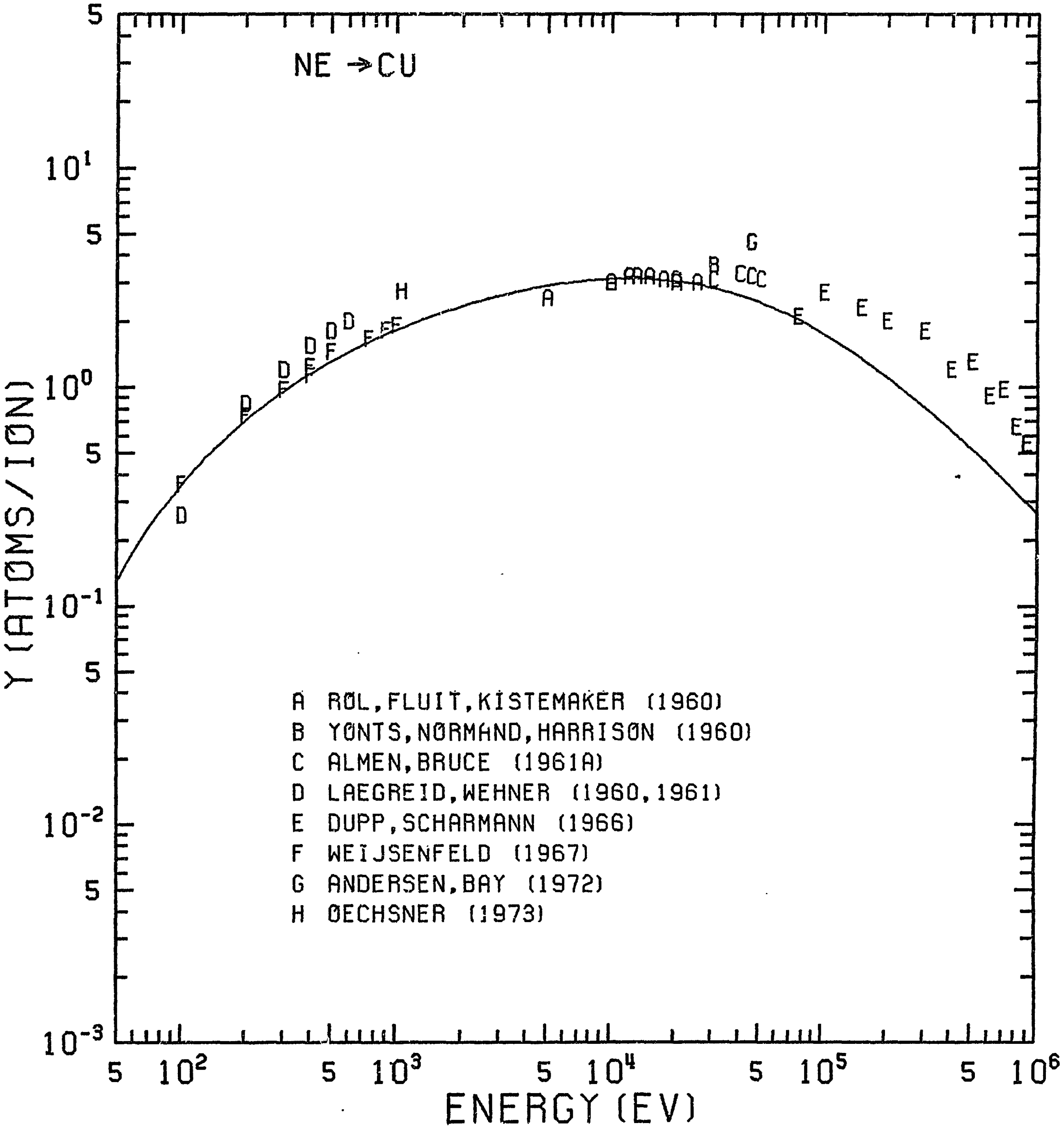
HG →NI
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A WEHNER (1957)
B WEHNER (1959)
C WEHNER, ROSENBERG (1961)
D STUART, WEHNER (1960B, 1962)
E ASKEROV, SENA (1969)
F ISMAIL (1970)


H →CU
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A YONTS, NORMAND, HARRISON (1960)
B BOHDANSKY (1980)
C BOHDANSKY, CHEN, ECKSTEIN (1982)
A
B
C

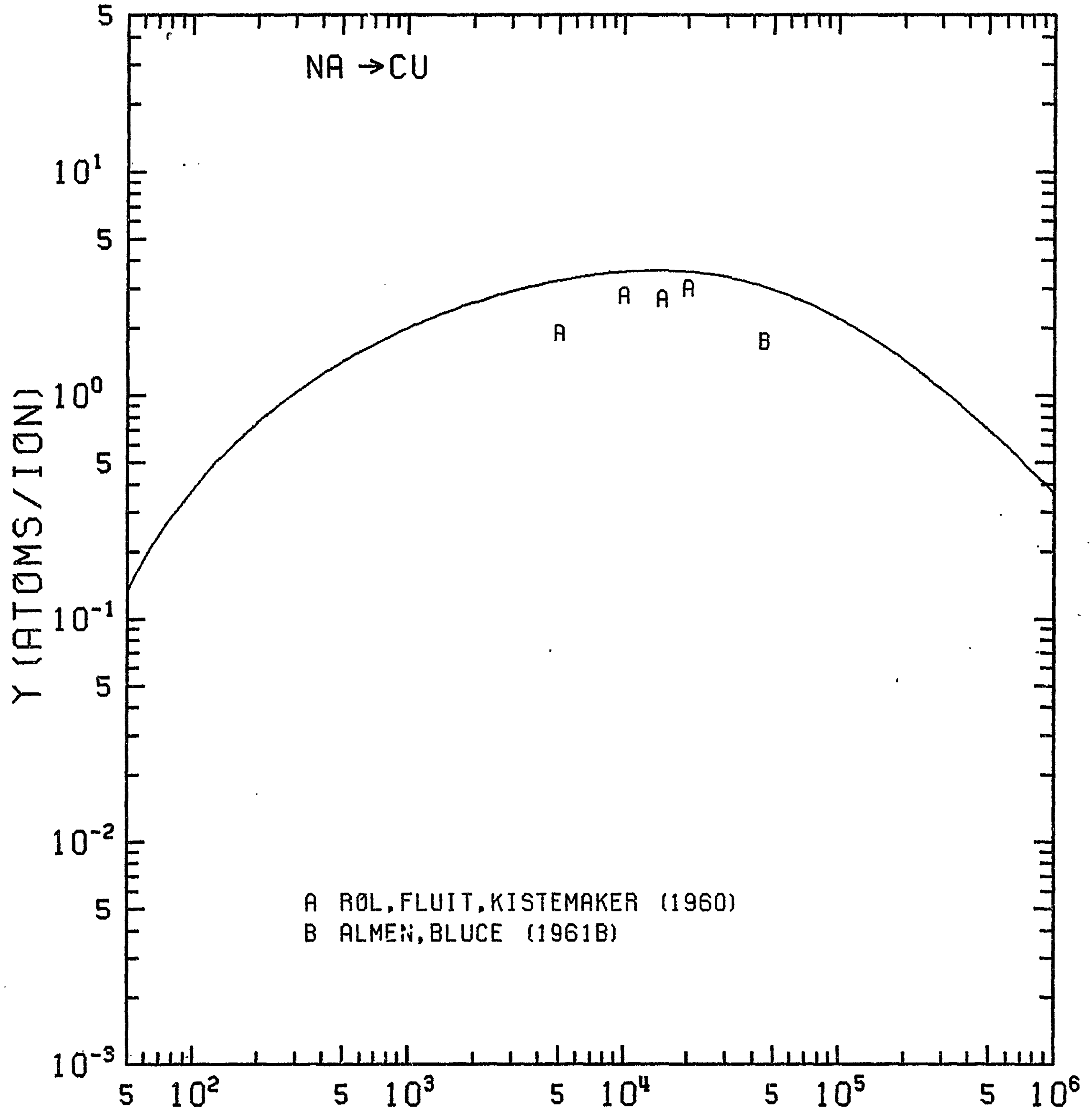

D →CU
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A YONTS, NORMAND, HARRISON (1960)
B BOHDANSKY (1980)
C BOHDANSKY, CHEN, ECKSTEIN (1982)

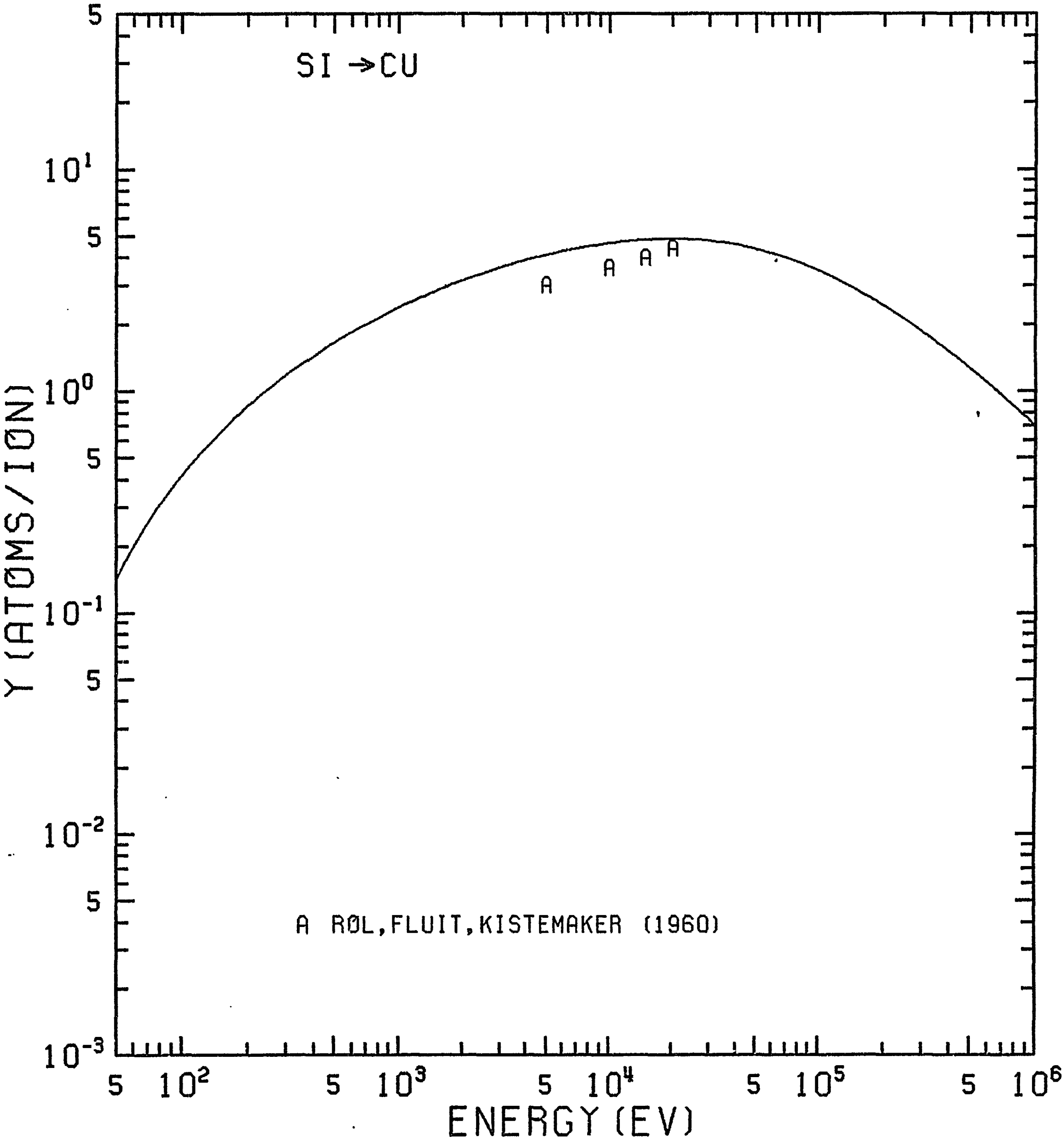

HE → CU
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A YONTS, NORMAND, HARRISON (1960)
B ROSENBERG, WEHNER (1962)
C OECHSNER (1973)
D BOHDANSKY (1980)
E BOHDANSKY, CHEN, ECKSTEIN (1982)

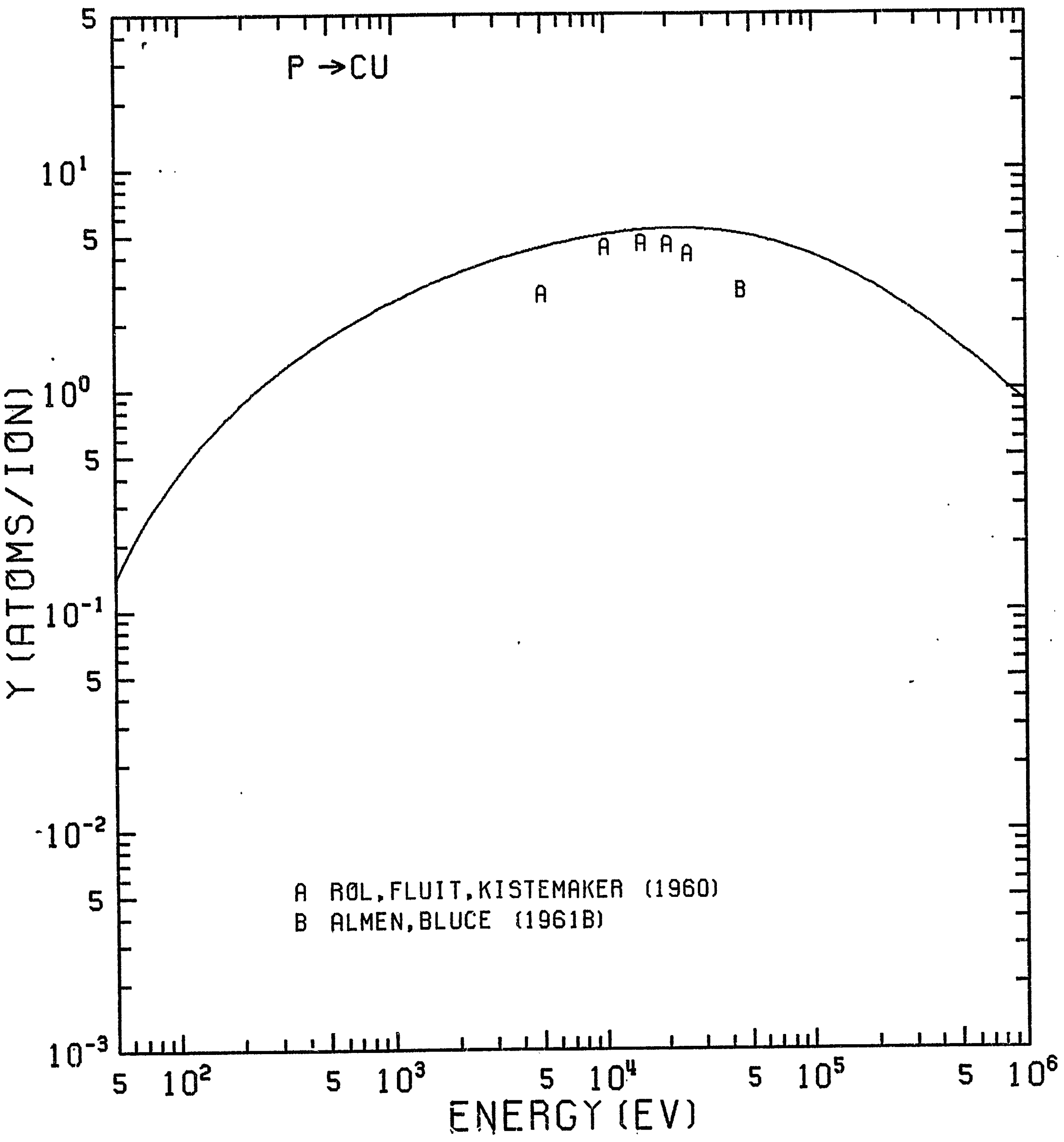

N →CU
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A RØL, FLUIT, KISTEMAKER (1960)
B ALMEN, BRUCE (1961A, B)
C BADER, WITTEBØRN, SNØUSE (1961)
D ANDERSEN, BAY (1972)

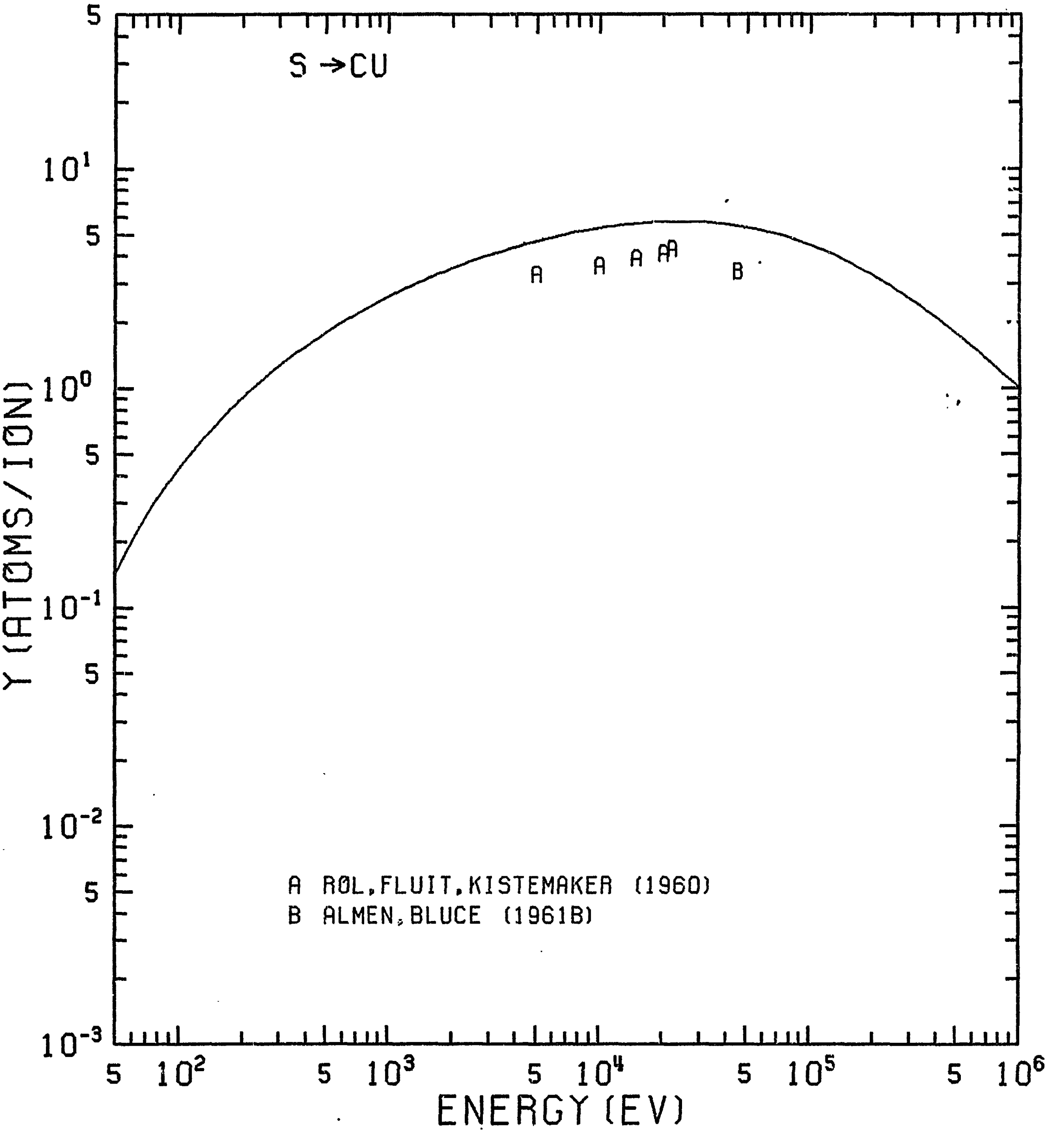


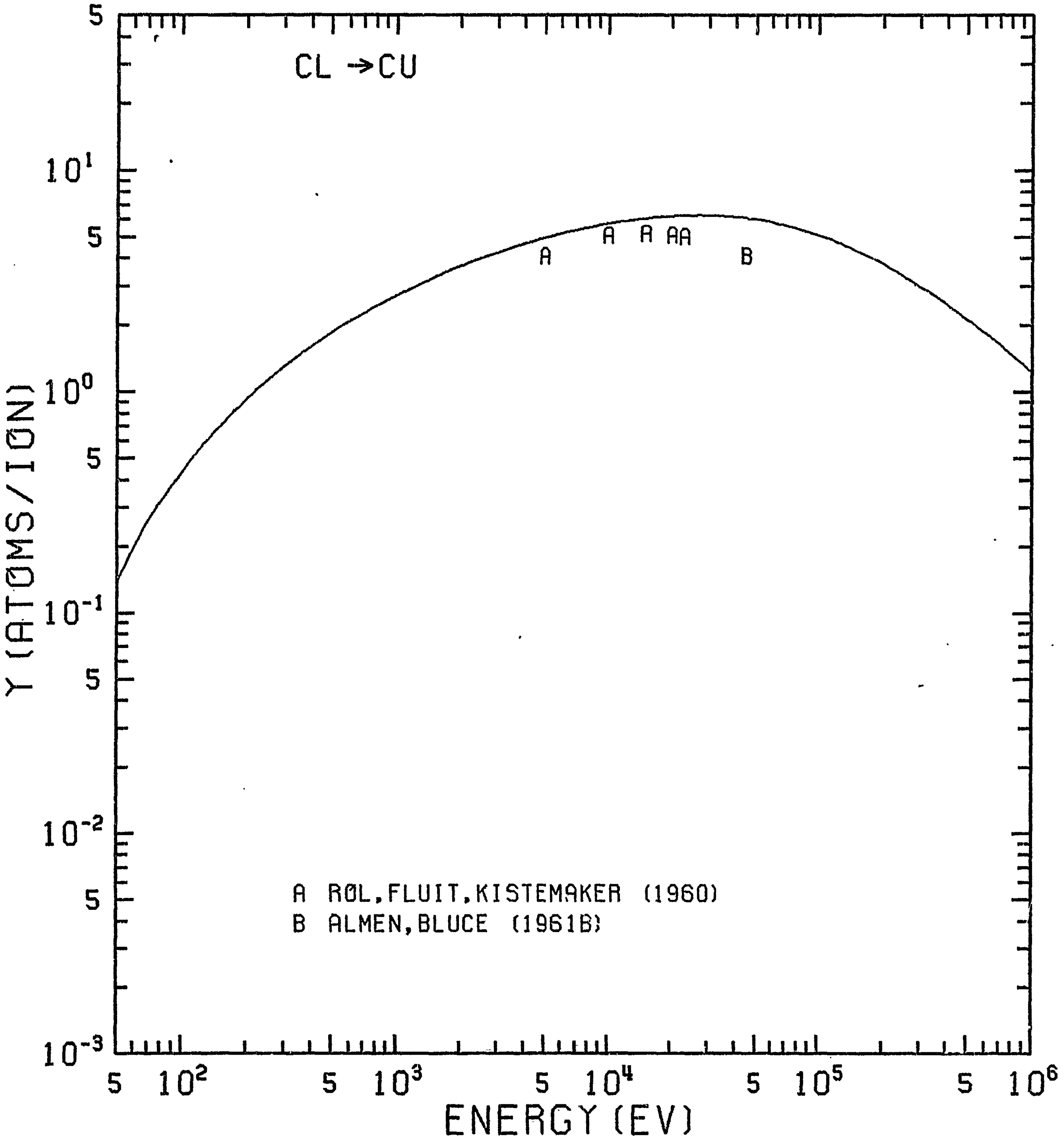
NE → CU
Y (ATØMS/IØN)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A RØL, FLUIT, KISTEMAKER (1960)
B YØNTS, NØRMAND, HARRISØN (1960)
C ALMEN, BRUCE (1961A)
D LAEGREID, WEHNER (1960, 1961)
E DUPP, SCHARMANN (1966)
F WEIJSENFELD (1967)
G ANDERSEN, BAY (1972)
H ØECHSNER (1973)

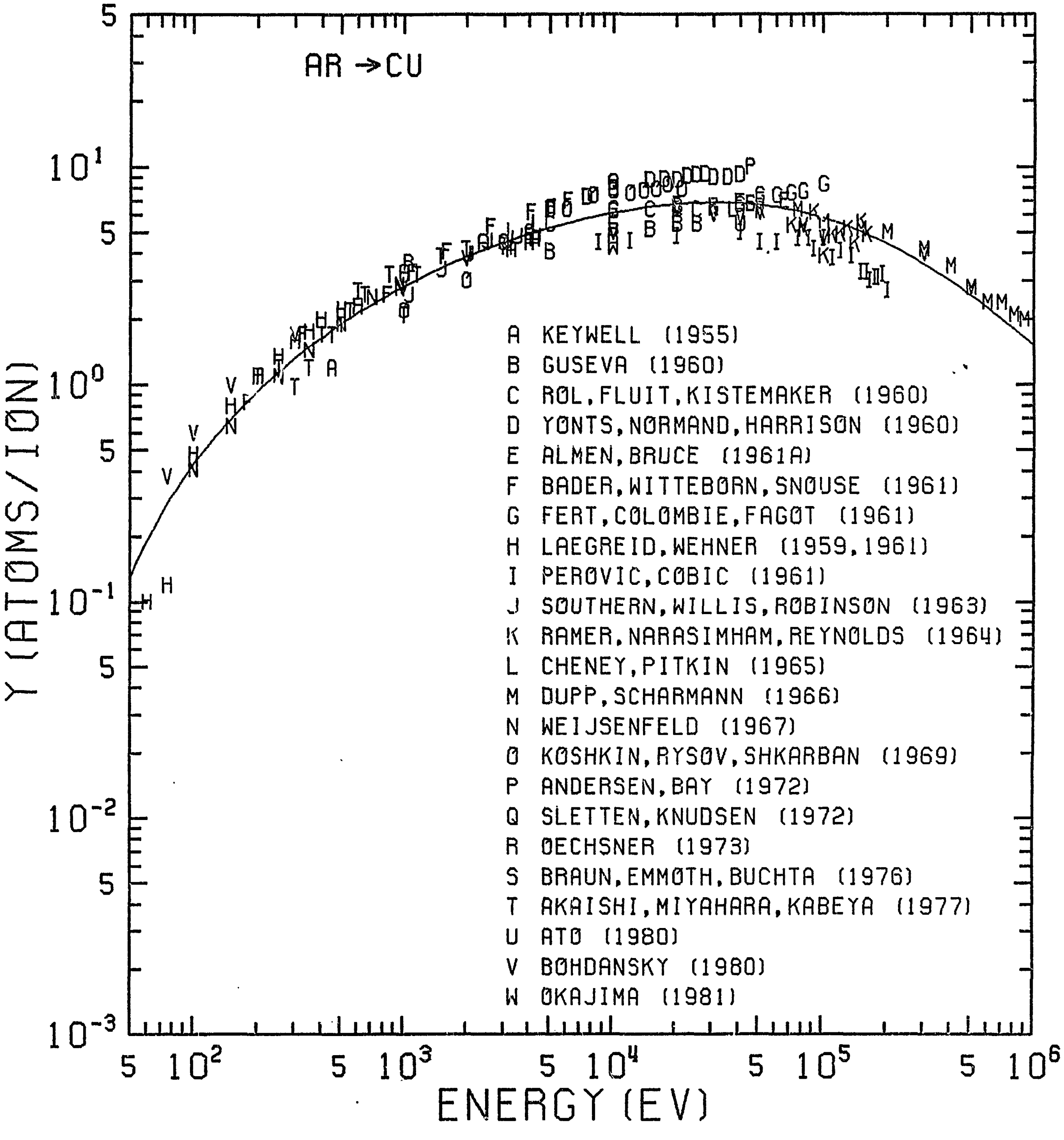

NA →CU
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
A
B
A RØL,FLUIT,KISTEMAKER (1960)
B ALMEN,BLUCE (1961B)

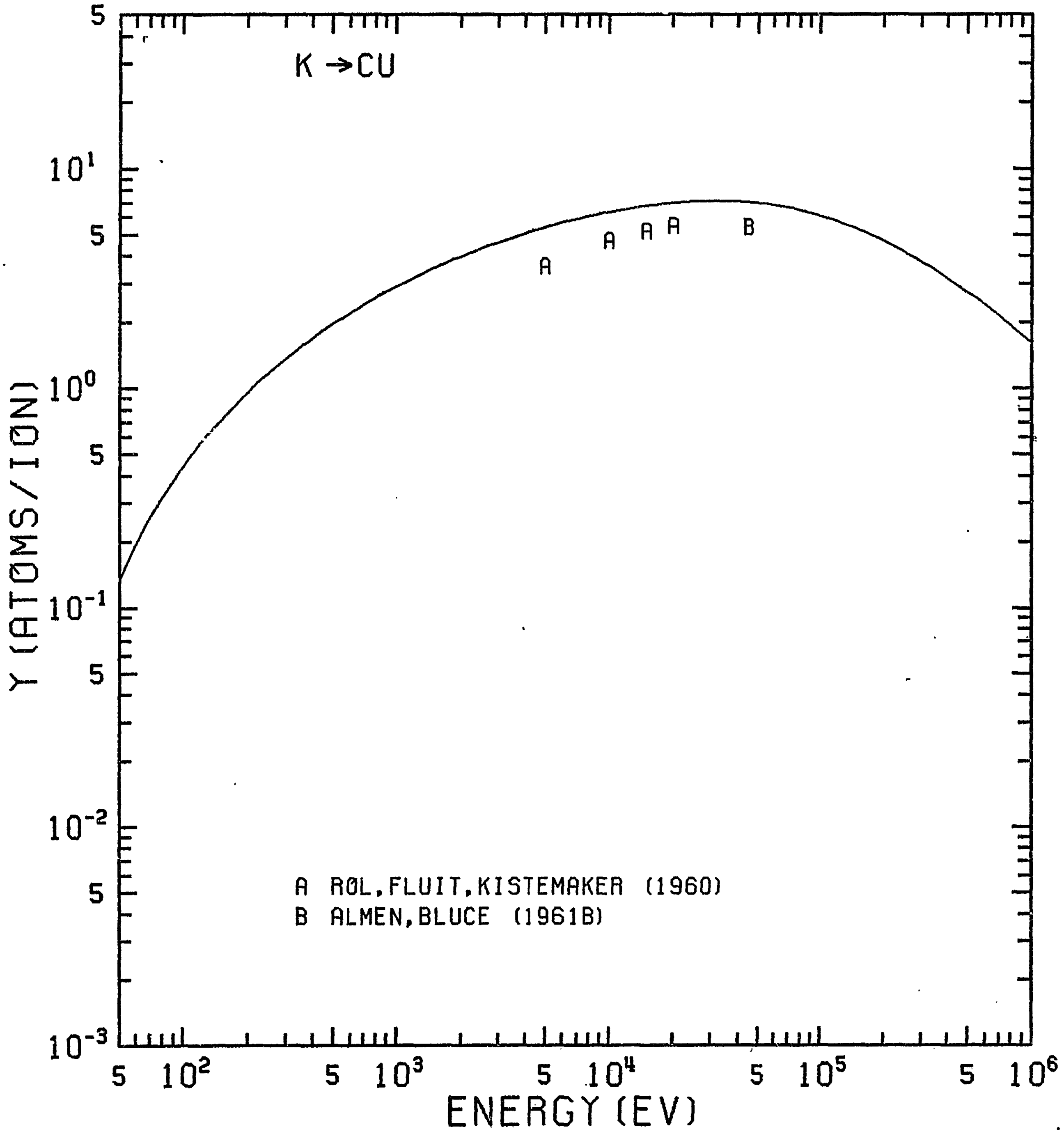

SI →CU
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ROL,FLUIT,KISTEMAKER (1960)

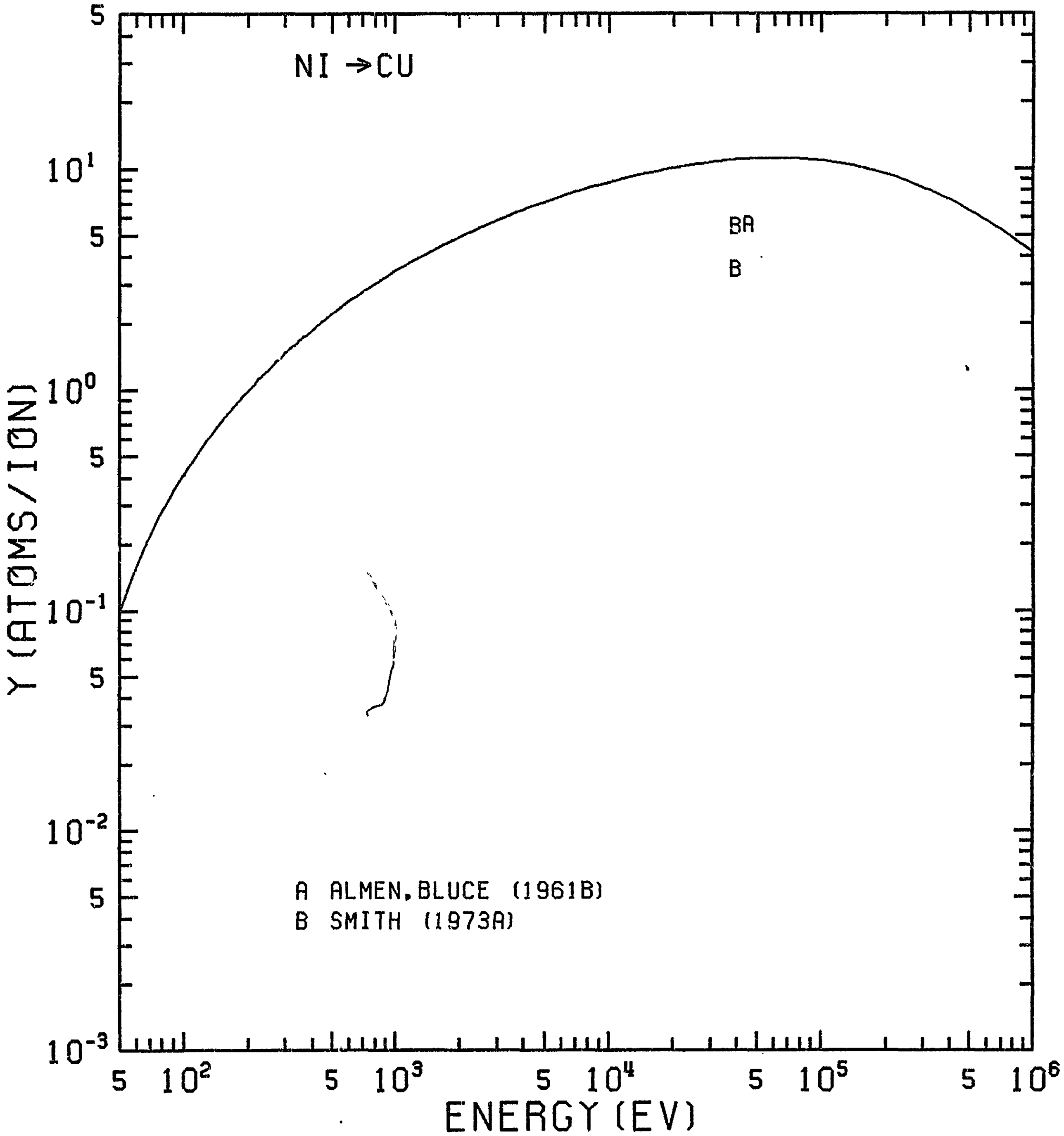

P →CU
Y (ATOMS/ION)
ENERGY (EV)
10^-3
5
10^-2
5
10^-1
5
10^0
5
10^1
5
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
A
A
B
A ROL, FLUIT, KISTEMAKER (1960)
B ALMEN, BLUCE (1961B)

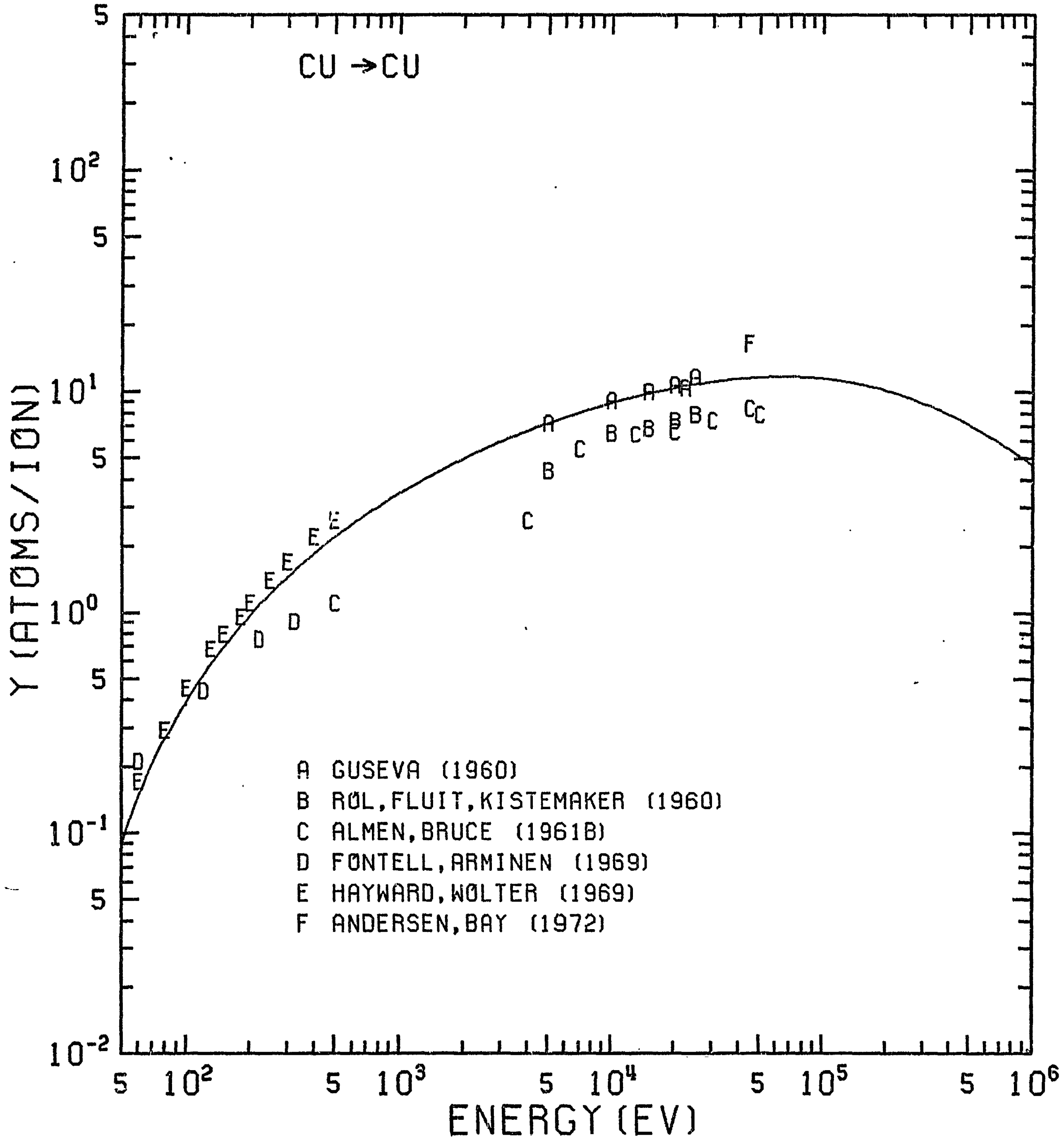

S →CU
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
A
A
A
A
B
A ROL, FLUIT, KISTEMAKER (1960)
B ALMEN, BLUCE (1961B)

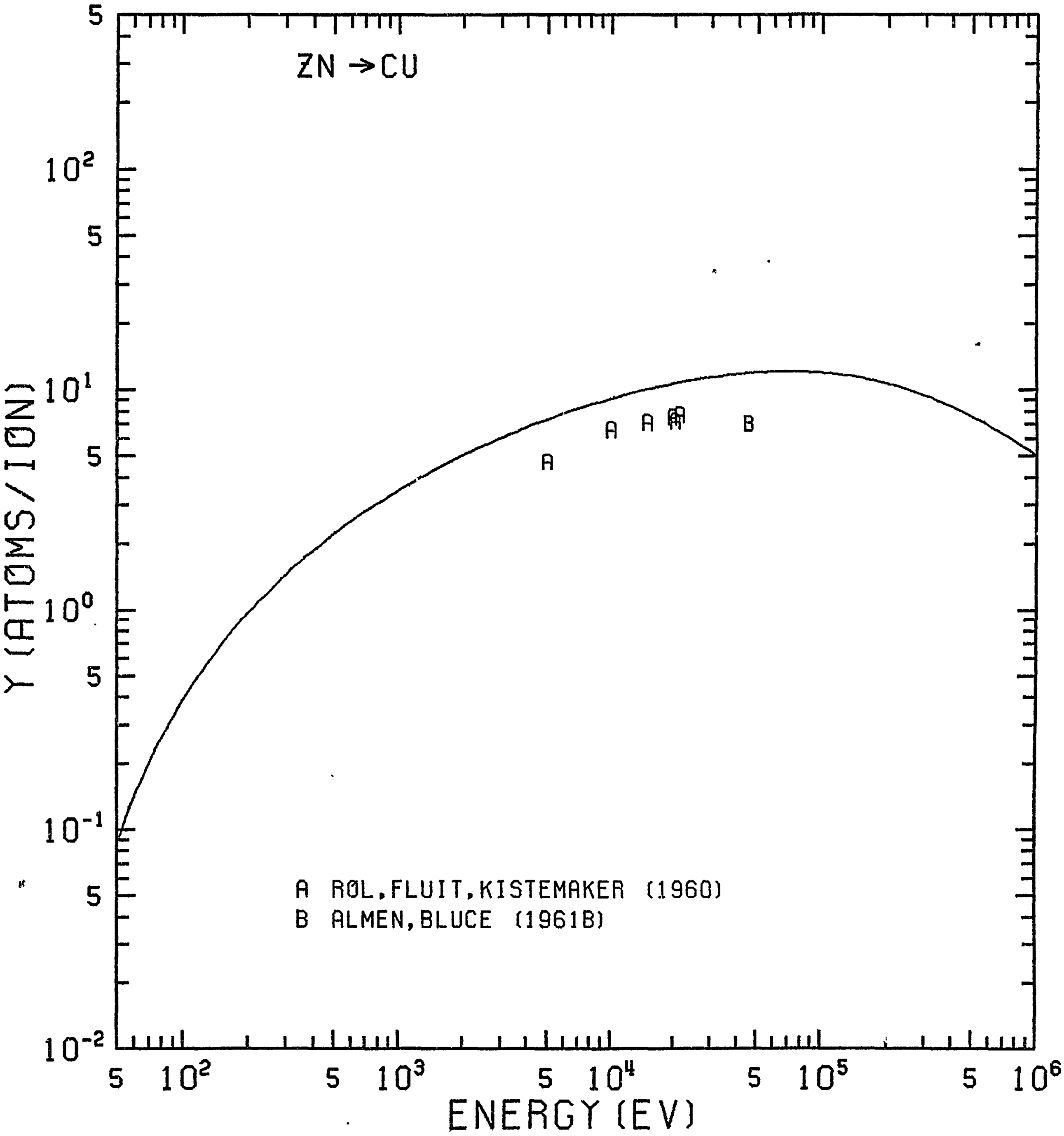

CL →CU
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
AA
B
A ROL, FLUIT, KISTEMAKER (1960)
B ALMEN, BLUCE (1961B)

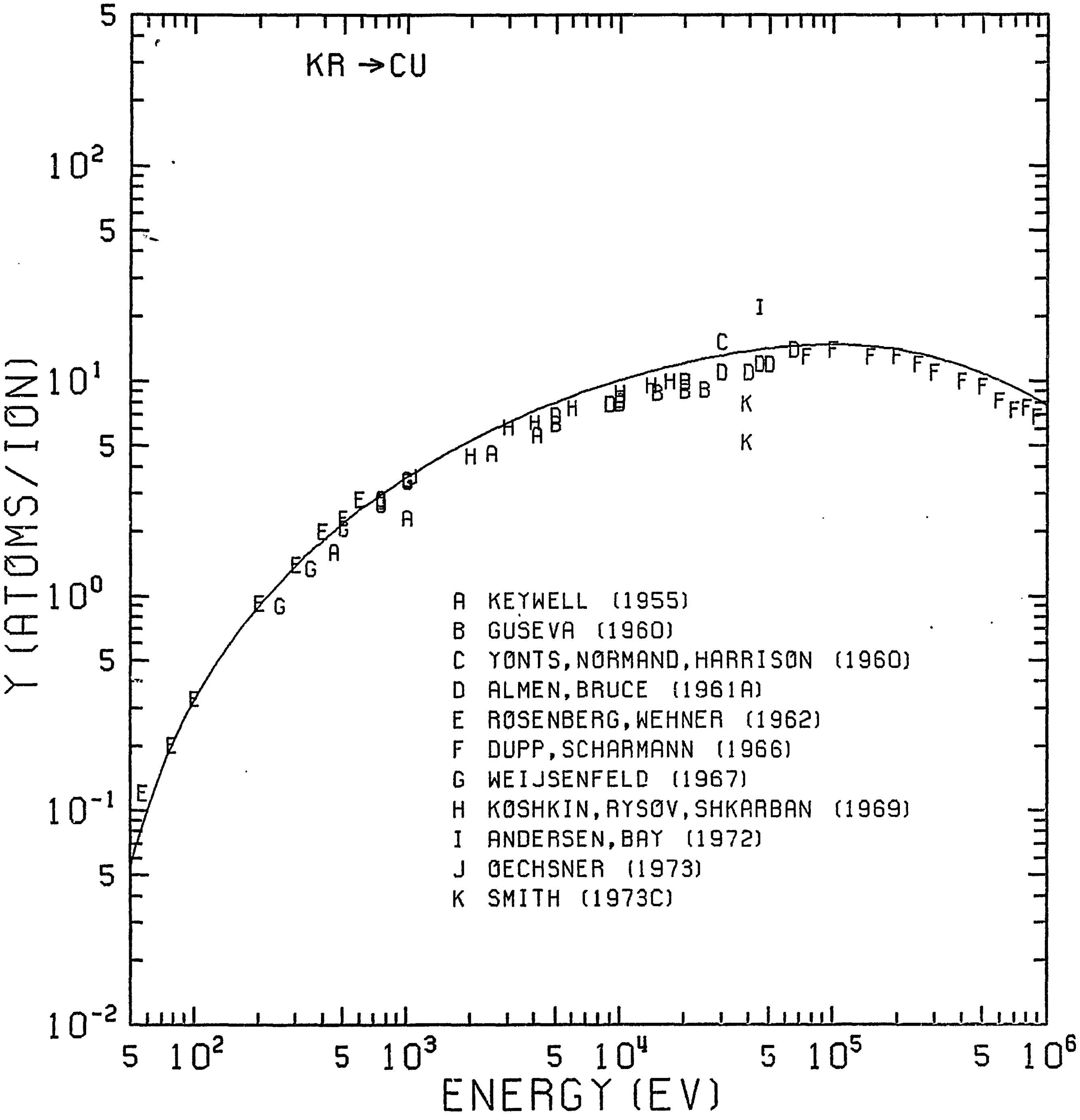

AR →CU
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5 10²
5 10³
5 10⁴
5 10⁵
5 10⁶
A KEYWELL (1955)
B GUSEVA (1960)
C ROL, FLUIT, KISTEMAKER (1960)
D YONTS, NORMAND, HARRISON (1960)
E ALMEN, BRUCE (1961A)
F BADER, WITTEBORN, SNOUSE (1961)
G FERT, COLOMBIE, FAGOT (1961)
H LAEGREID, WEHNER (1959, 1961)
I PEROVIC, COBIC (1961)
J SOUTHERN, WILLIS, ROBINSON (1963)
K RAMER, NARASIMHAM, REYNOLDS (1964)
L CHENEY, PITKIN (1965)
M DUPP, SCHARMANN (1966)
N WEIJSENFELD (1967)
O KOSHKIN, RYSOV, SHKARBAN (1969)
P ANDERSEN, BAY (1972)
Q SLETTEN, KNUDSEN (1972)
R OECHSNER (1973)
S BRAUN, EMMOTH, BUCHTA (1976)
T AKAISHI, MIYAHARA, KABEYA (1977)
U ATO (1980)
V BOHDANSKY (1980)
W OKAJIMA (1981)

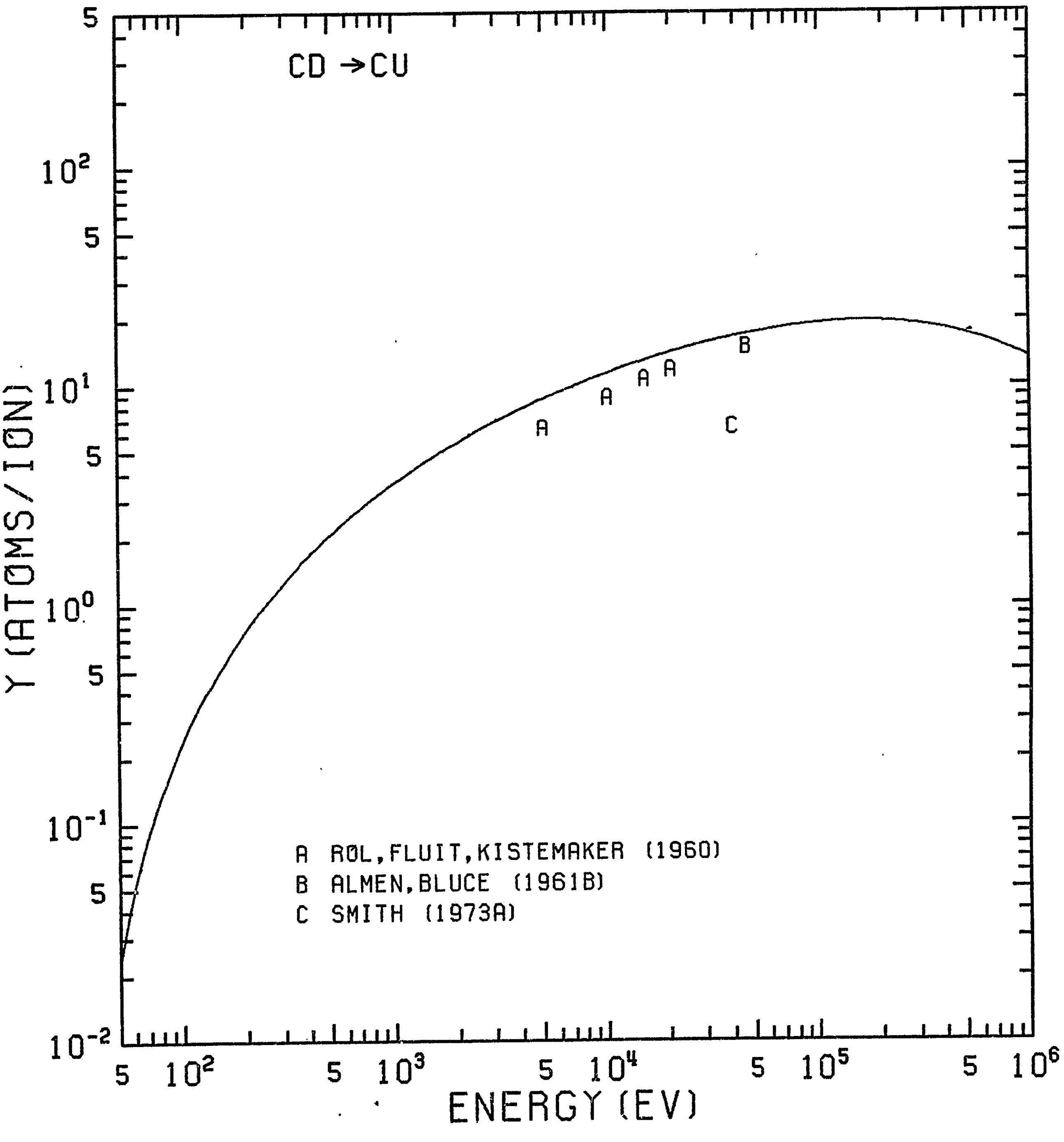

K →CU
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
A
B
A RØL, FLUIT, KISTEMAKER (1960)
B ALMEN, BLUCE (1961B)

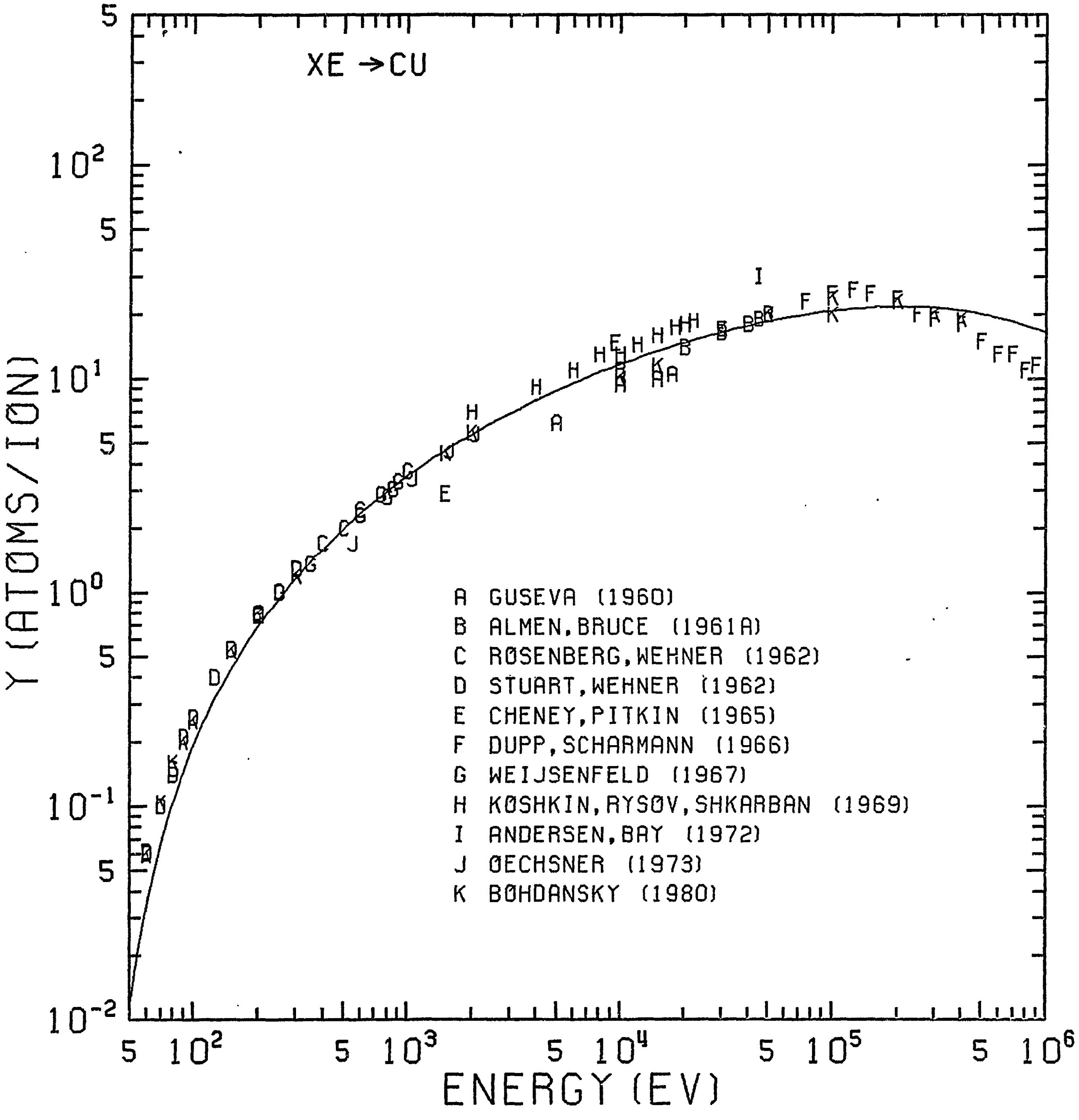

NI → CU
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
BA
B
A ALMEN, BLUCE (1961B)
B SMITH (1973A)

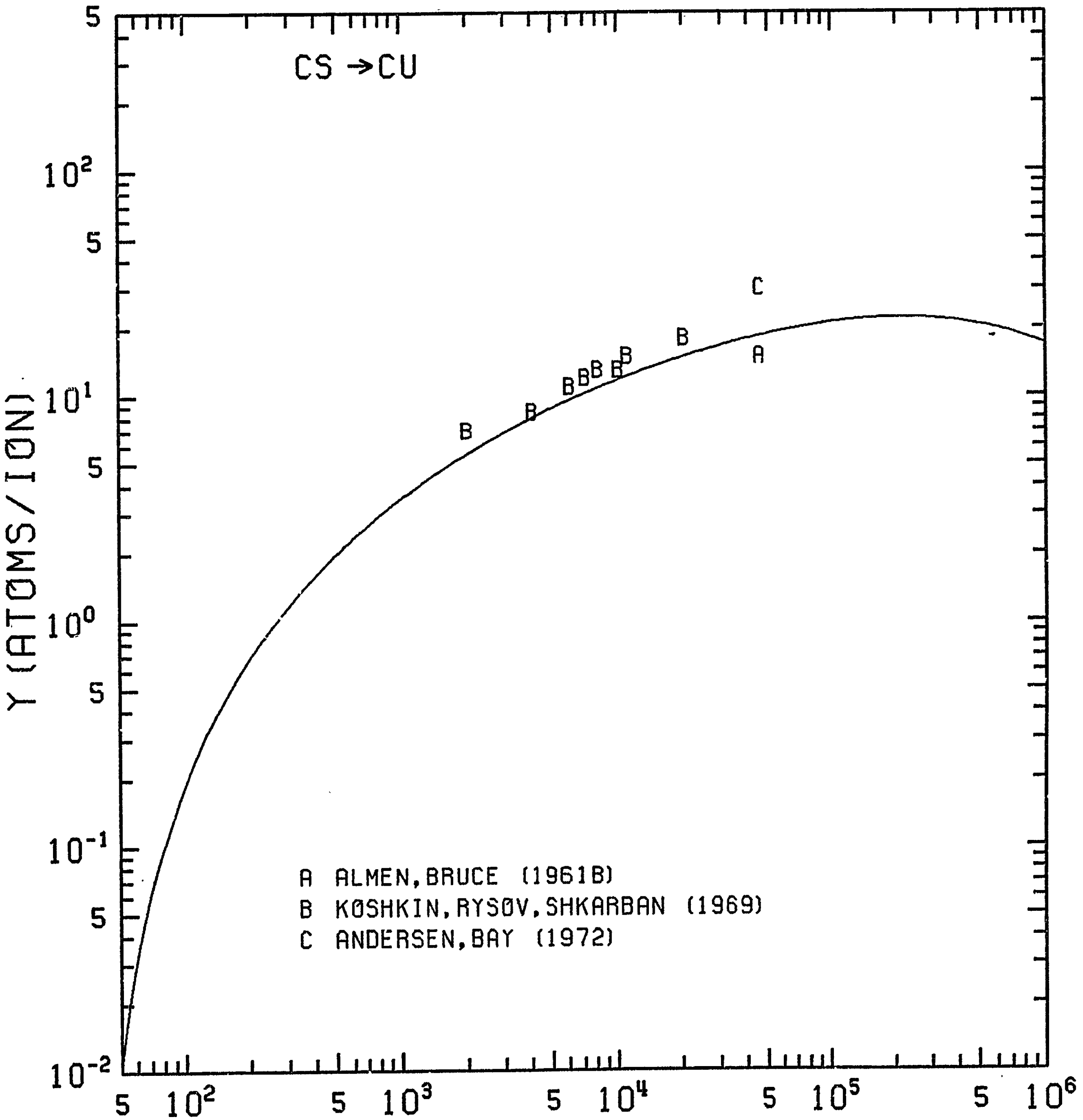

CU → CU
Y (ATØMS/IØN)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A GUSEVA (1960)
B RØL, FLUIT, KISTEMAKER (1960)
C ALMEN, BRUCE (1961B)
D FØNTELL, ARMINEN (1969)
E HAYWARD, WØLTER (1969)
F ANDERSEN, BAY (1972)

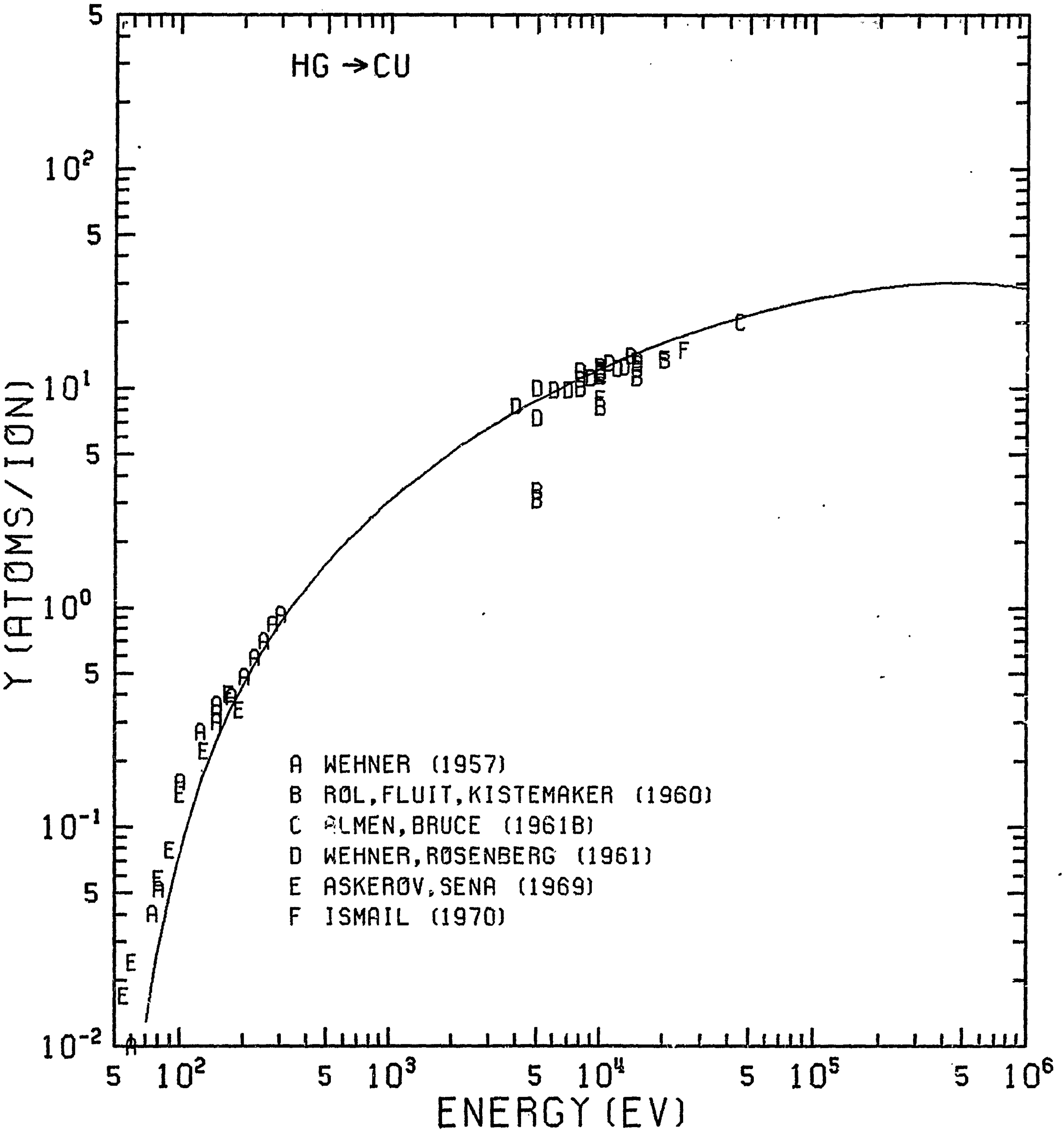

ZN → CU
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B
A ROL, FLUIT, KISTEMAKER (1960)
B ALMEN, BLUCE (1961B)

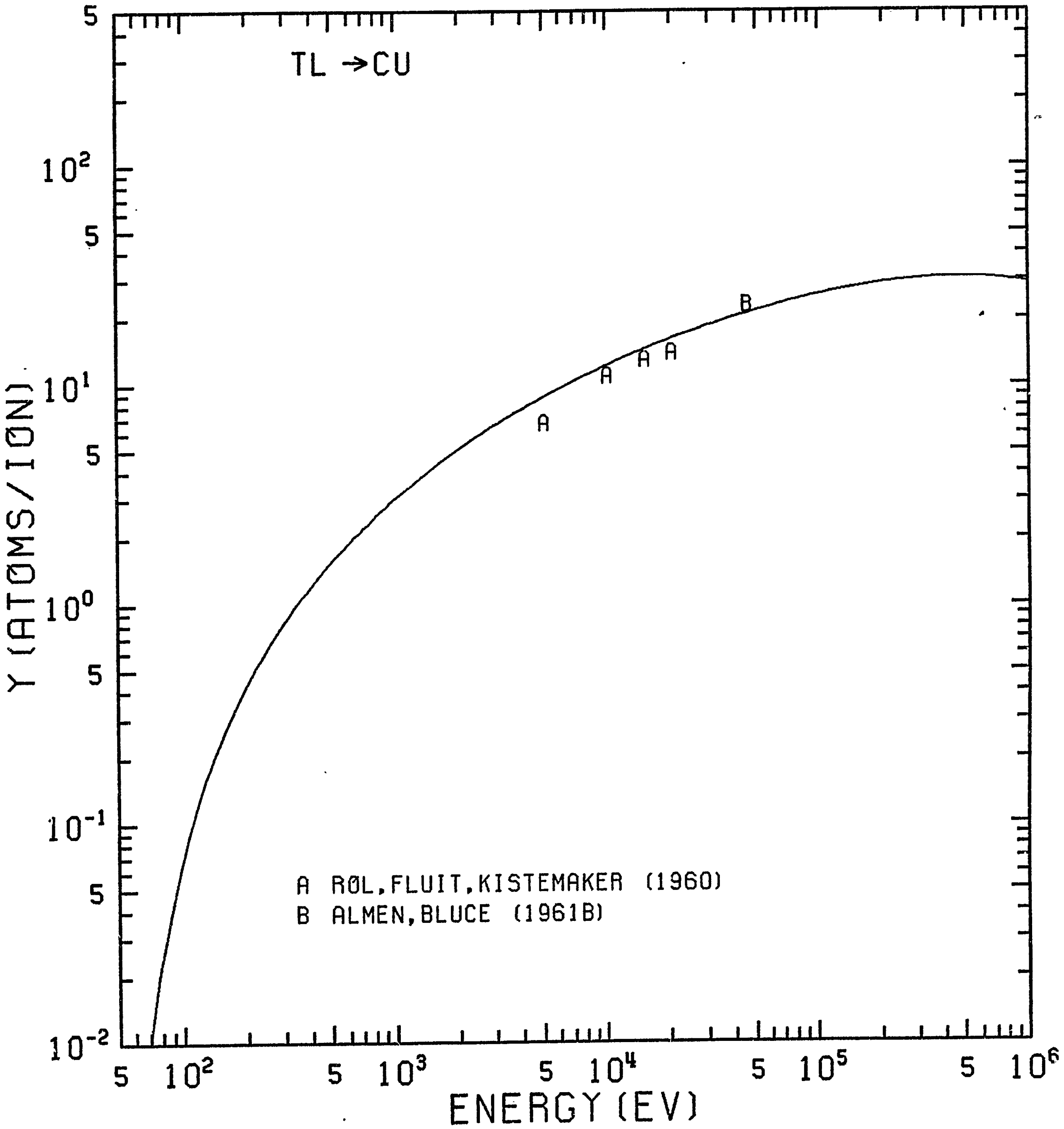

KR → CU
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A KEYWELL (1955)
B GUSEVA (1960)
C YONTS, NORMAND, HARRISON (1960)
D ALMEN, BRUCE (1961A)
E ROSENBERG, WEHNER (1962)
F DUPP, SCHARMANN (1966)
G WEIJSENFELD (1967)
H KOSHKIN, RYSOV, SHKARBAN (1969)
I ANDERSEN, BAY (1972)
J OECHSNER (1973)
K SMITH (1973C)

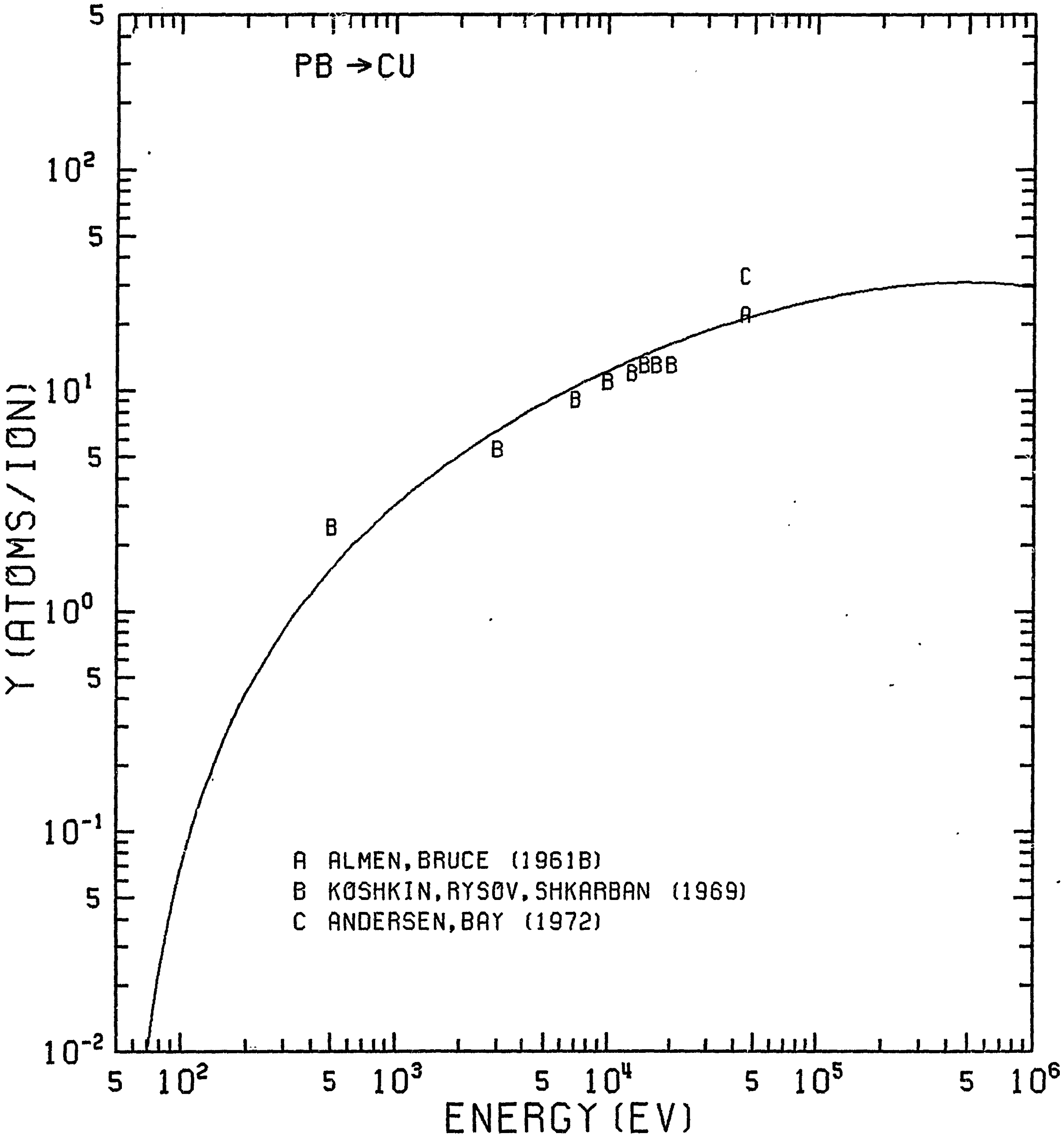

CD →CU
Y (ATOMS/ION)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A
A
A
A
B
C
A ROL, FLUIT, KISTEMAKER (1960)
B ALMEN, BLUCE (1961B)
C SMITH (1973A)

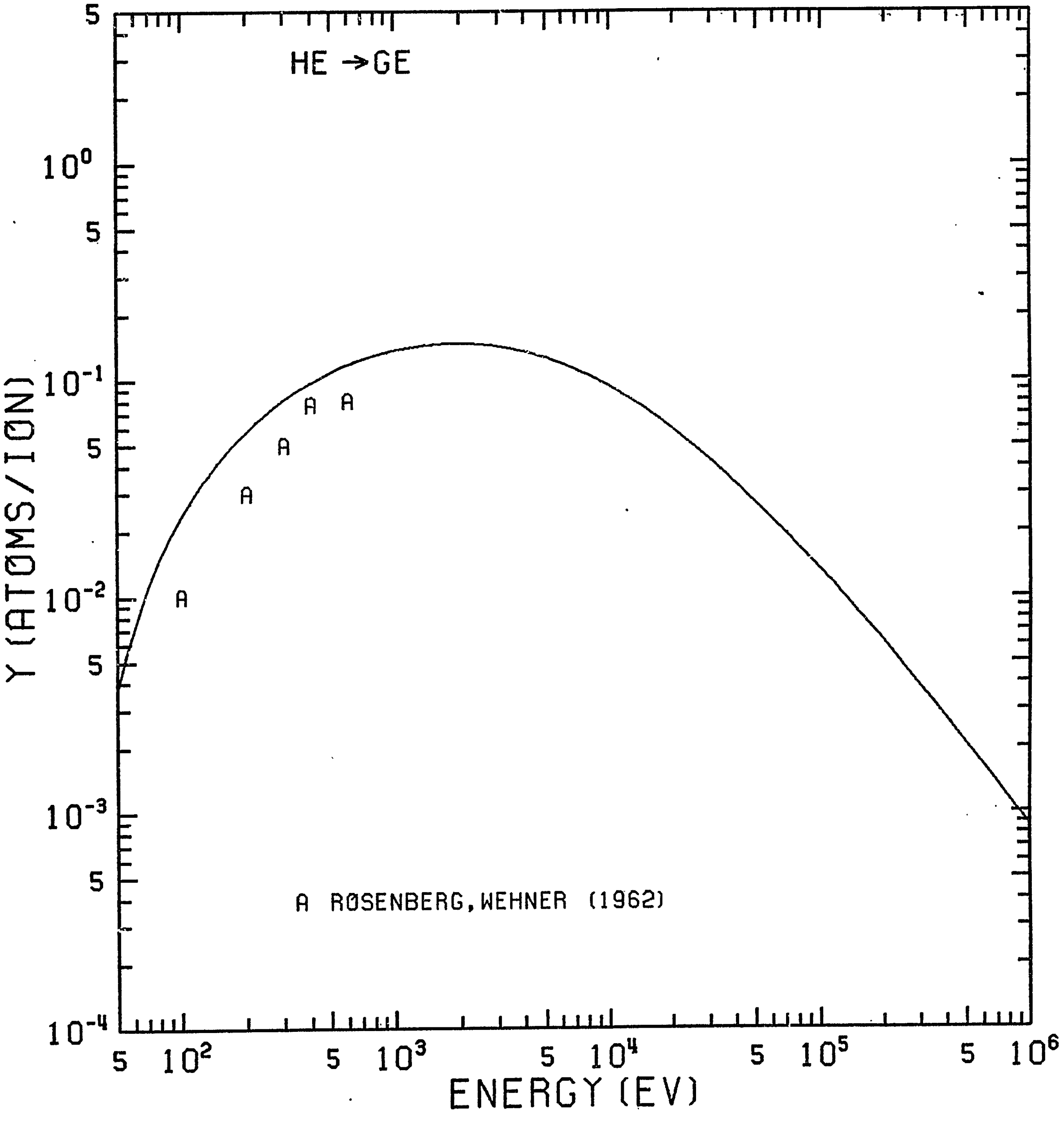

XE →CU
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A GUSEVA (1960)
B ALMEN, BRUCE (1961A)
C ROSENBERG, WEHNER (1962)
D STUART, WEHNER (1962)
E CHENEY, PITKIN (1965)
F DUPP, SCHARMANN (1966)
G WEIJSENFELD (1967)
H KOSHKIN, RYSOV, SHKARBAN (1969)
I ANDERSEN, BAY (1972)
J OECHSNER (1973)
K BOHDANSKY (1980)

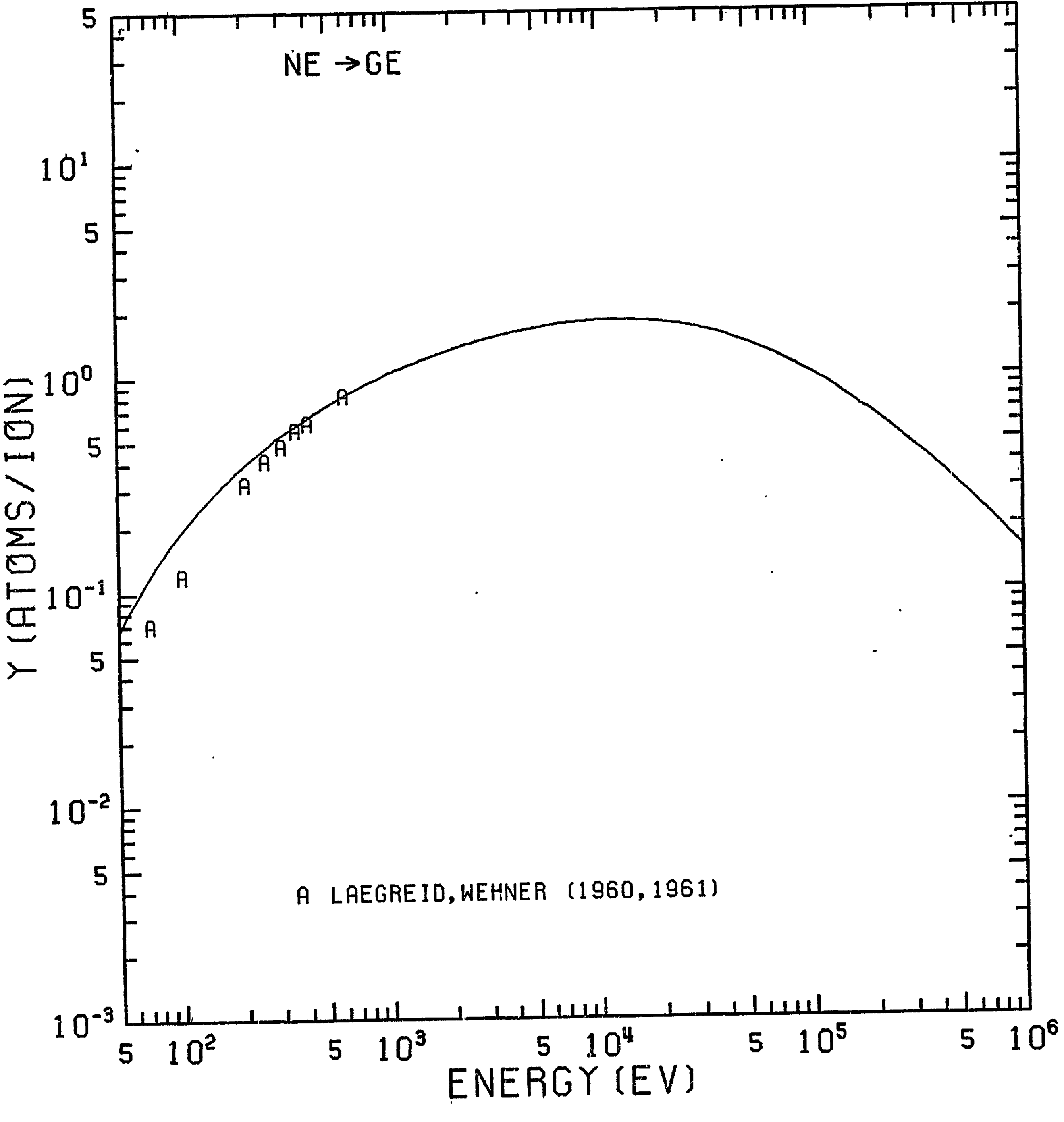

CS →CU
Y (ATOMS/ION)
ENERGY (EV)
10⁻²
5
10⁻¹
5
10⁰
5
10¹
5
10²
5
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
B
C
A ALMEN, BRUCE (1961B)
B KOSHKIN, RYSOV, SHKARBAN (1969)
C ANDERSEN, BAY (1972)

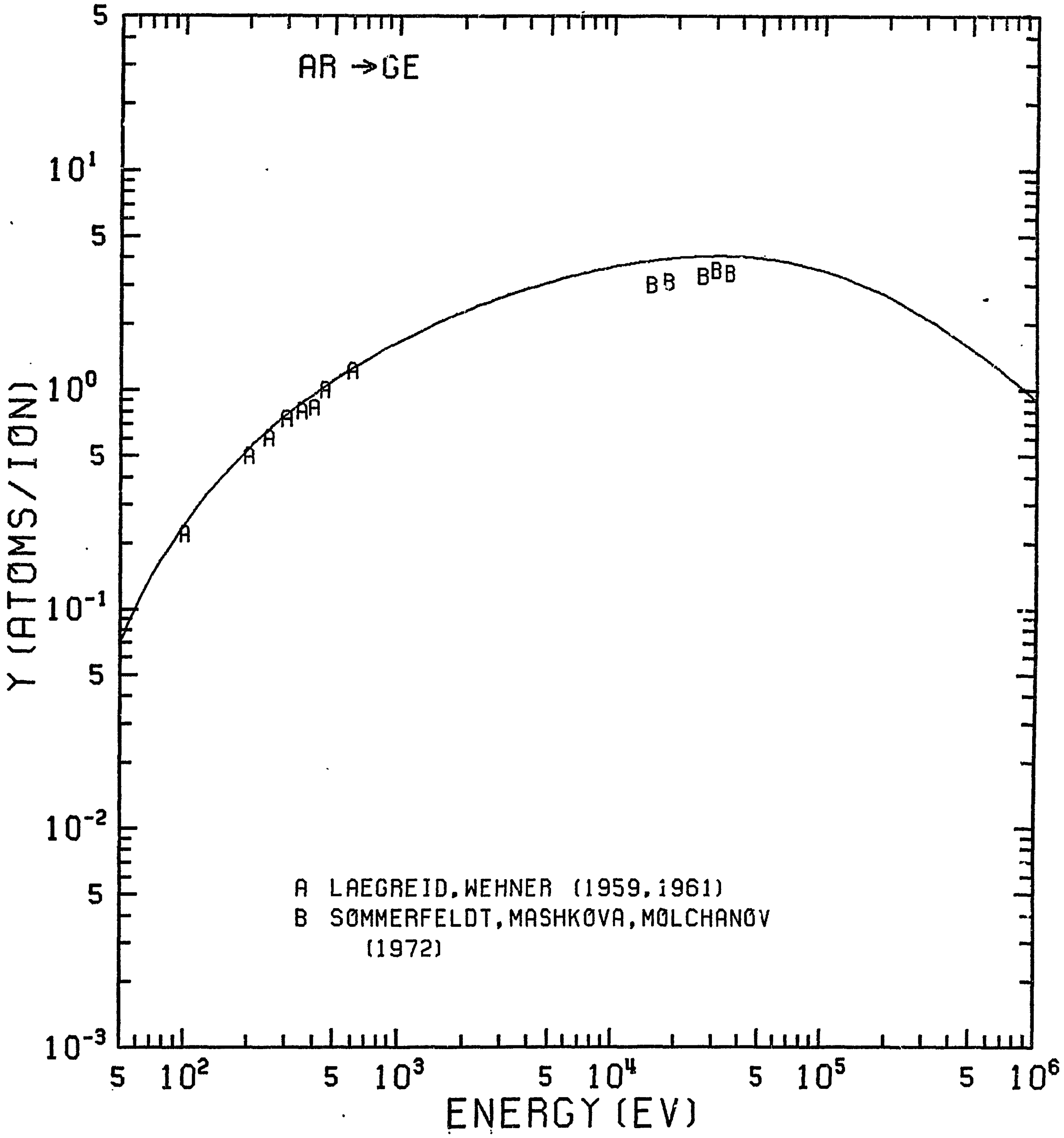

HG → CU
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A WEHNER (1957)
B ROL, FLUIT, KISTEMAKER (1960)
C ALMEN, BRUCE (1961B)
D WEHNER, ROSENBERG (1961)
E ASKEROV, SENA (1969)
F ISMAIL (1970)

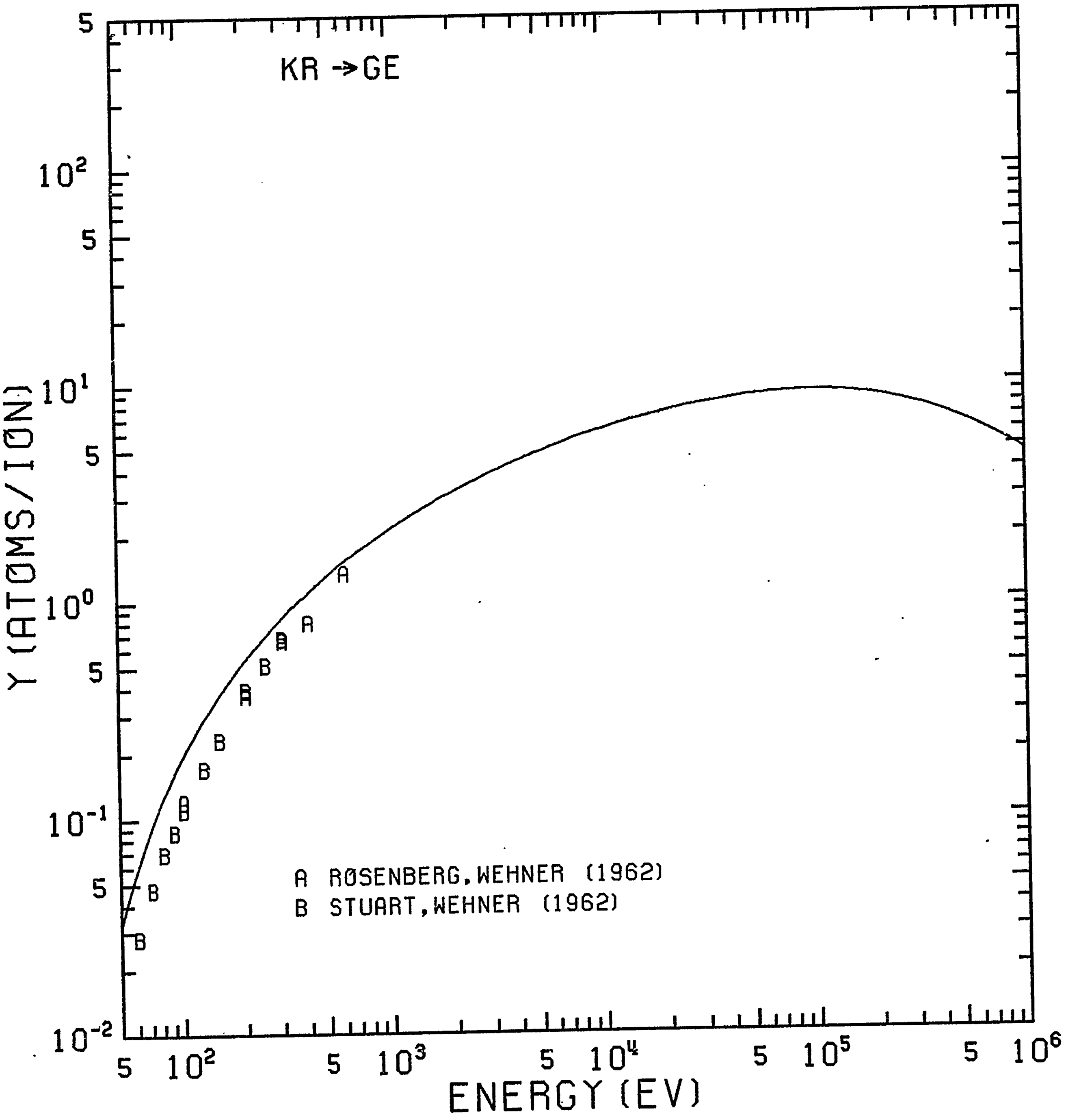

TL →CU
A RØL,FLUIT,KISTEMAKER (1960)
B ALMEN,BLUCE (1961B)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
A
B

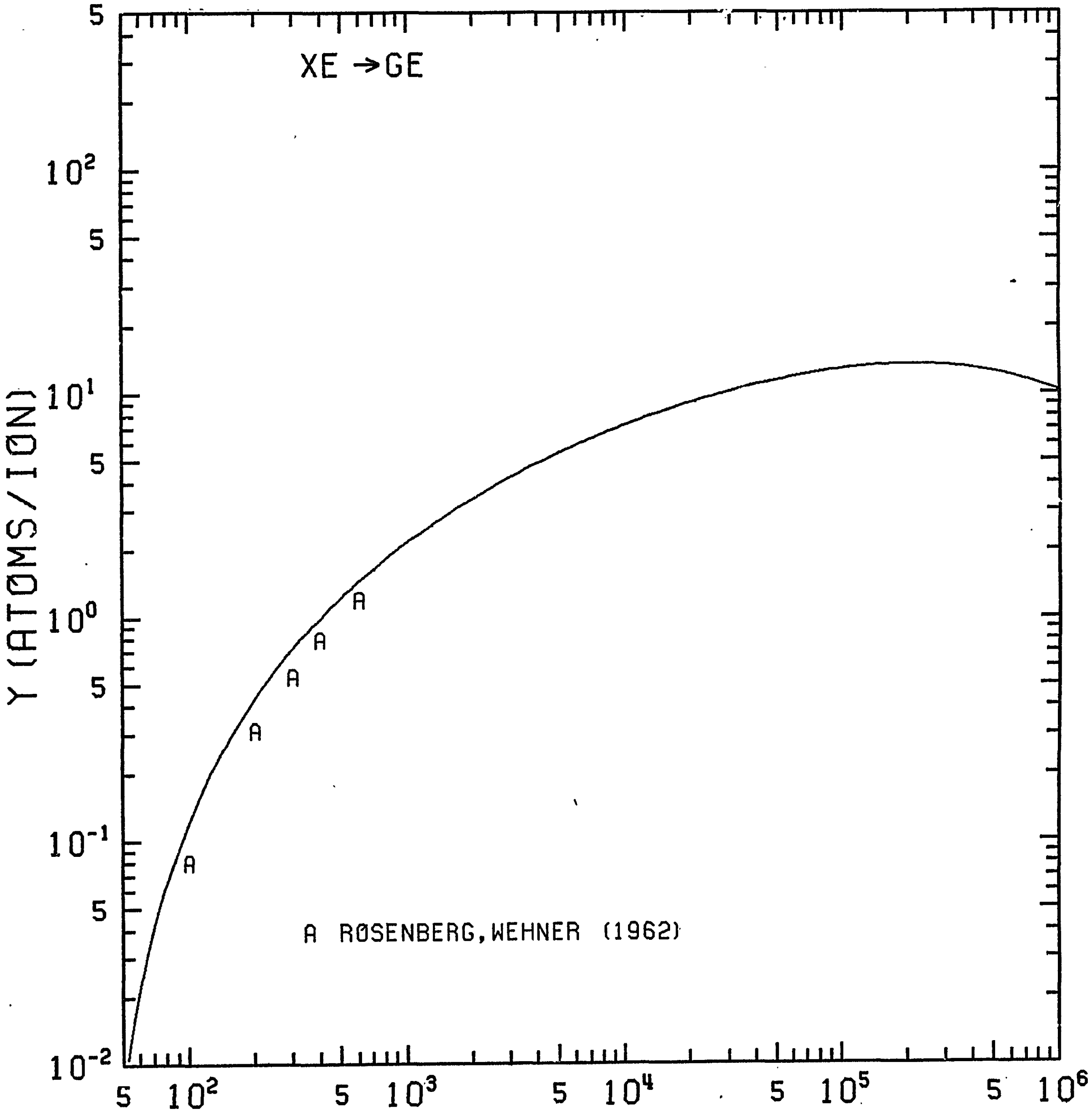

PB → CU
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961B)
B KOSHKIN, RYSOV, SHKARBAN (1969)
C ANDERSEN, BAY (1972)
A
B
C

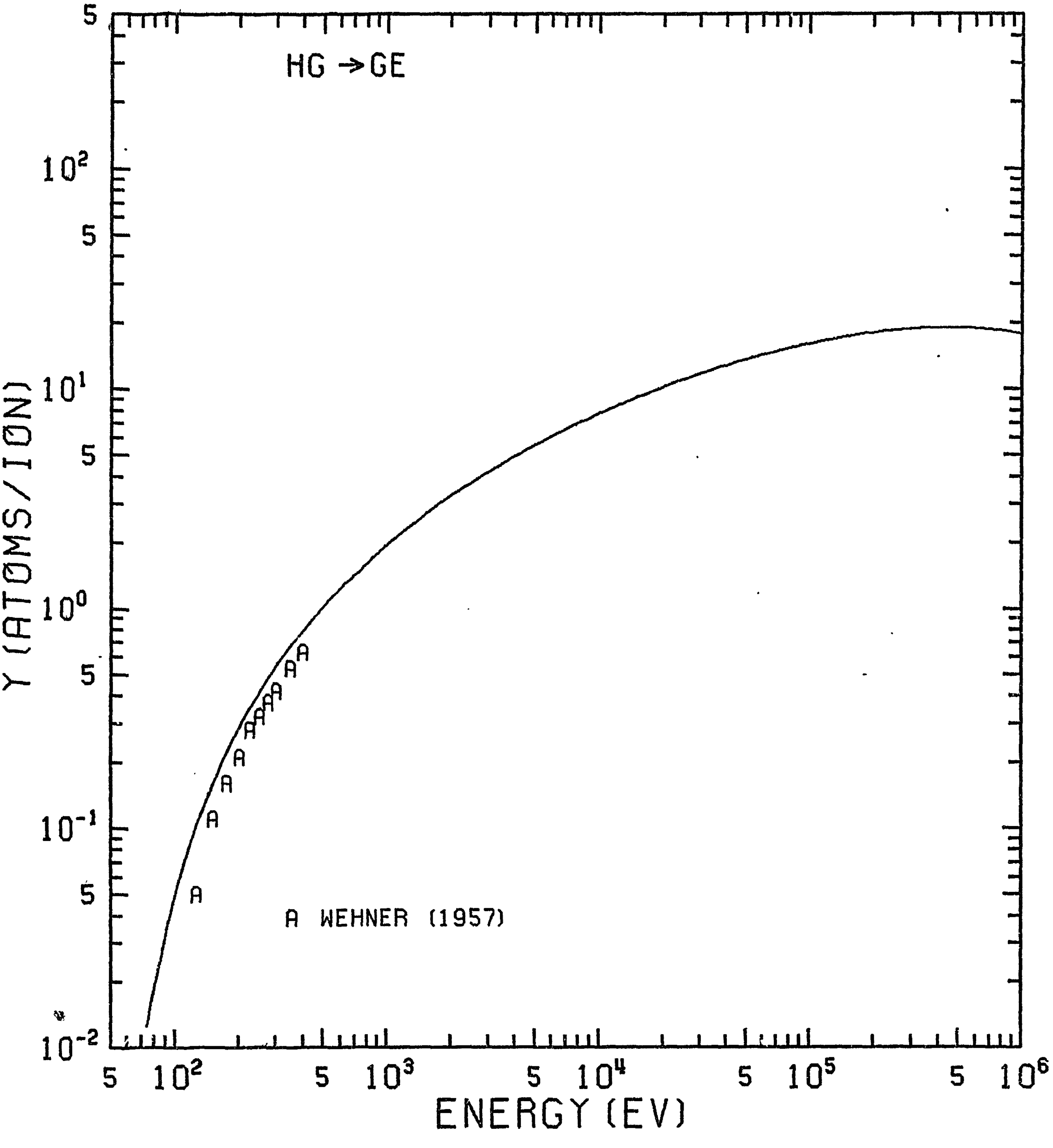

HE →GE
A ROSENBERG, WEHNER (1962)
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

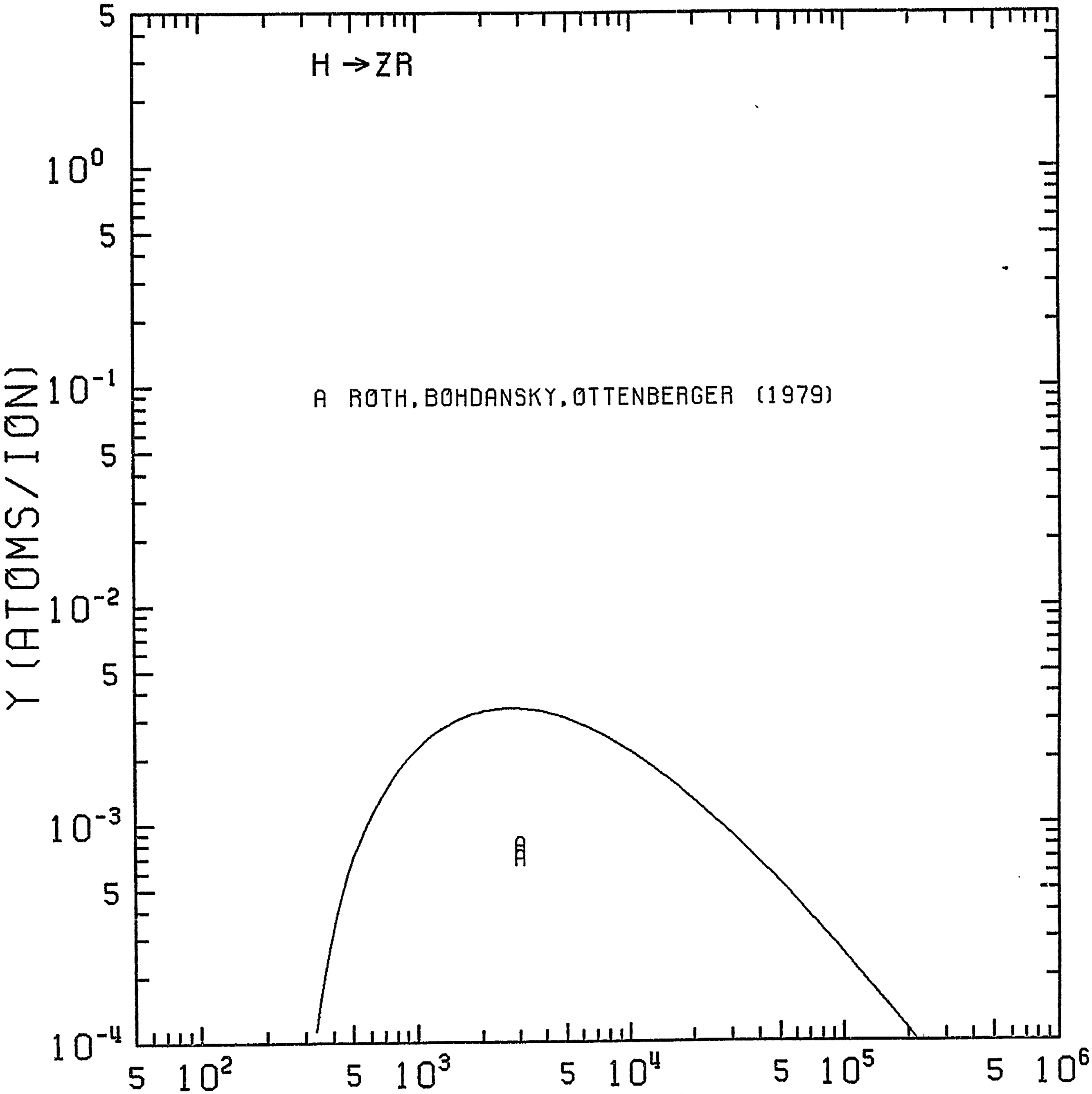

NE →GE
Y (ATOMS/ION)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A
A LAEGREID, WEHNER (1960, 1961)

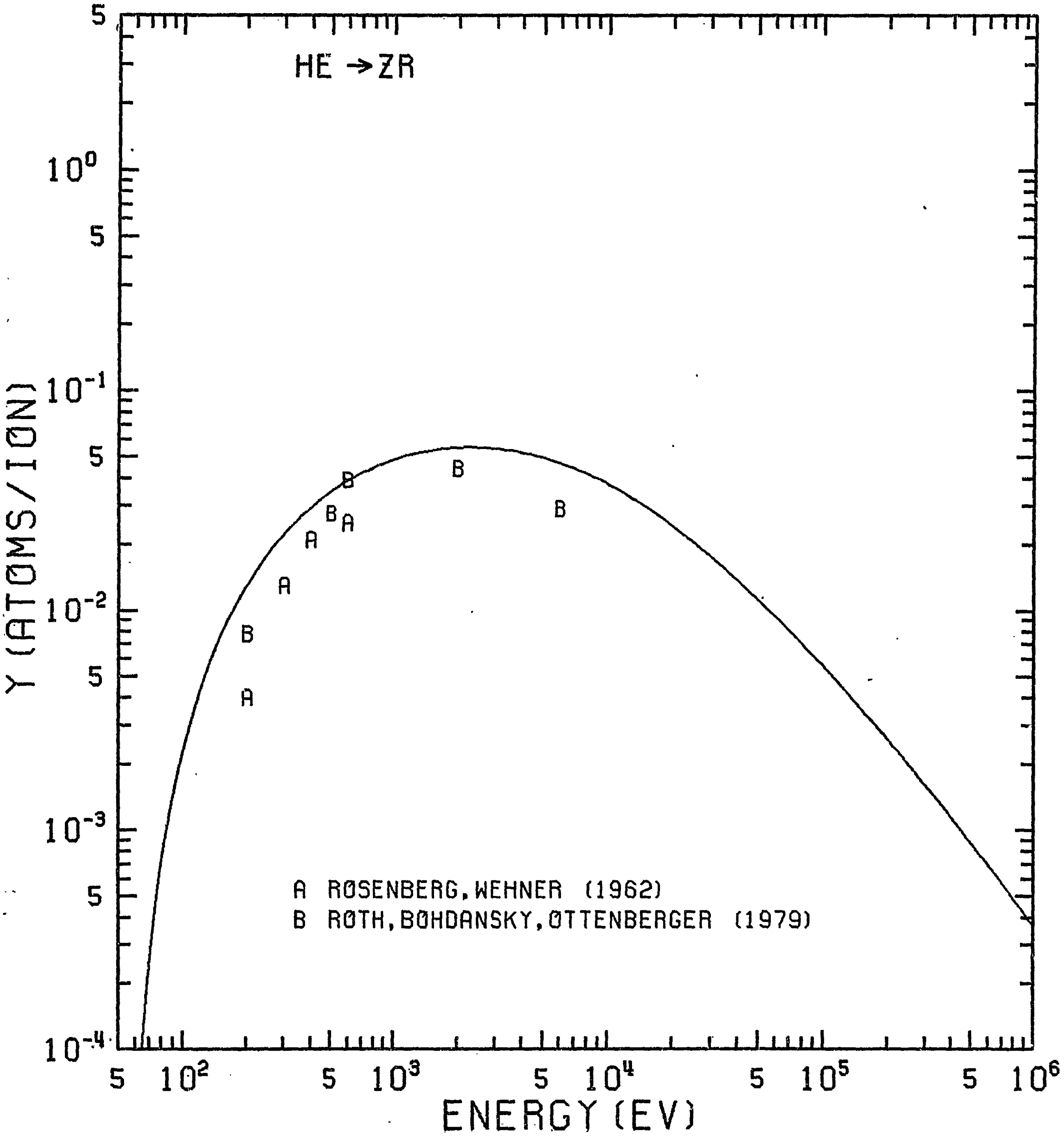

AR → GE
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A LAEGREID, WEHNER (1959, 1961)
B SOMMERFELDT, MASHKOVA, MOLCHANOV (1972)

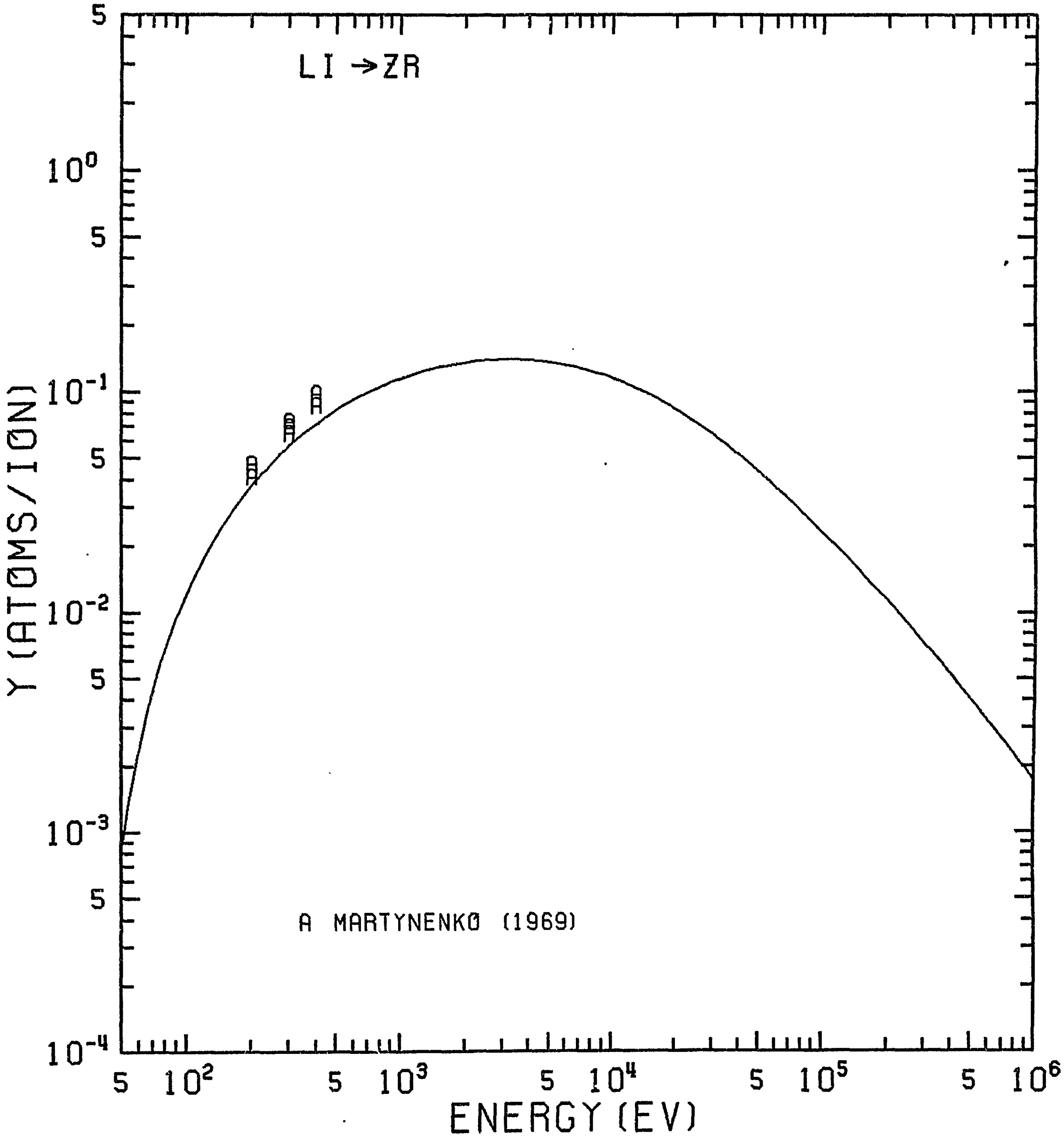

KR ->GE
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5 10²
5 10³
5 10⁴
5 10⁵
5 10⁶
A ROSENBERG, WEHNER (1962)
B STUART, WEHNER (1962)

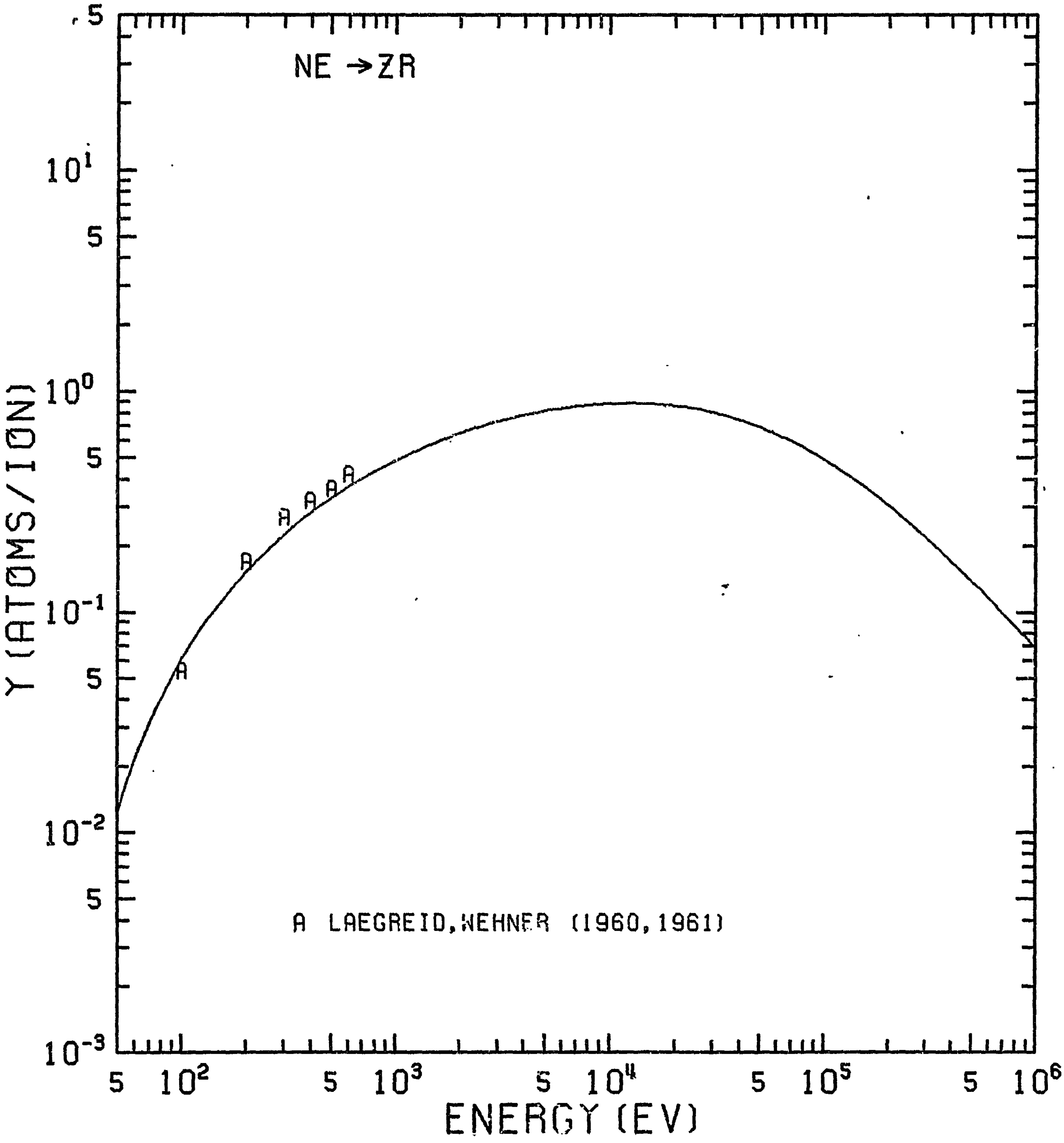

XE →GE
Y (ATØMS/IØN)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
A RØSENBERG,WEHNER (1962)

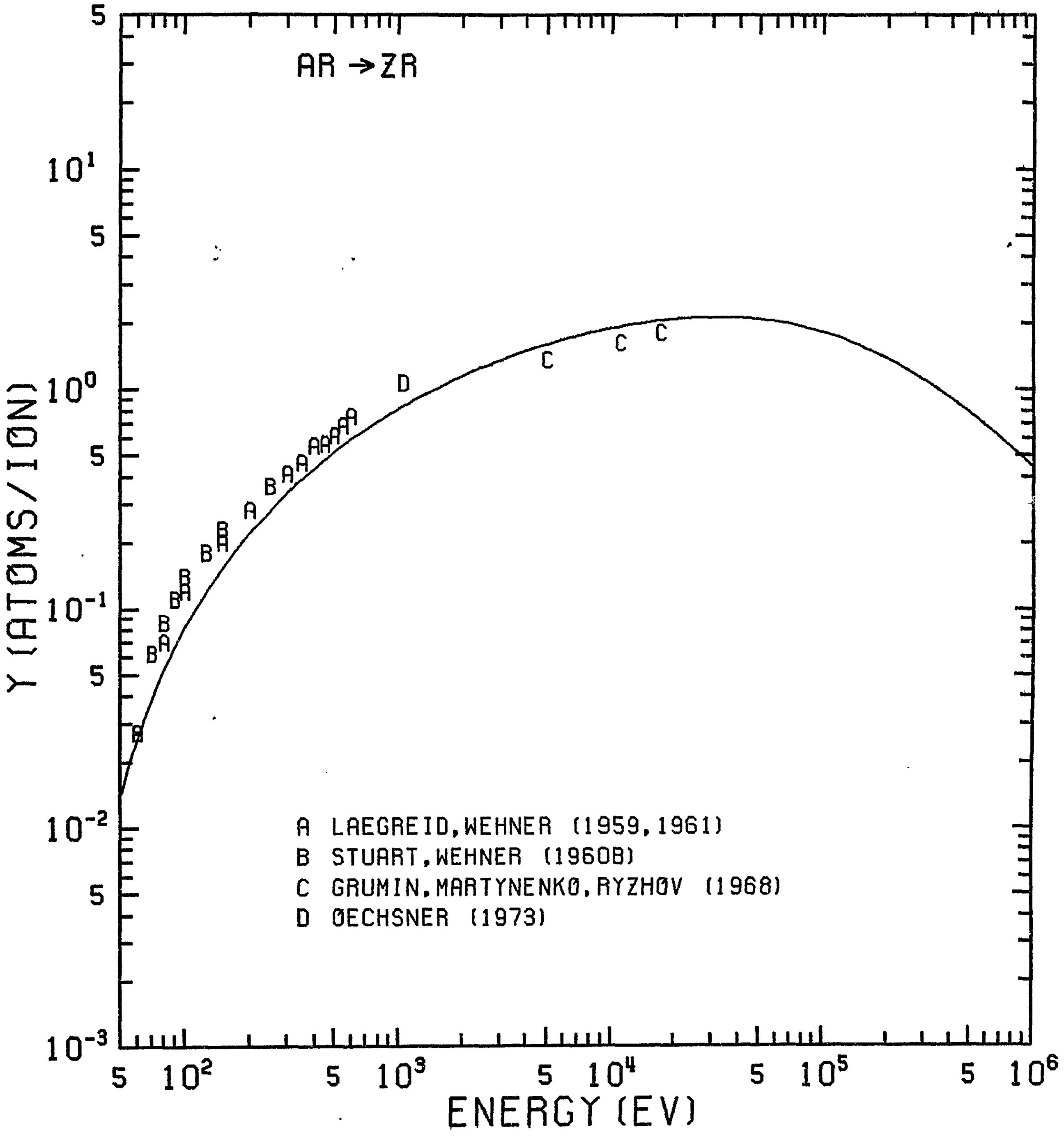

HG →GE
A WEHNER (1957)
Y (ATØMS/IØN)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶

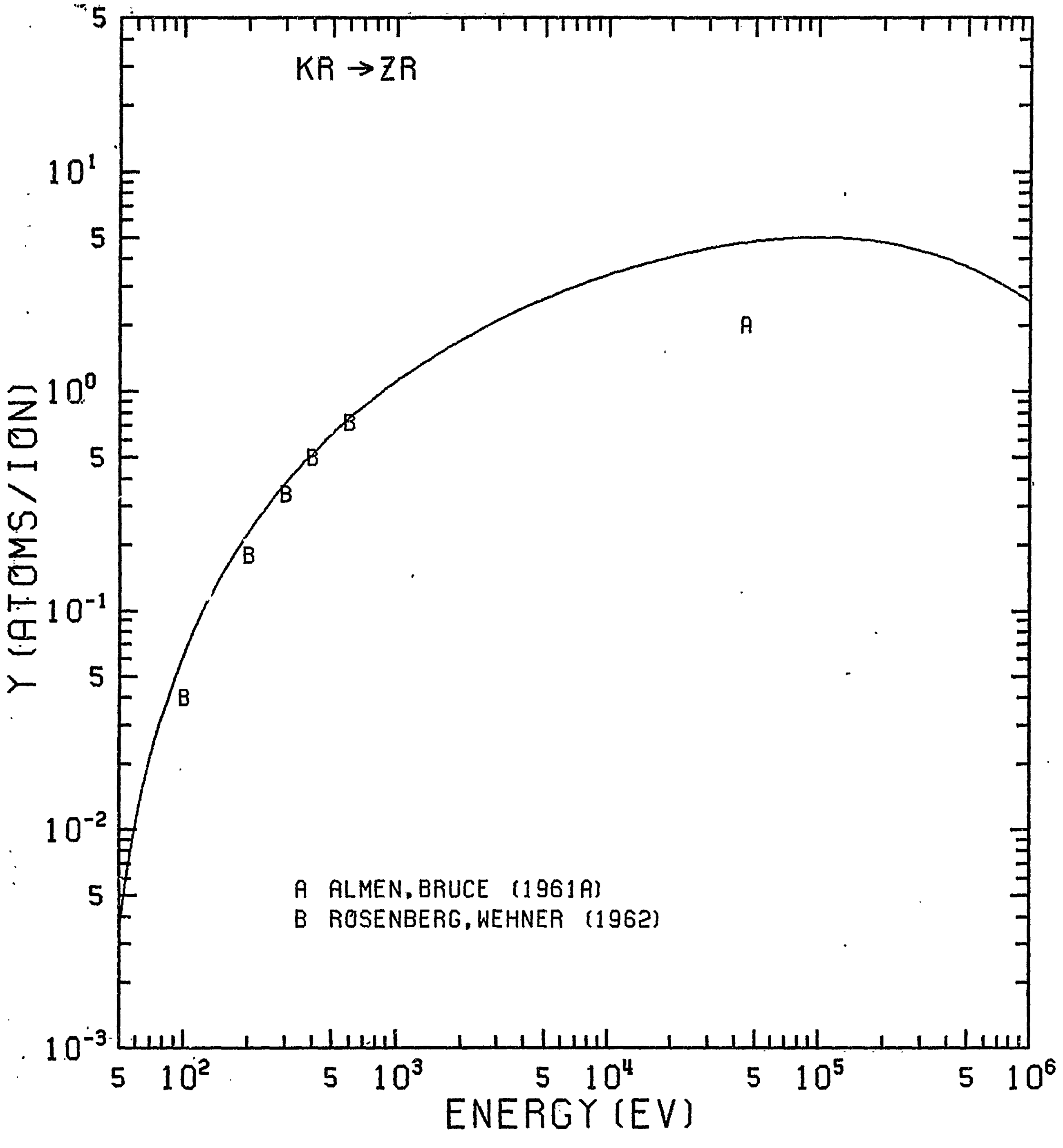

H → ZR
A ROTH, BOHDANSKY, OTTENBERGER (1979)
A
A
Y (ATOMS/ION)
5
10^{0}
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^{2}
5
10^{3}
5
10^{4}
5
10^{5}
5
10^{6}
ENERGY (EV)

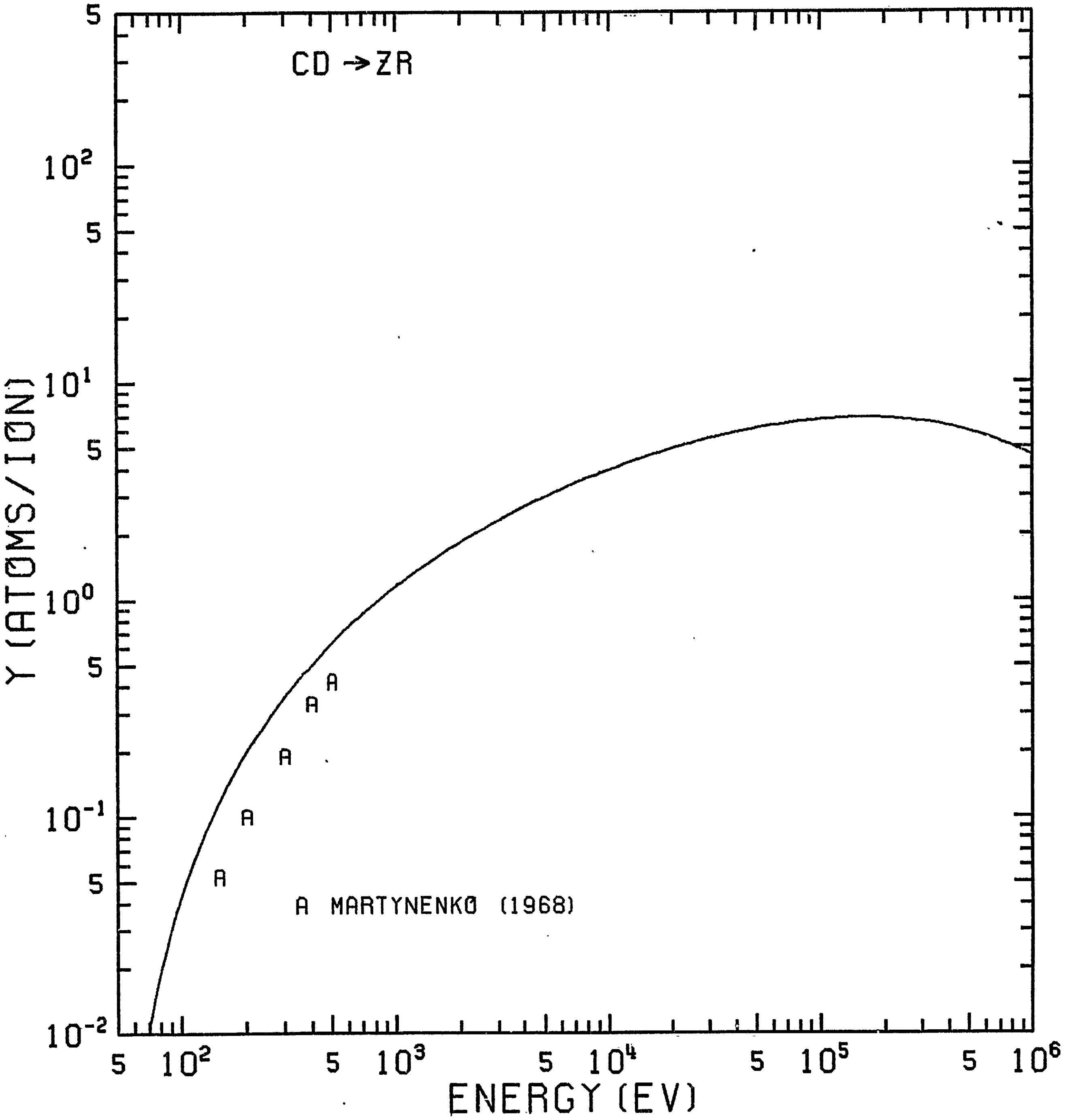

HE → ZR
A ROSENBERG, WEHNER (1962)
B ROTH, BOHDANSKY, OTTENBERGER (1979)
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B

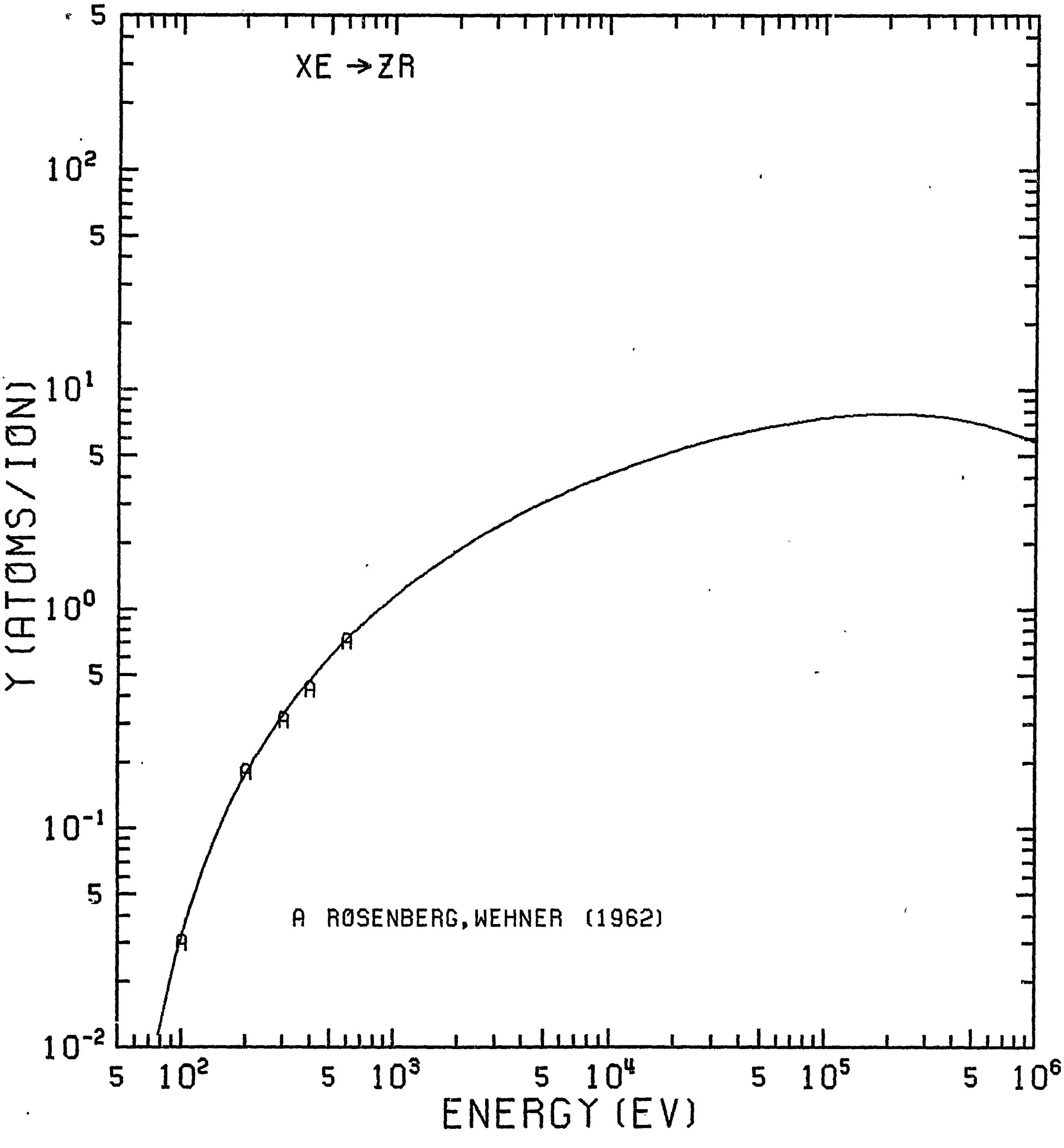

LI → ZR
Y (ATOMS/ION)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A MARTYNENKO (1969)

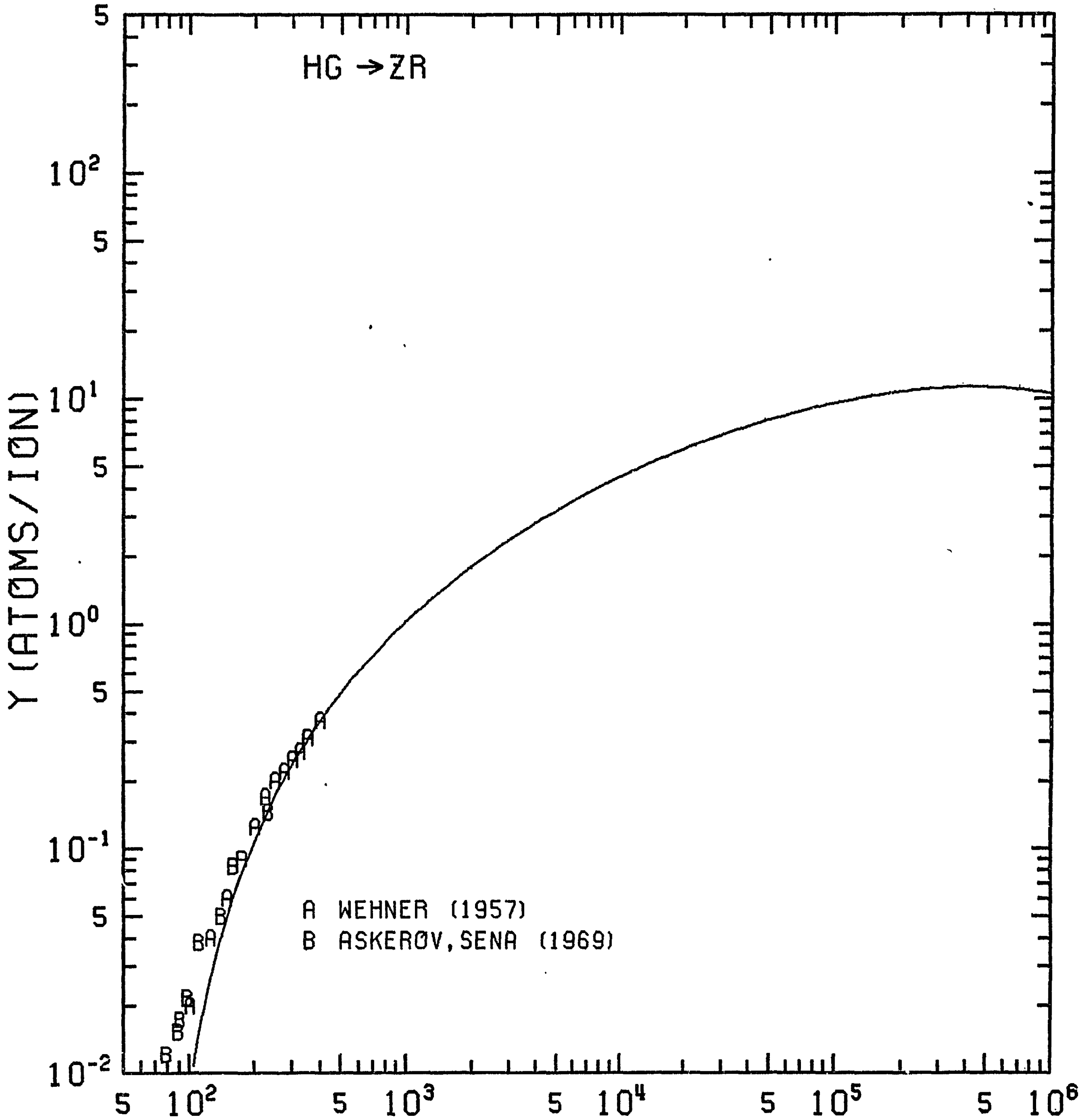

NE → ZR
A LAEGREID, WEHNER (1960, 1961)
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

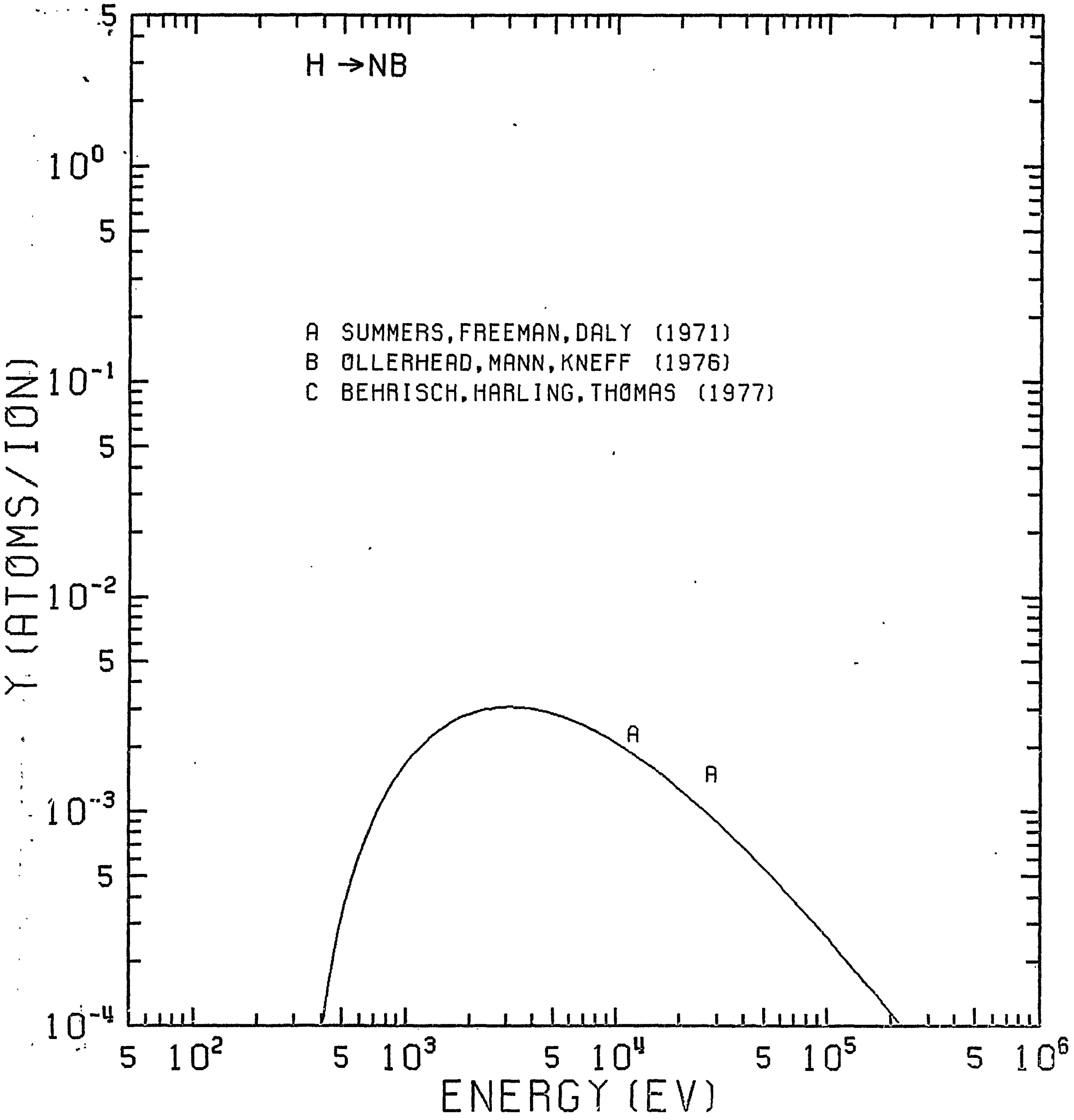

AR → ZR
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A LAEGREID, WEHNER (1959, 1961)
B STUART, WEHNER (1960B)
C GRUMIN, MARTYNENKO, RYZHOV (1968)
D OECHSNER (1973)

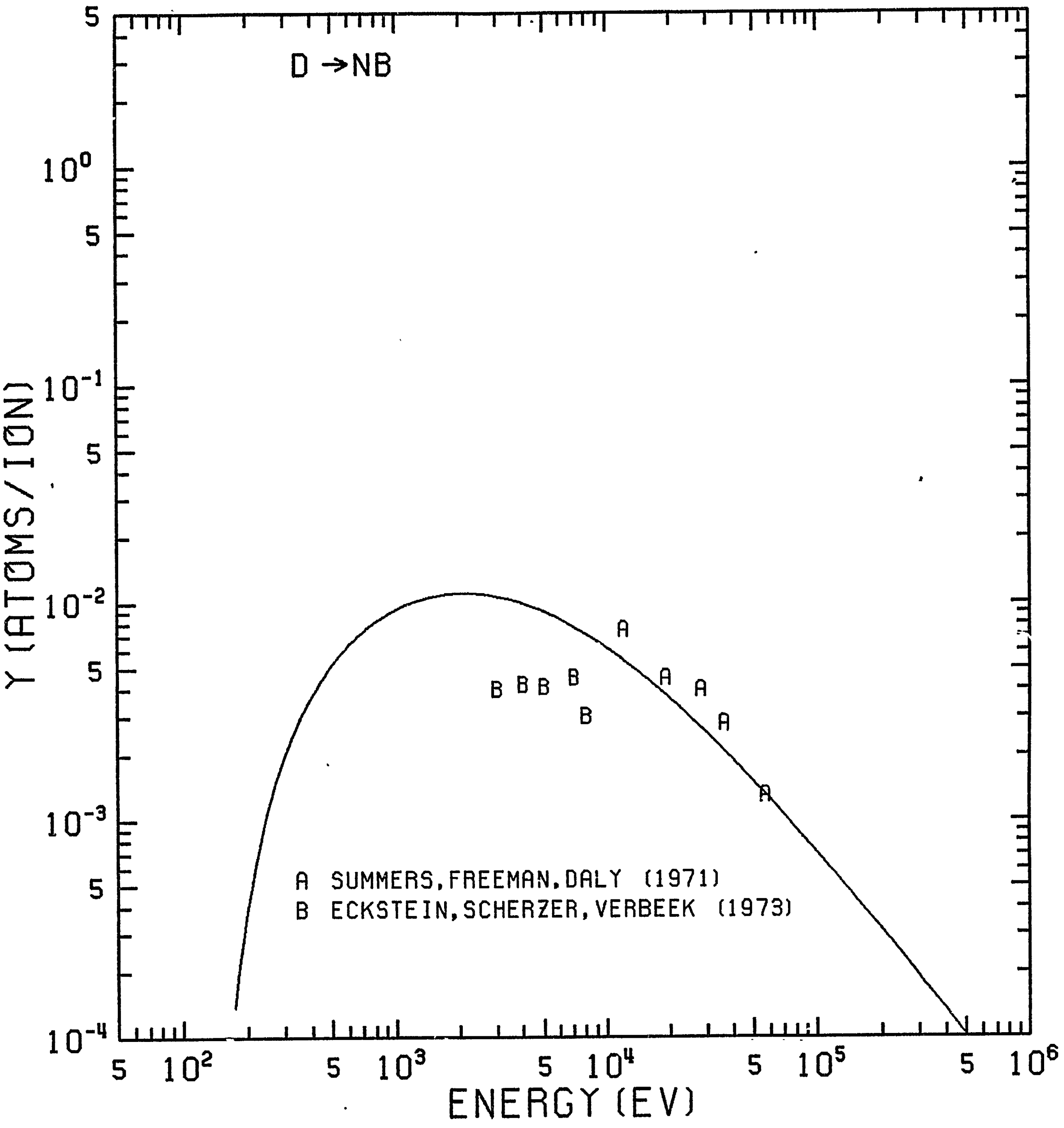

KR → ZR
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)

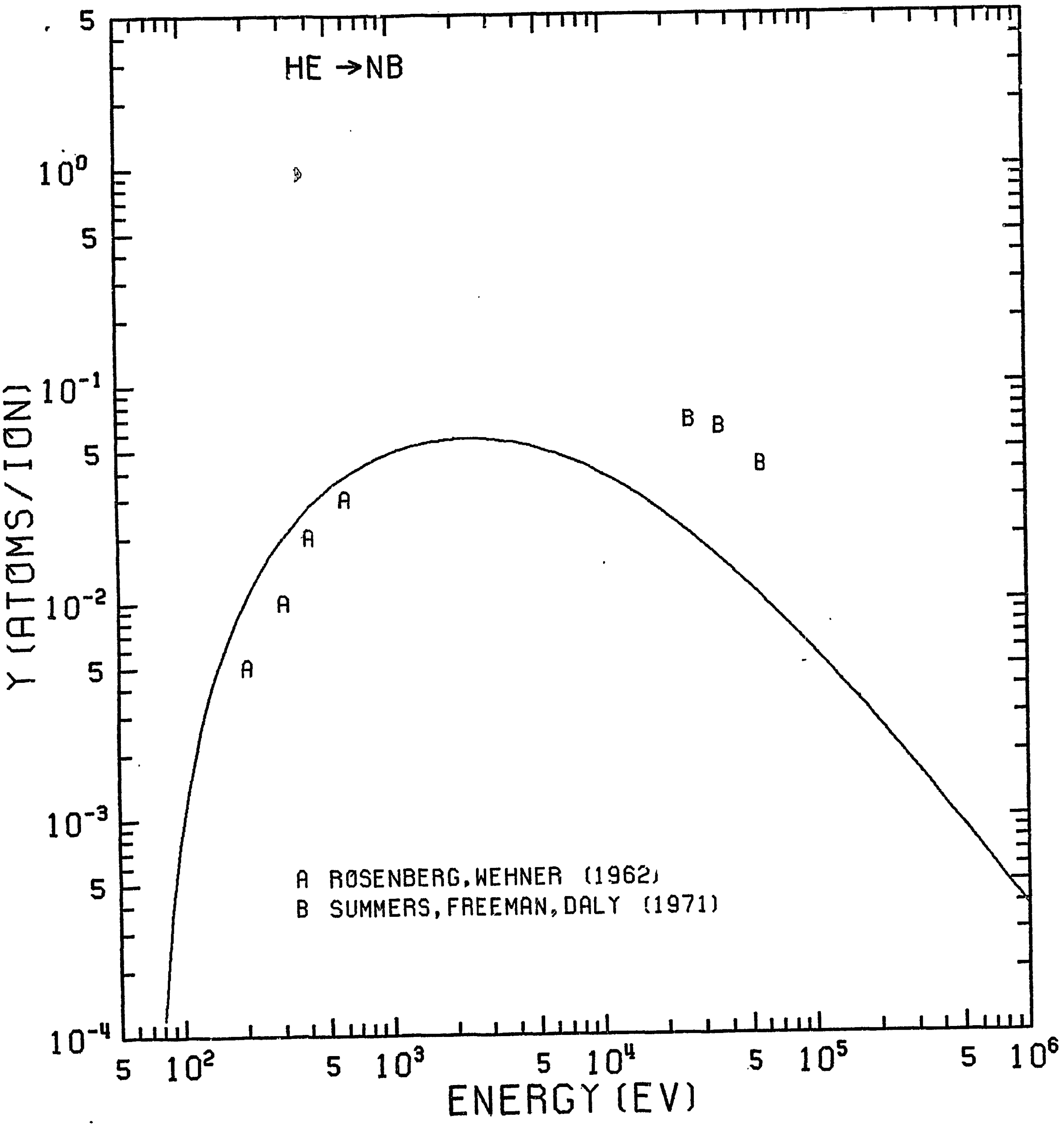

CD → ZR
A MARTYNENKO (1968)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

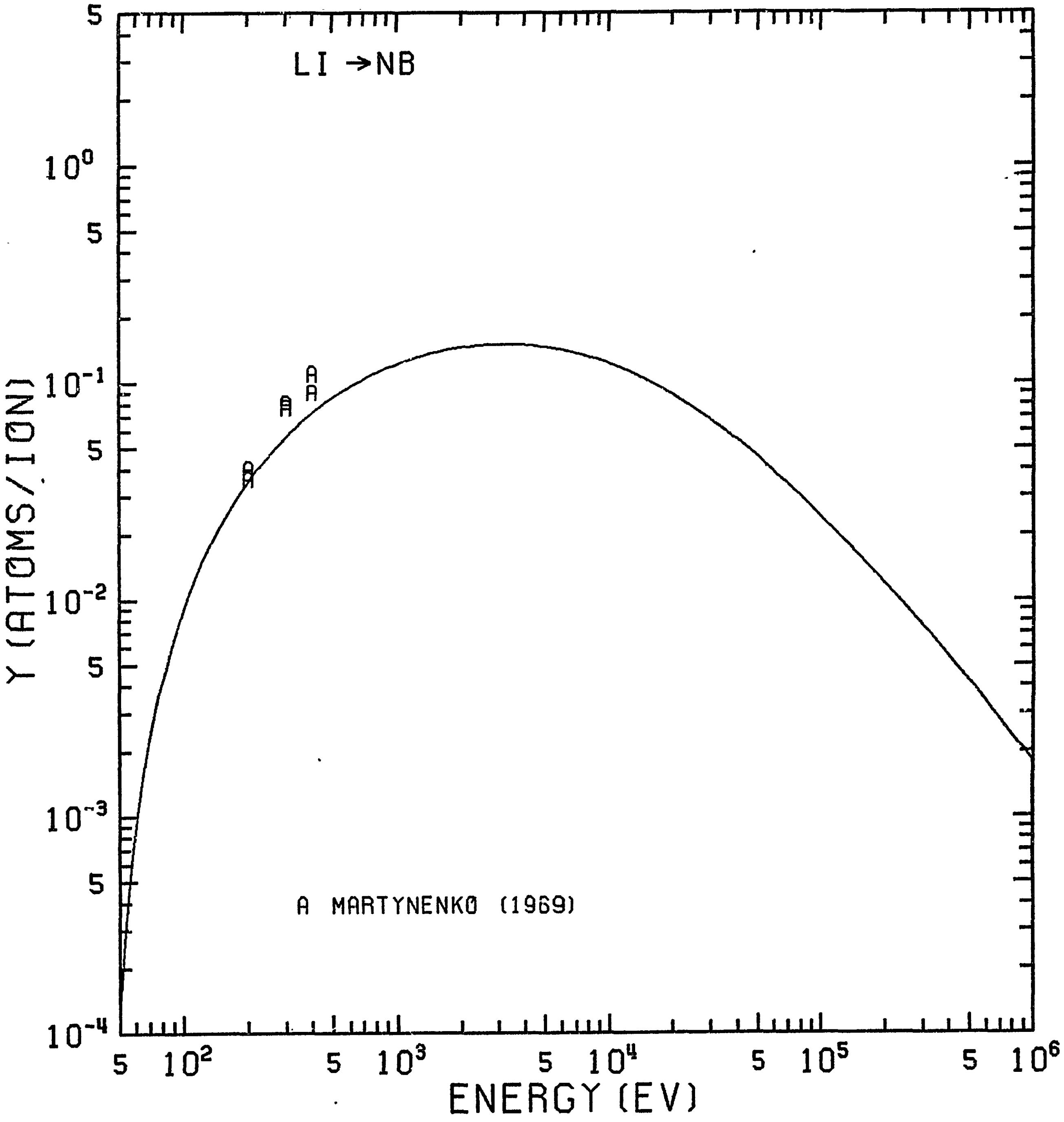

XE → ZR
A ROSENBERG, WEHNER (1962)
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶

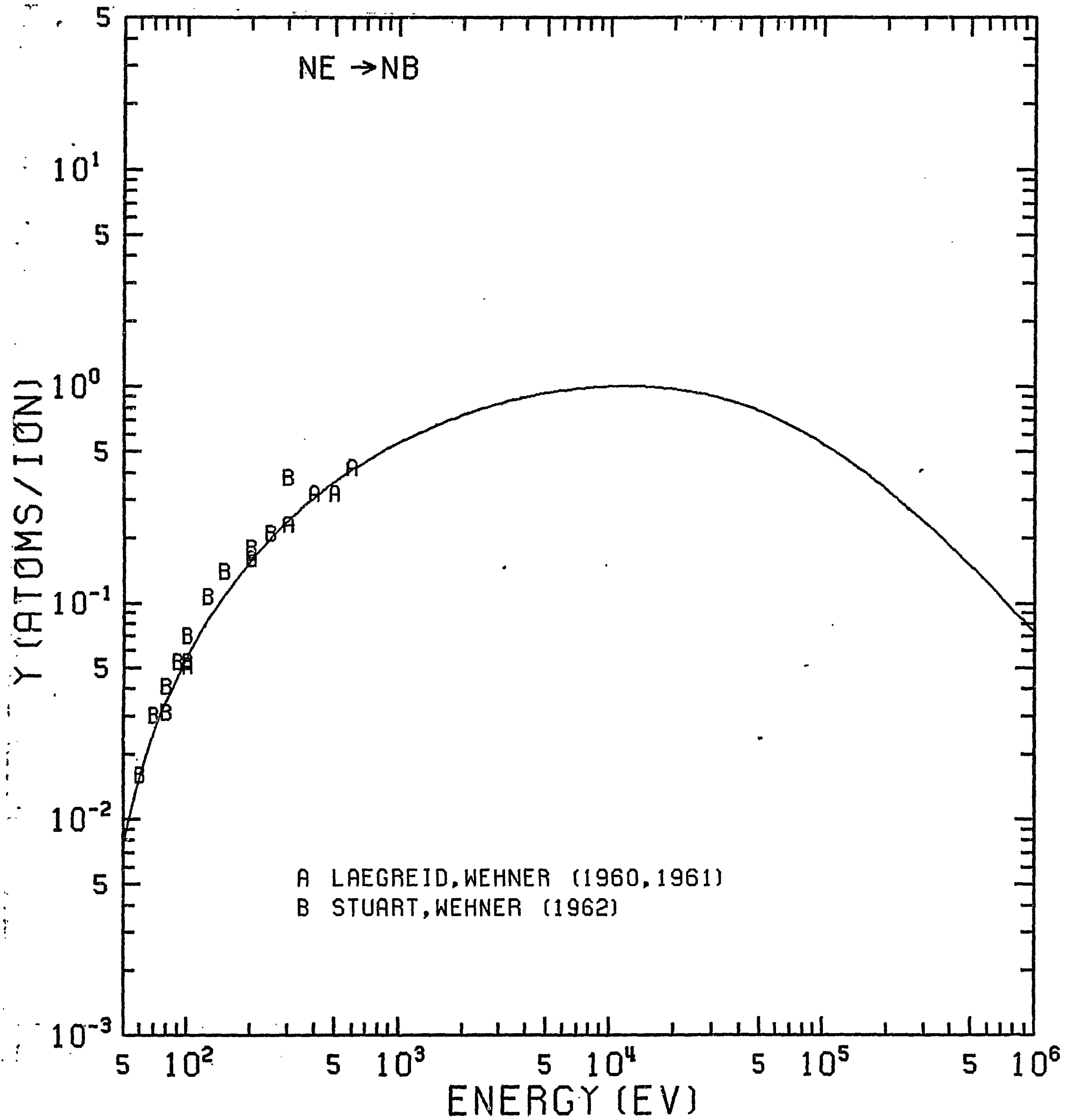

HG → ZR
Y (ATOMS/ION)
ENERGY (EV)
A WEHNER (1957)
B ASKEROV, SENA (1969)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

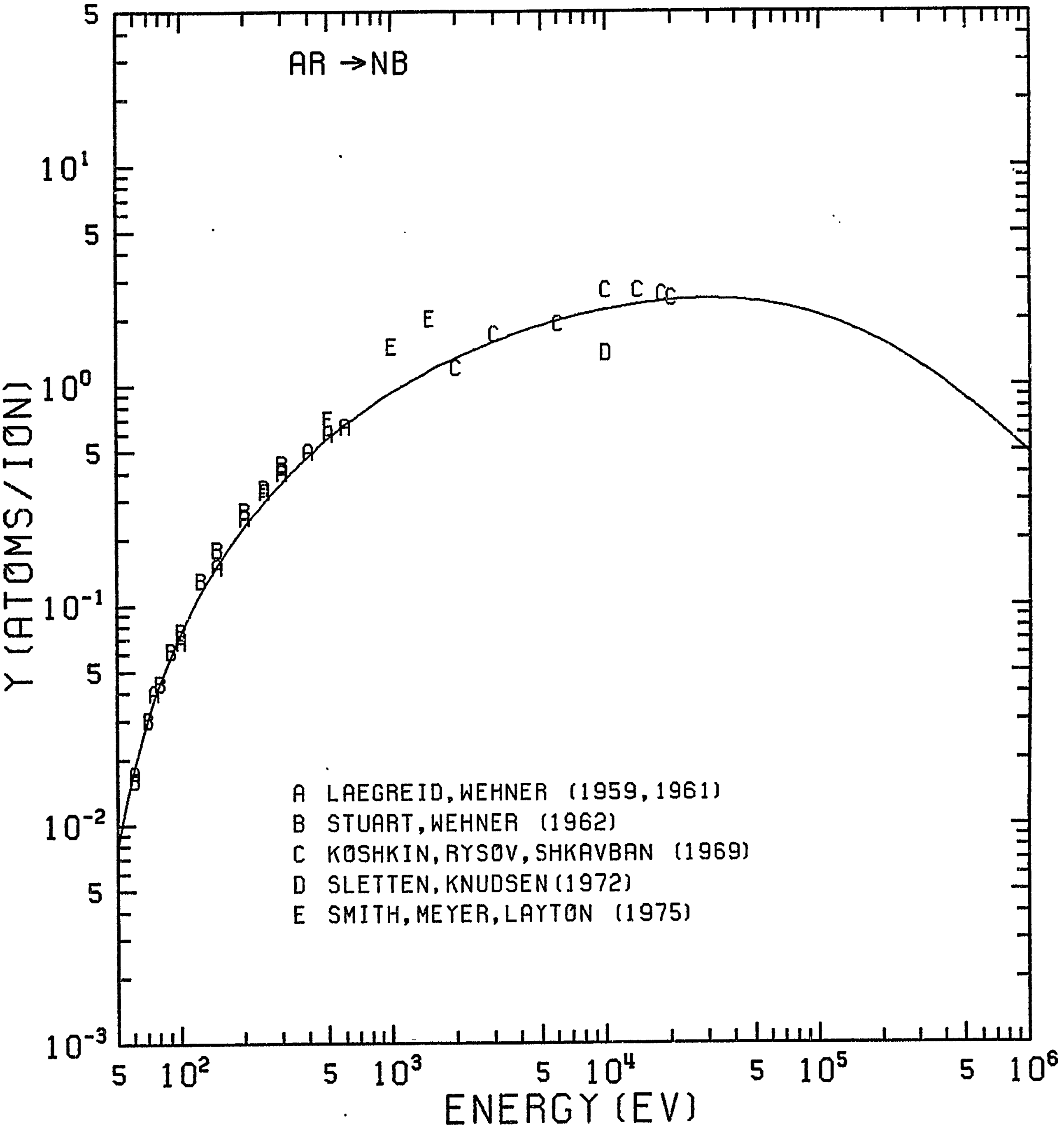

H →NB
A SUMMERS, FREEMAN, DALY (1971)
B ØLLERHEAD, MANN, KNEFF (1976)
C BEHRISCH, HARLING, THØMAS (1977)
A
A
Y (ATØMS/IØN)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)

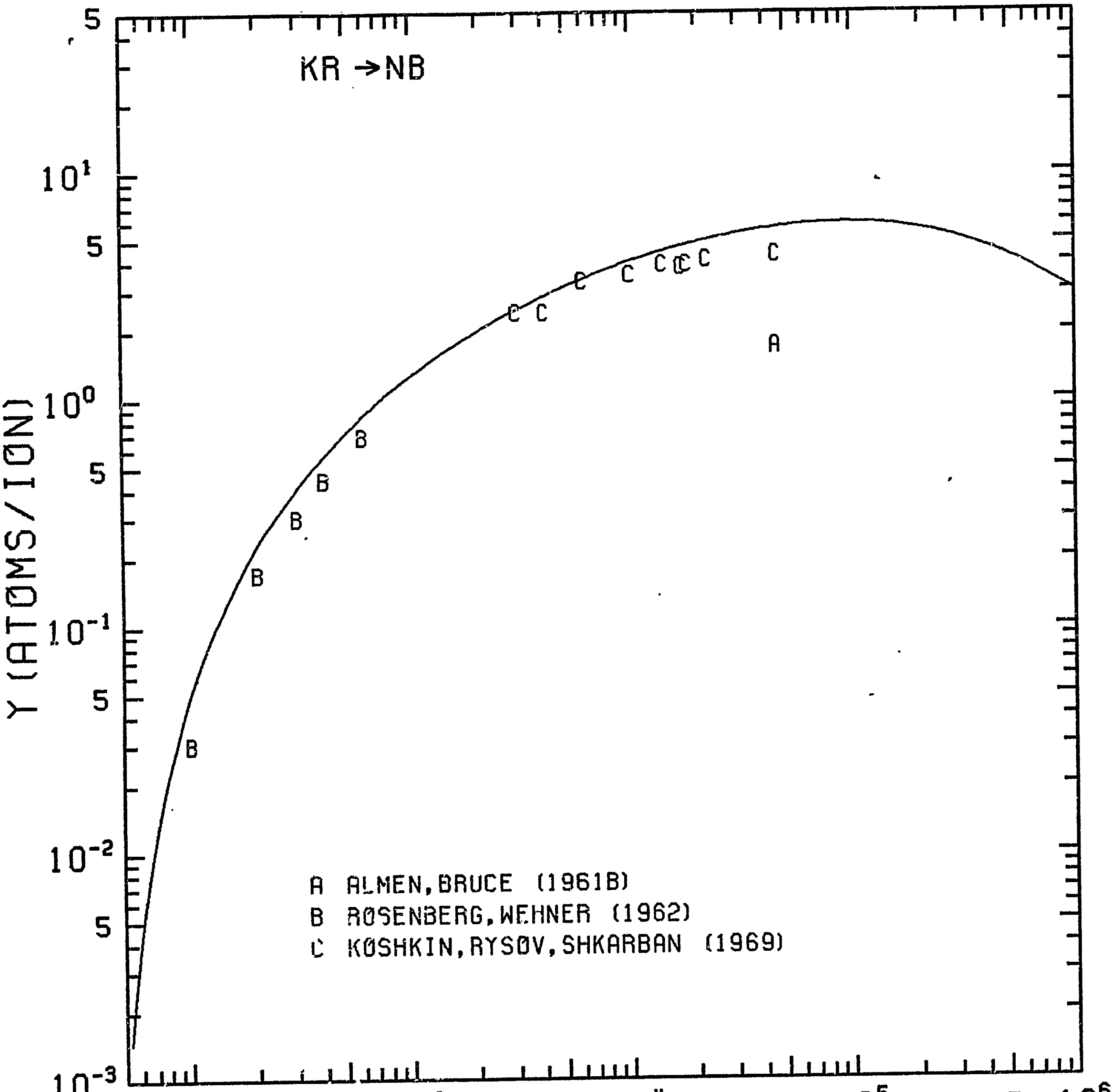

D →NB
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5 10² 5 10³ 5 10⁴ 5 10⁵ 5 10⁶
A SUMMERS, FREEMAN, DALY (1971)
B ECKSTEIN, SCHERZER, VERBEEK (1973)
A
B

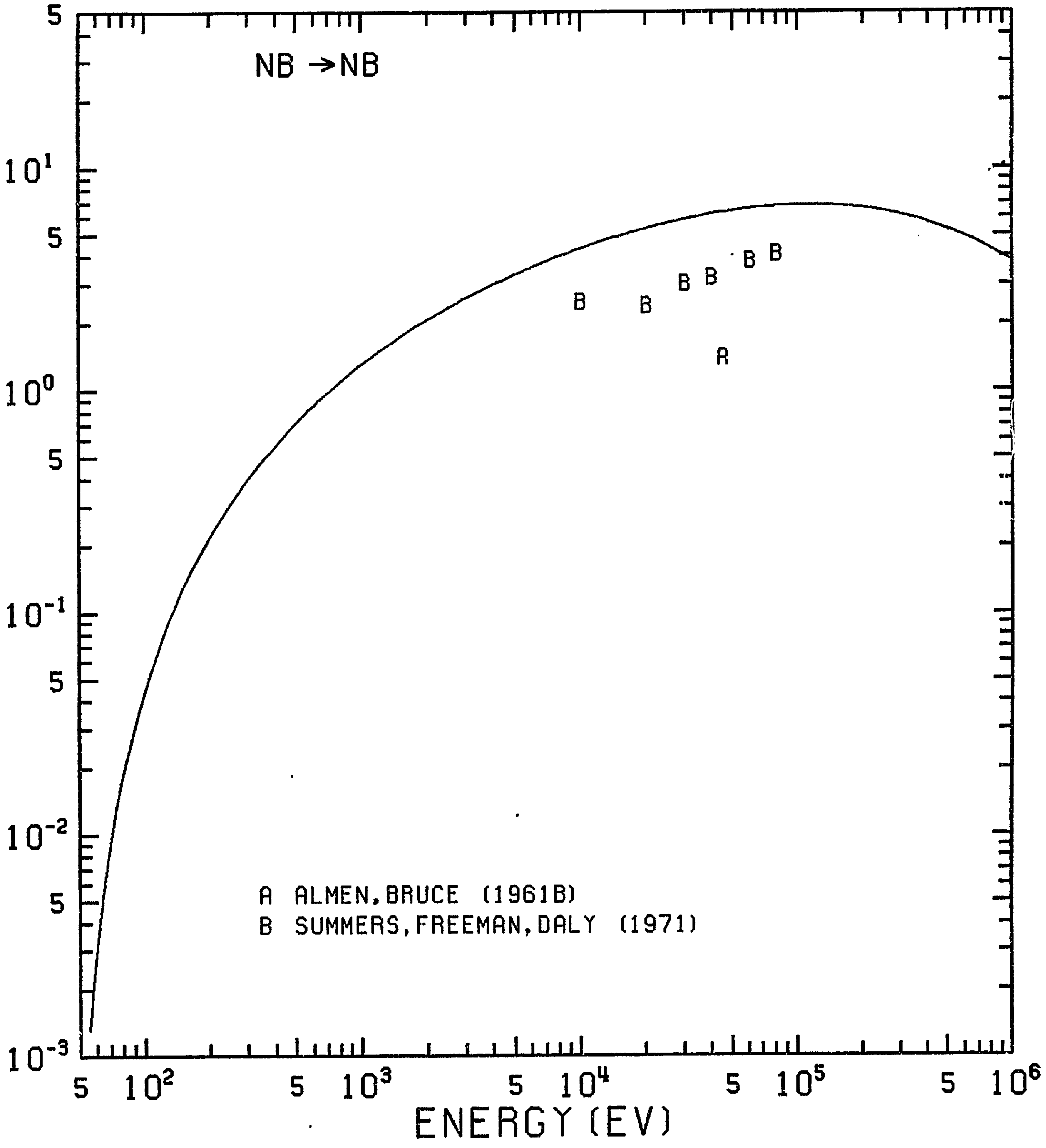

HE →NB
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ROSENBERG, WEHNER (1962)
B SUMMERS, FREEMAN, DALY (1971)

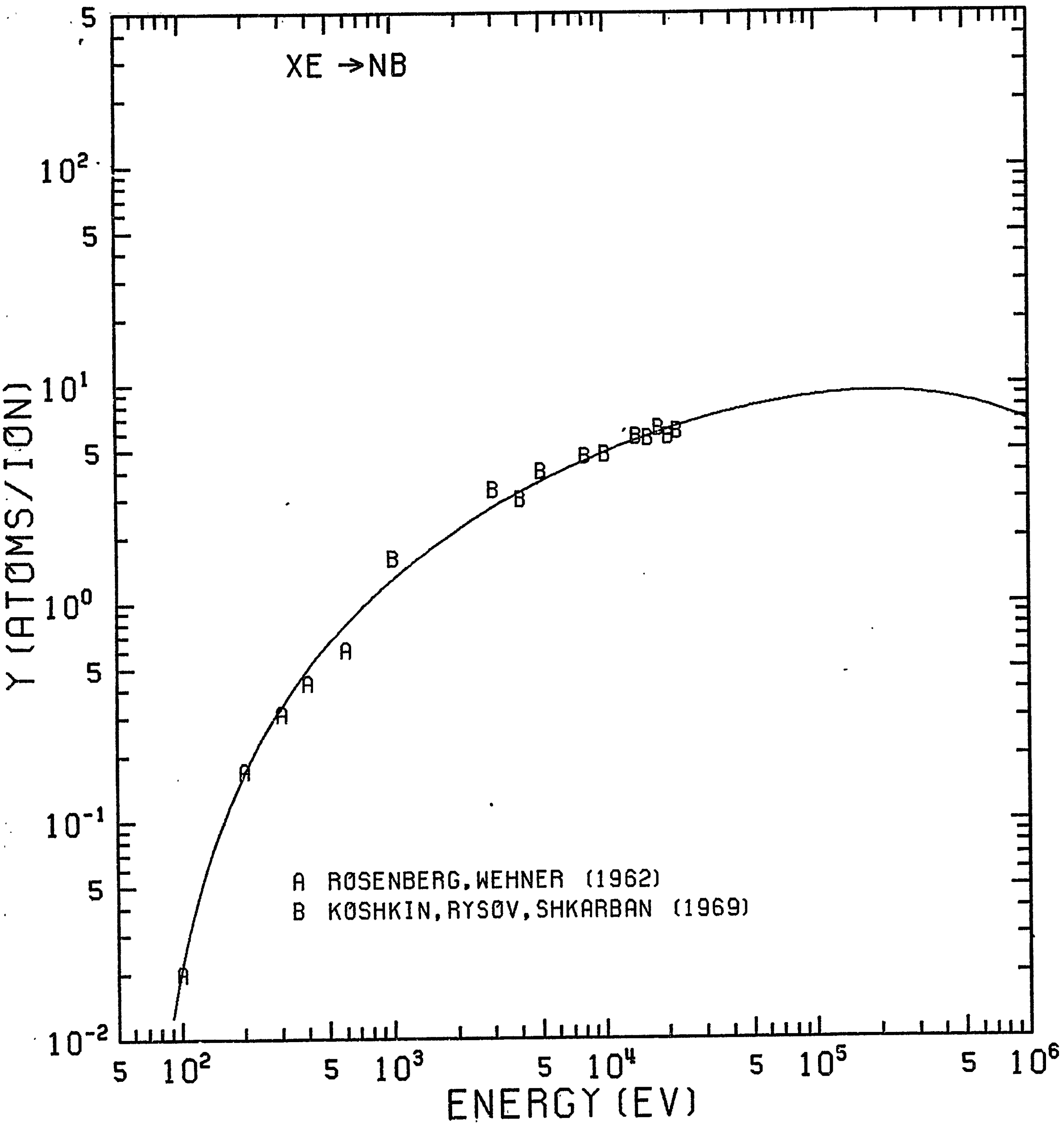

LI →NB
A MARTYNENKO (1969)
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
A

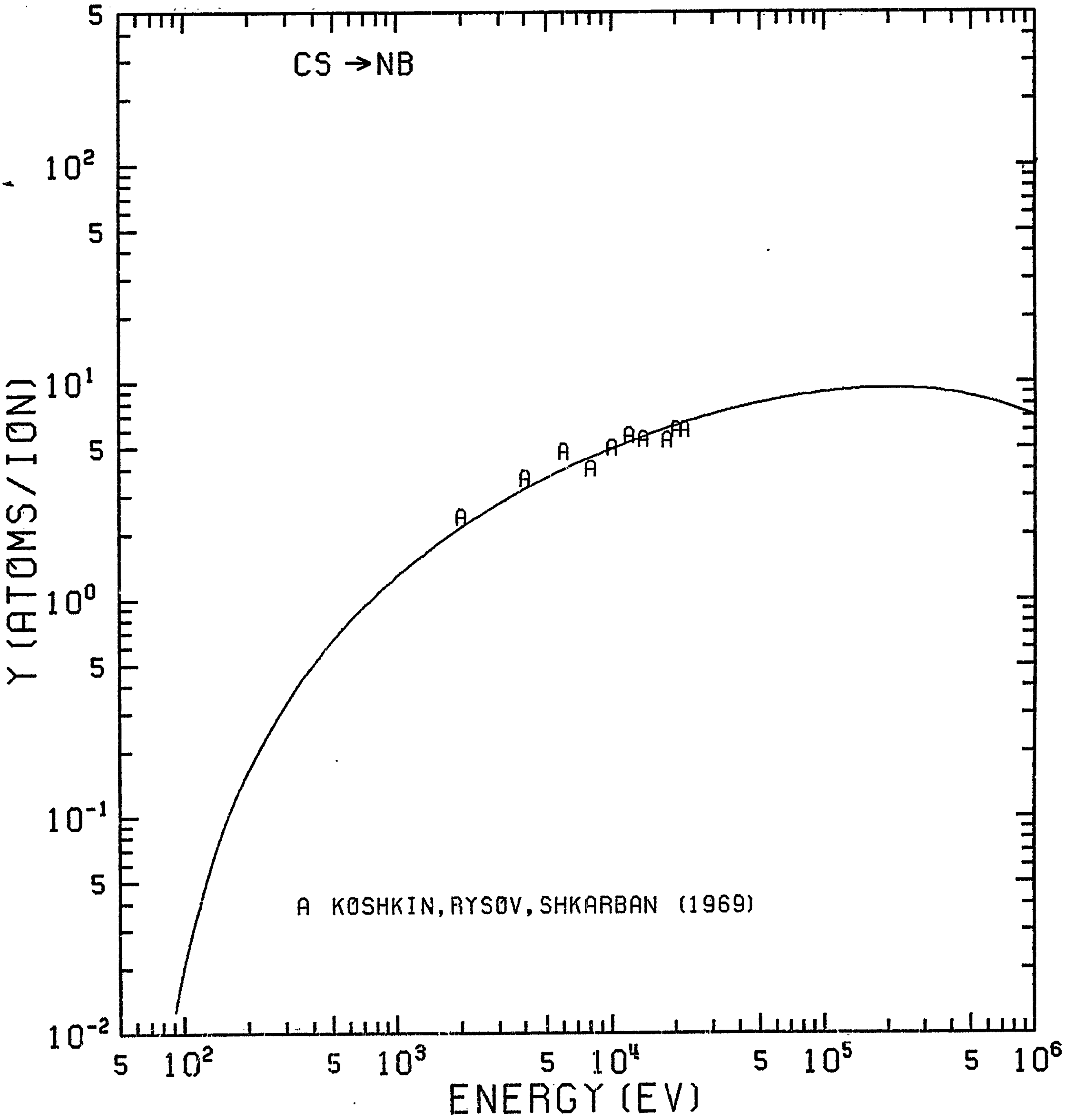

NE →NB
Y (ATOMS/ION)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A LAEGREID,WEHNER (1960,1961)
B STUART,WEHNER (1962)

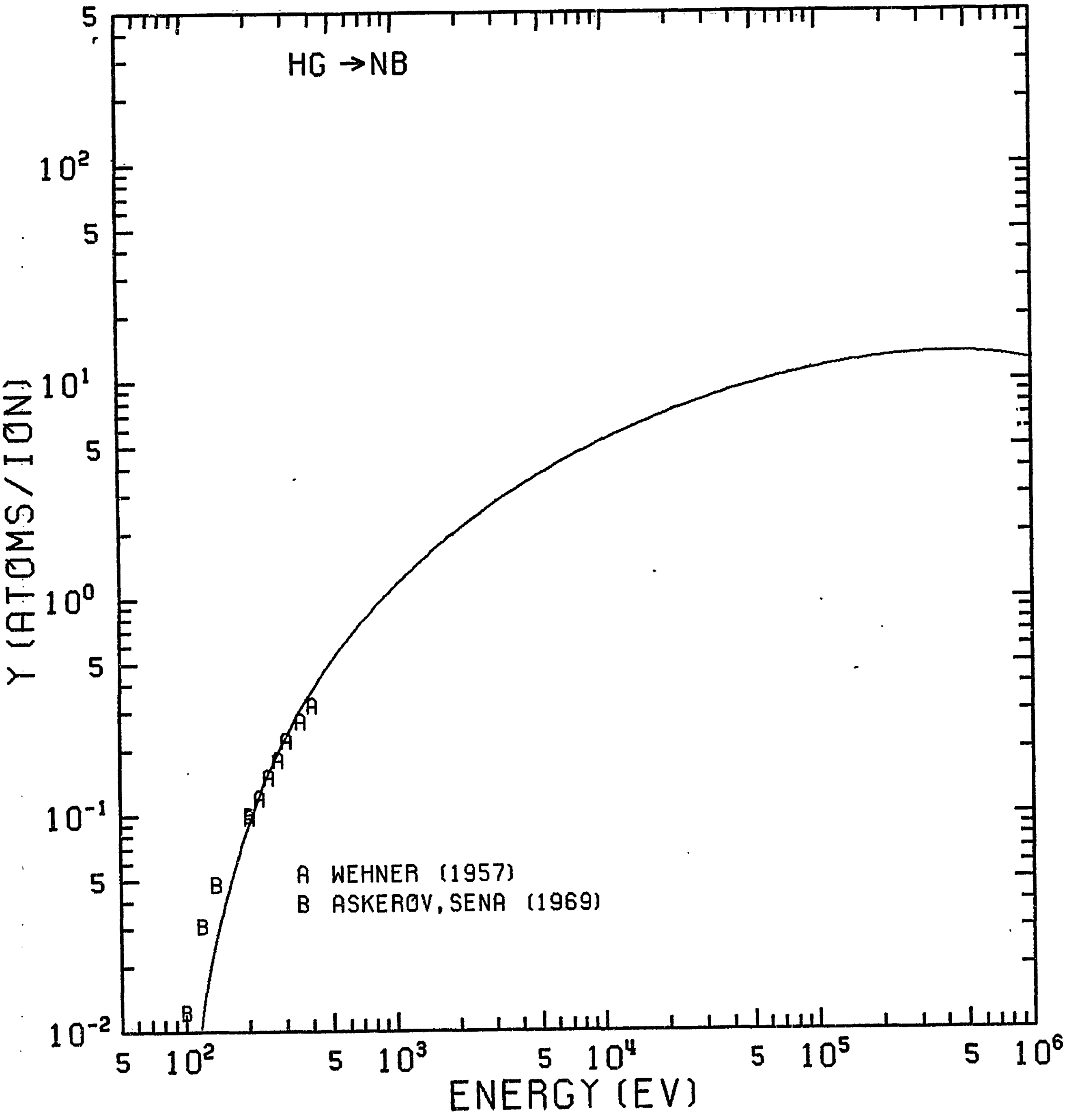

AR → NB
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A LAEGREID, WEHNER (1959, 1961)
B STUART, WEHNER (1962)
C KOSHKIN, RYSOV, SHKAVBAN (1969)
D SLETTEN, KNUDSEN (1972)
E SMITH, MEYER, LAYTON (1975)

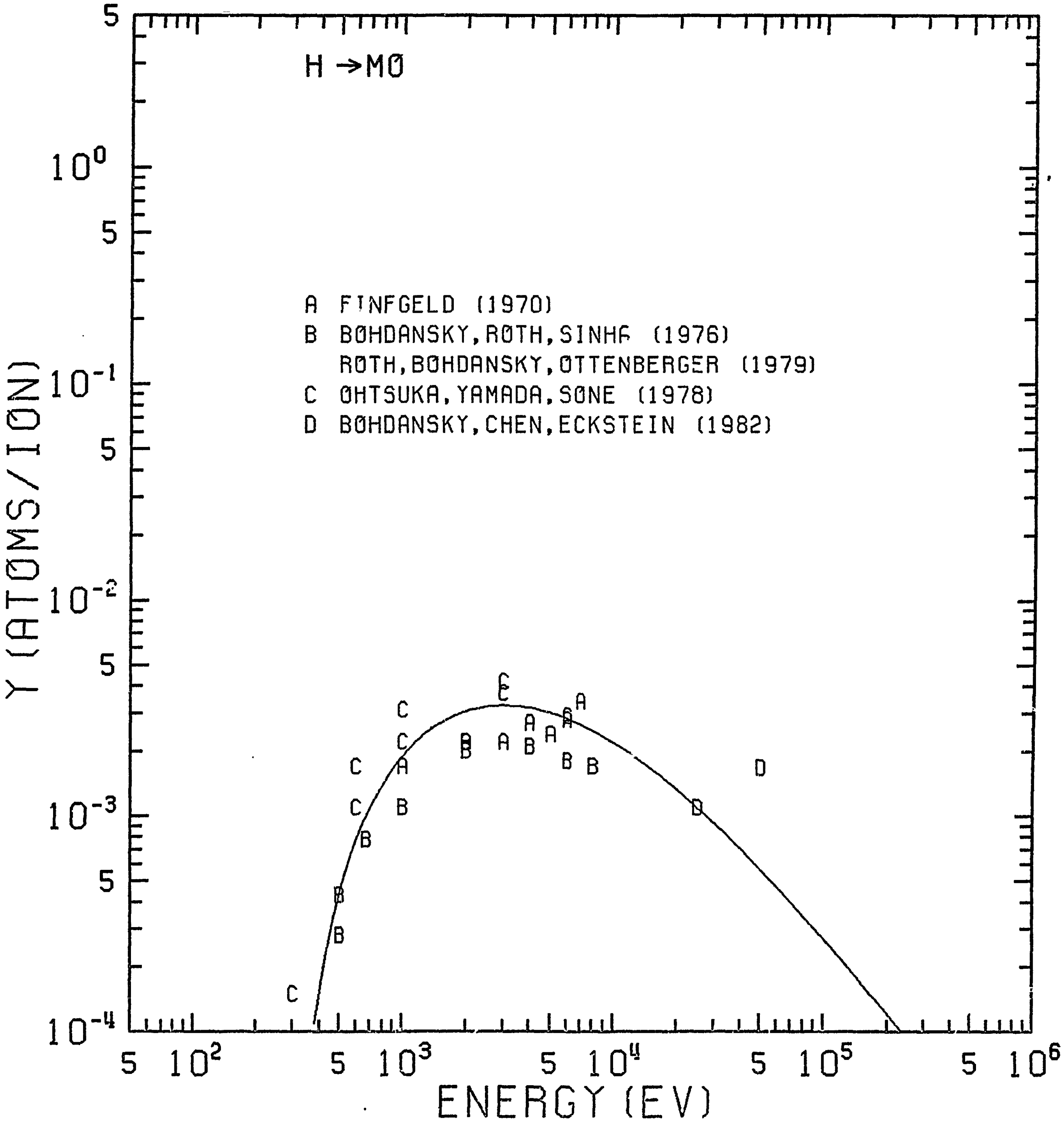

KR → NB
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961B)
B ROSENBERG, WEHNER (1962)
C KOSHKIN, RYSOV, SHKARBAN (1969)

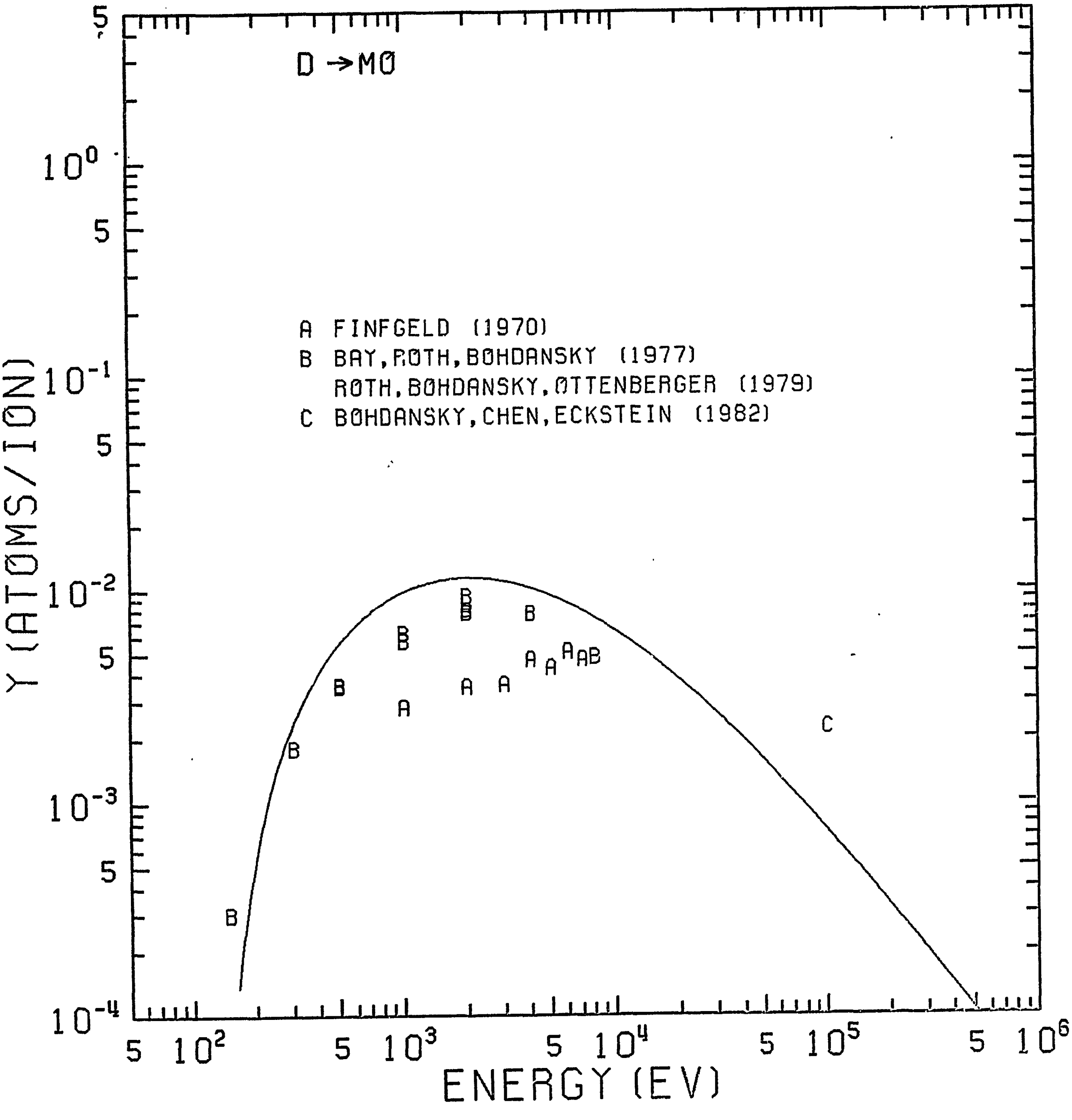

NB →NB
Y (ATØMS/IØN)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
B
B
B
B
B
B
A
A ALMEN, BRUCE (1961B)
B SUMMERS, FREEMAN, DALY (1971)

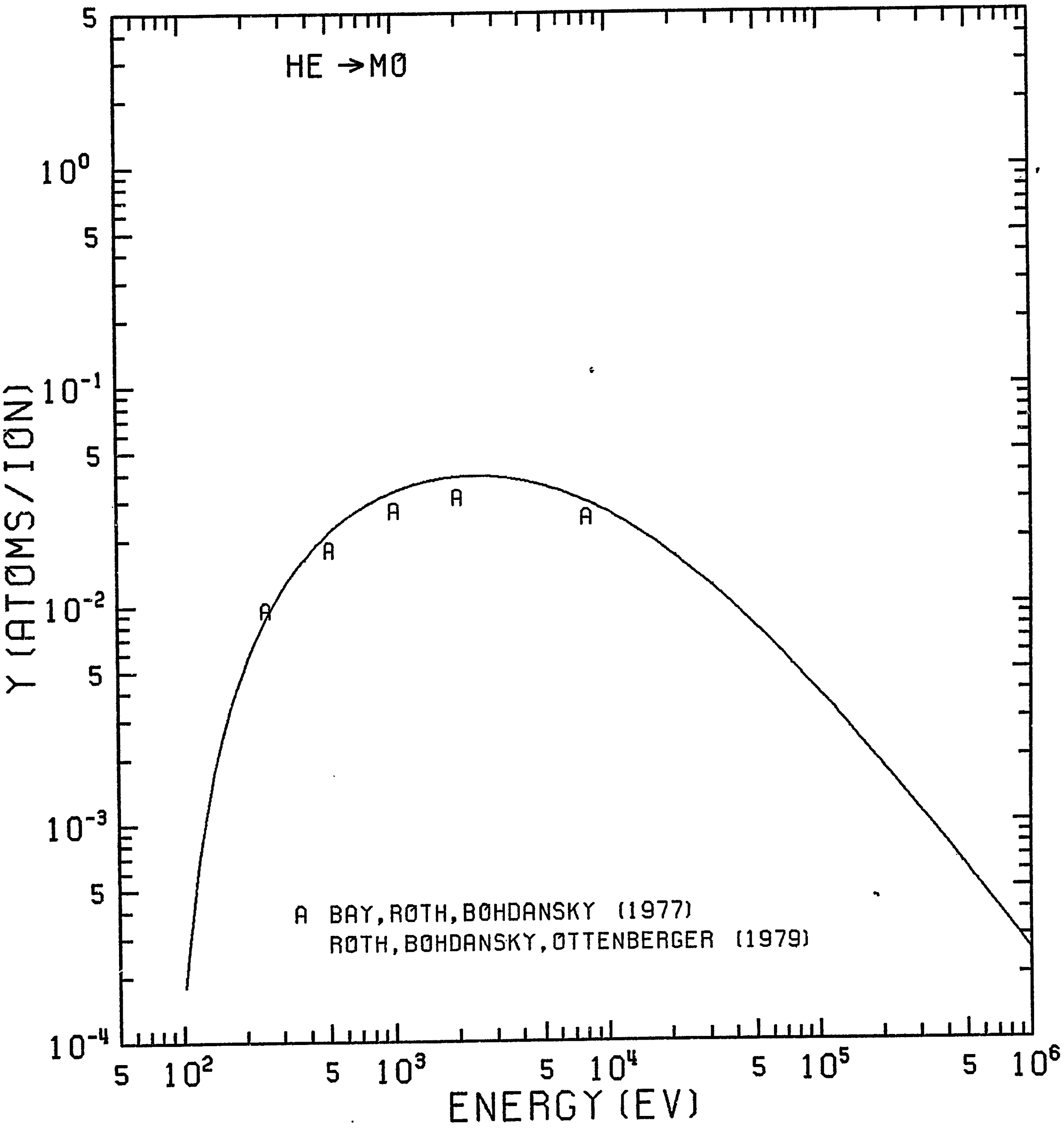

XE →NB
Y (ATØMS/IØN)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
A ROSENBERG, WEHNER (1962)
B KØSHKIN, RYSØV, SHKARBAN (1969)
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)

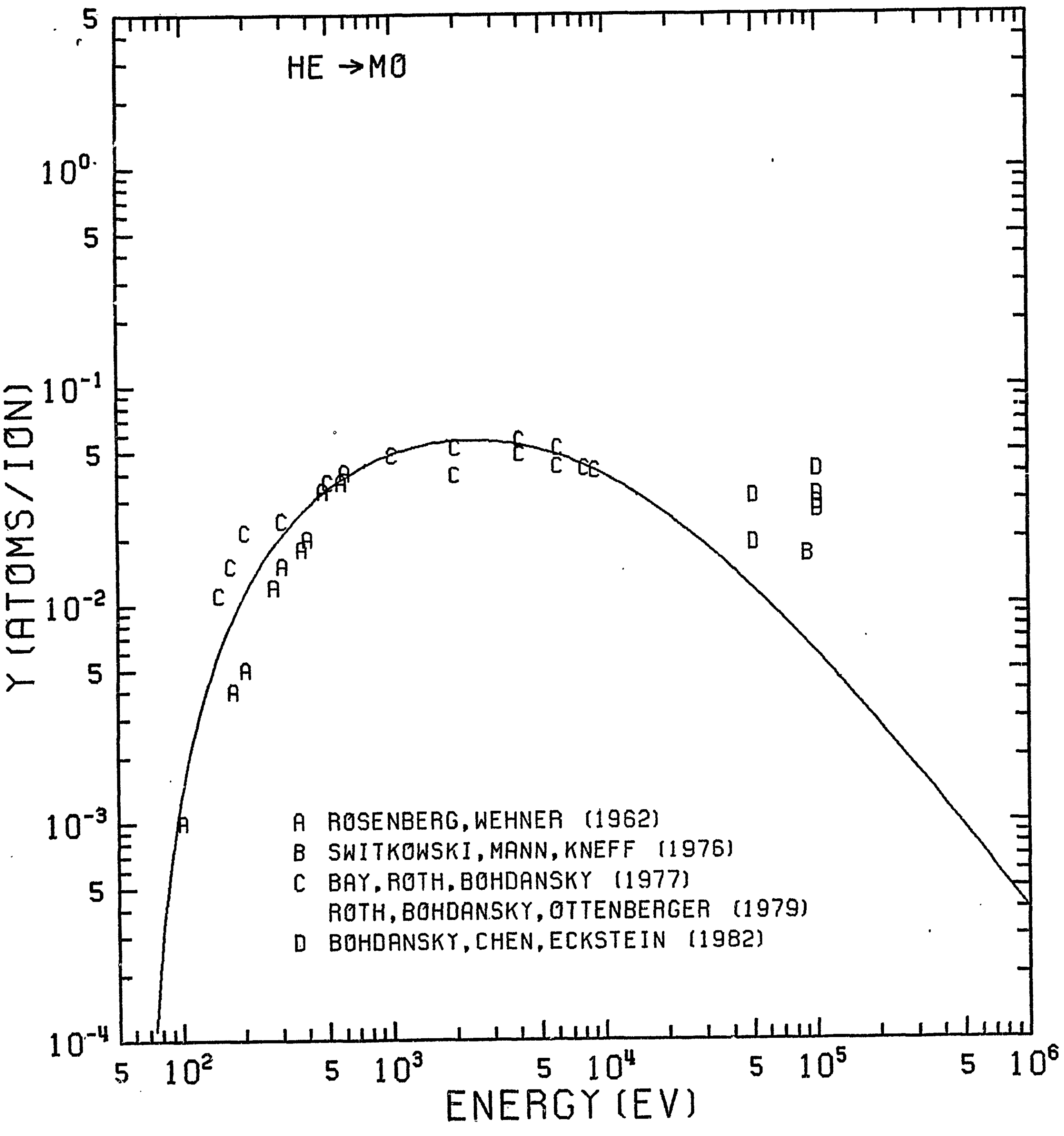

CS →NB
A KØSHKIN, RYSØV, SHKARBAN (1969)
Y (ATØMS/IØN)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A

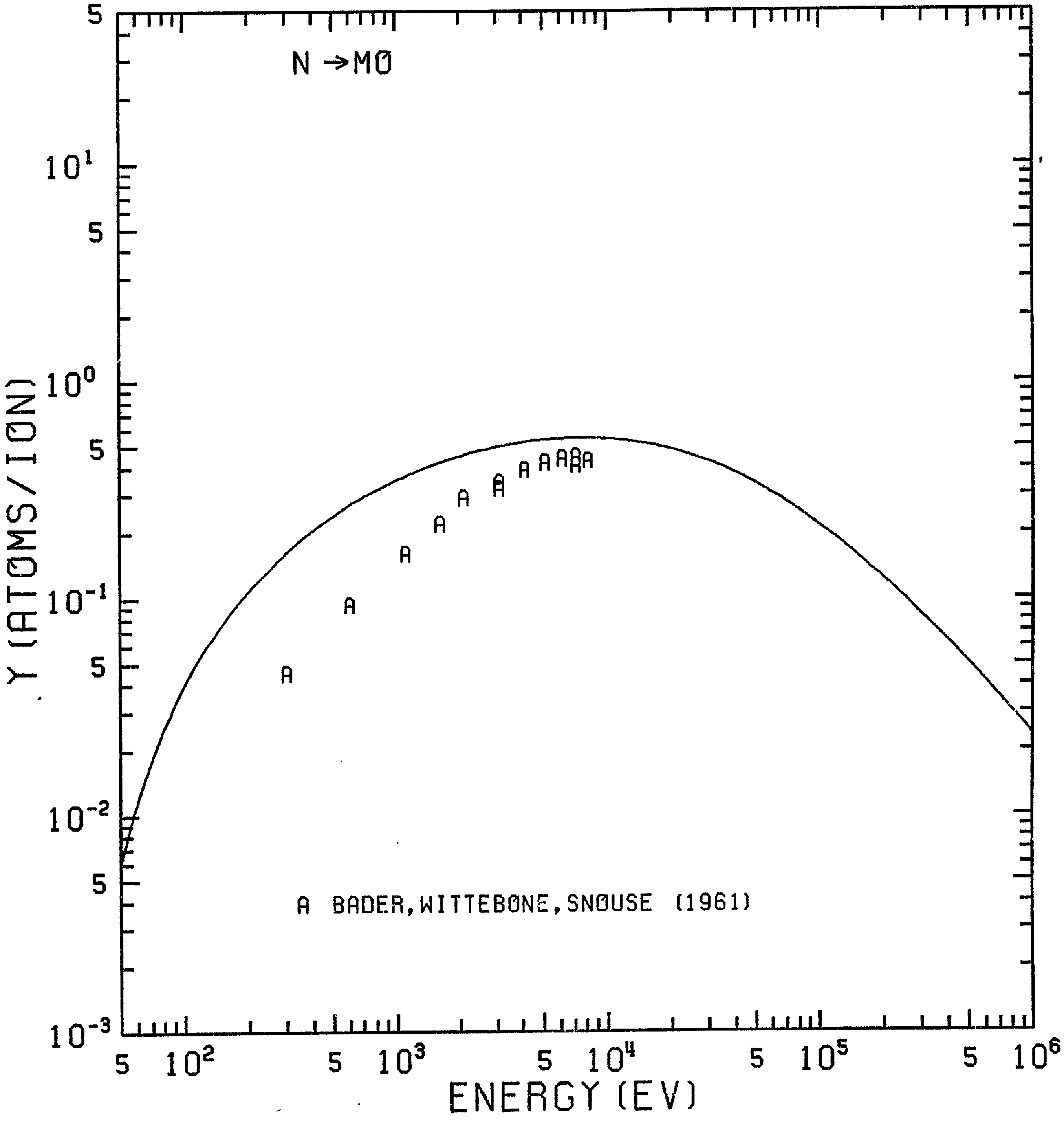

HG →NB
Y (ATOMS/ION)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A WEHNER (1957)
B ASKEROV, SENA (1969)
A
B

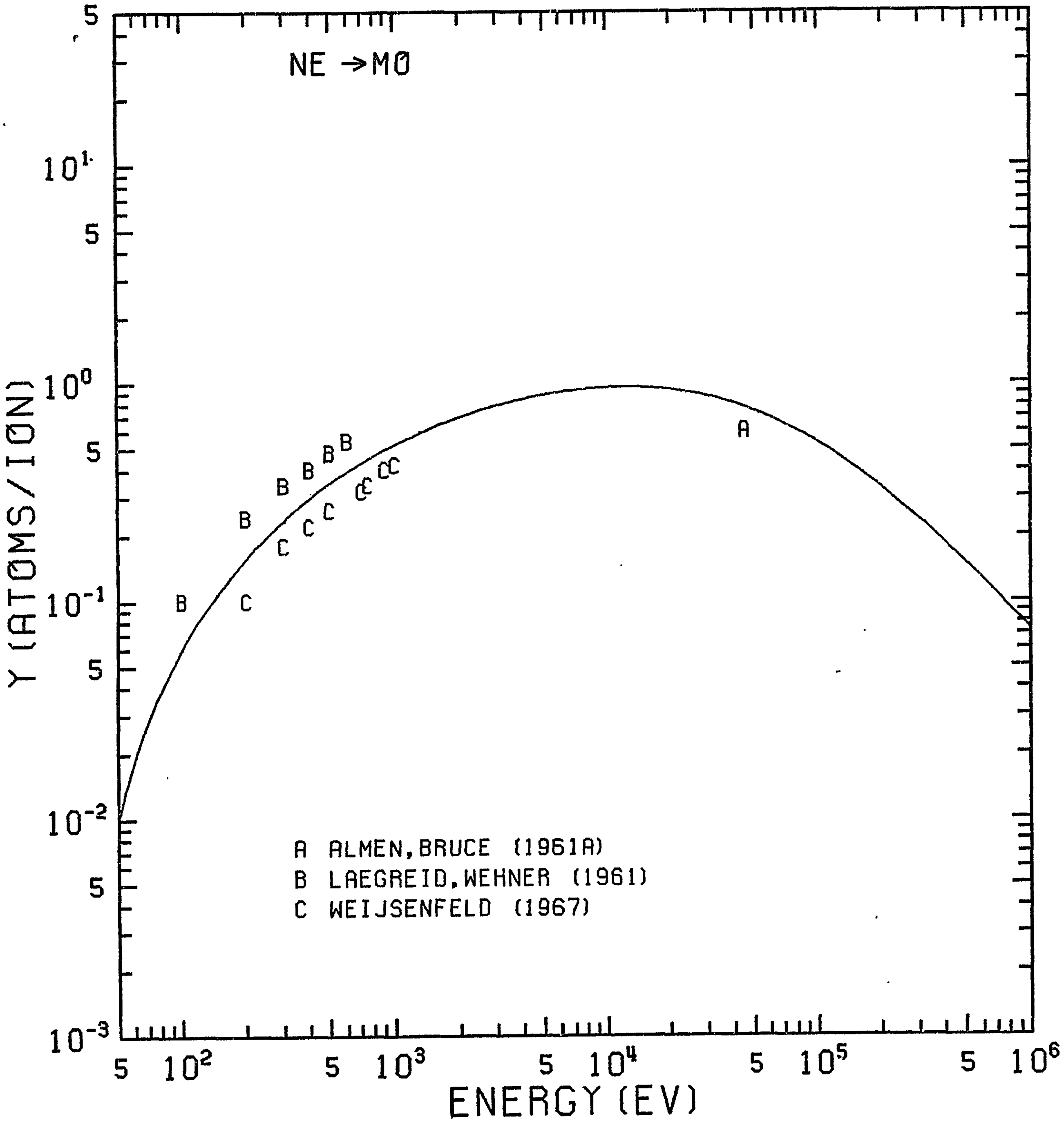

H →MO
A FINFGELD (1970)
B BOHDANSKY, ROTH, SINHA (1976)
ROTH, BOHDANSKY, OTTENBERGER (1979)
C OHTSUKA, YAMADA, SONE (1978)
D BOHDANSKY, CHEN, ECKSTEIN (1982)
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

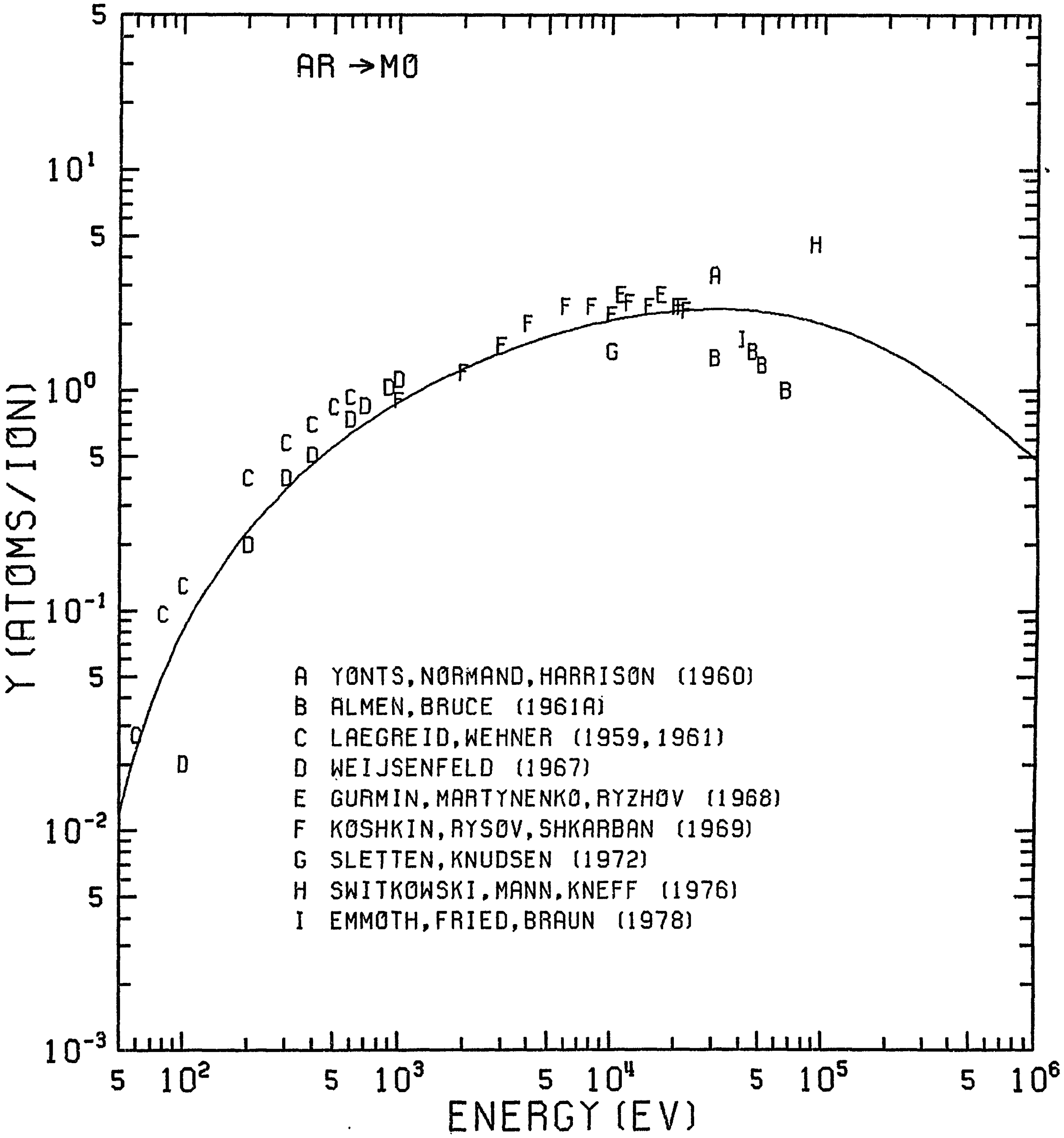

D → MO
A FINFGELD (1970)
B BAY, ROTH, BOHDANSKY (1977)
ROTH, BOHDANSKY, OTTENBERGER (1979)
C BOHDANSKY, CHEN, ECKSTEIN (1982)
Y (ATOMS/ION)
10^{0}
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5 10^{2}
5 10^{3}
5 10^{4}
5 10^{5}
5 10^{6}
ENERGY (EV)

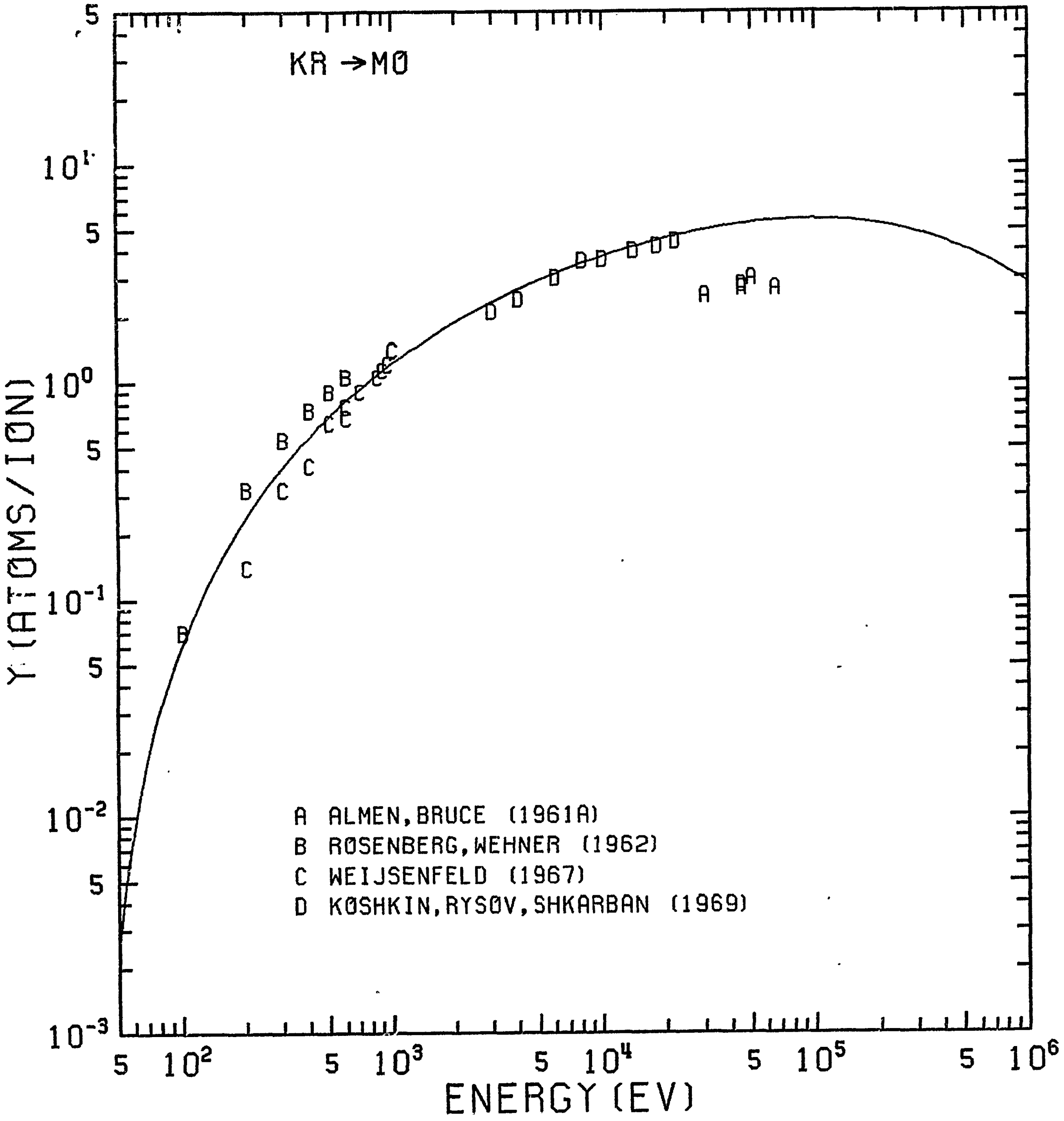

HE → MO
Y (ATOMS/ION)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A BAY, ROTH, BOHDANSKY (1977)
ROTH, BOHDANSKY, OTTENBERGER (1979)

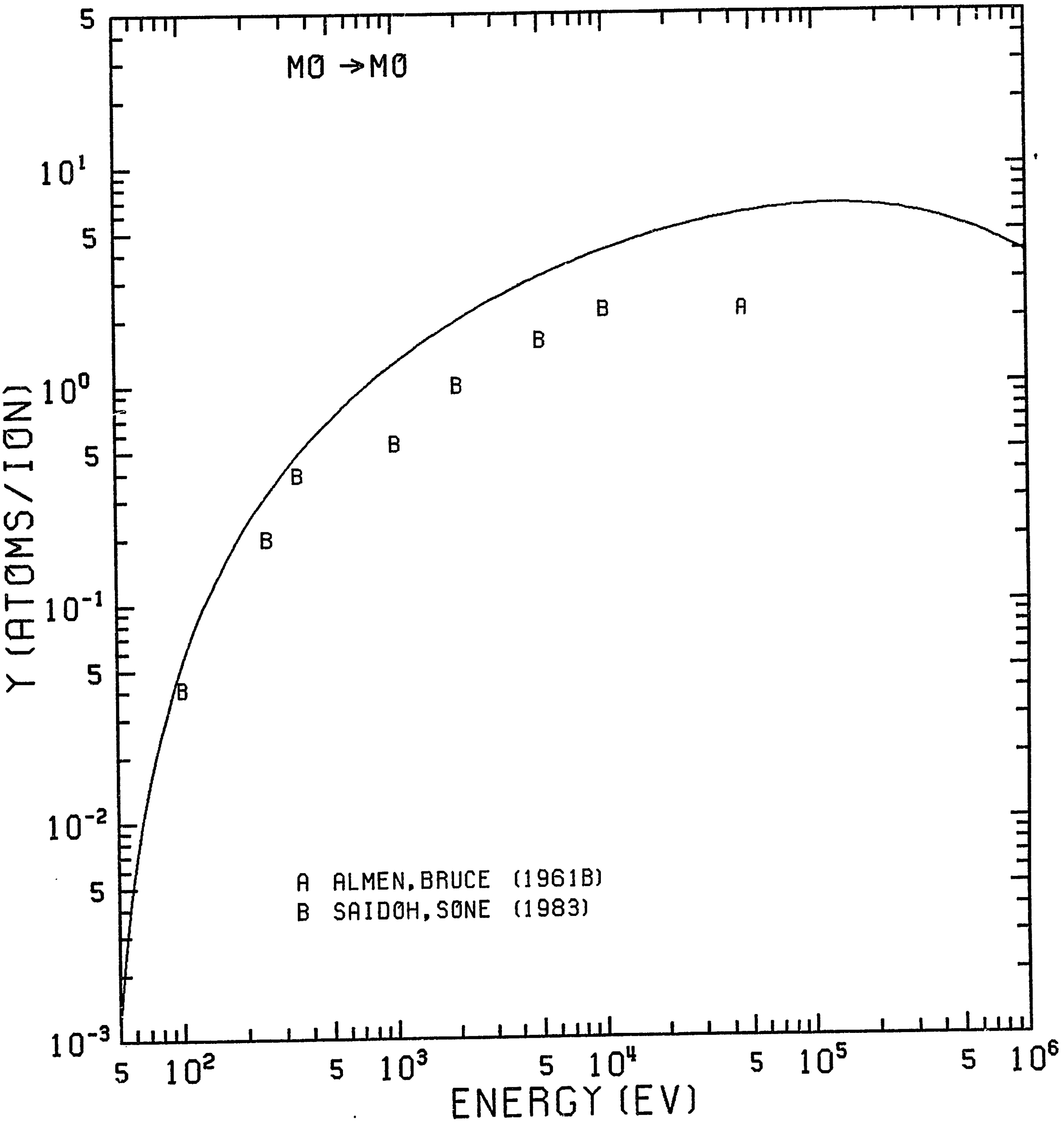

HE →MO
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ROSENBERG, WEHNER (1962)
B SWITKOWSKI, MANN, KNEFF (1976)
C BAY, ROTH, BOHDANSKY (1977)
ROTH, BOHDANSKY, OTTENBERGER (1979)
D BOHDANSKY, CHEN, ECKSTEIN (1982)

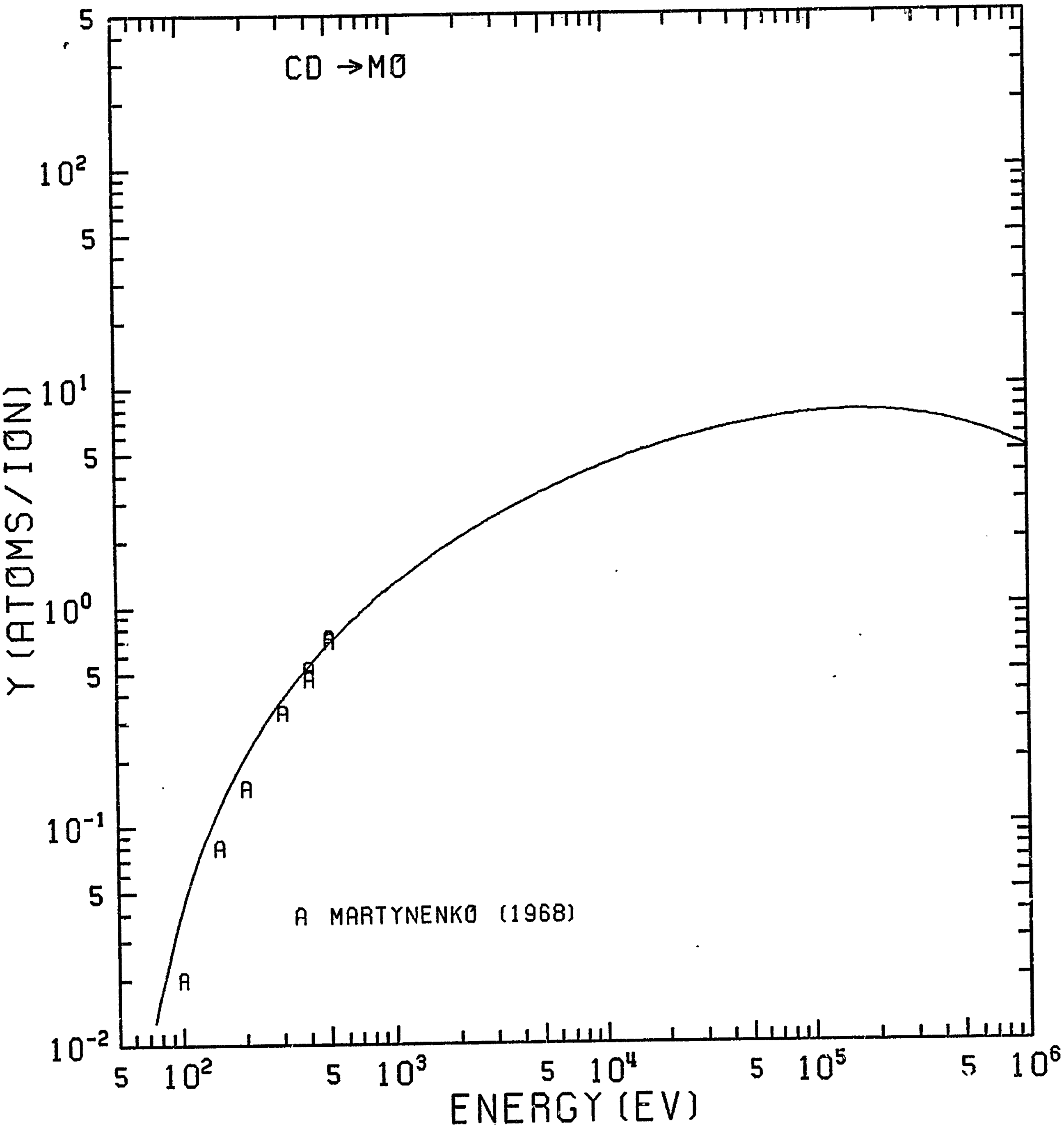

N →MO
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
Y (ATOMS/ION)
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A BADER, WITTEBONE, SNOUSE (1961)

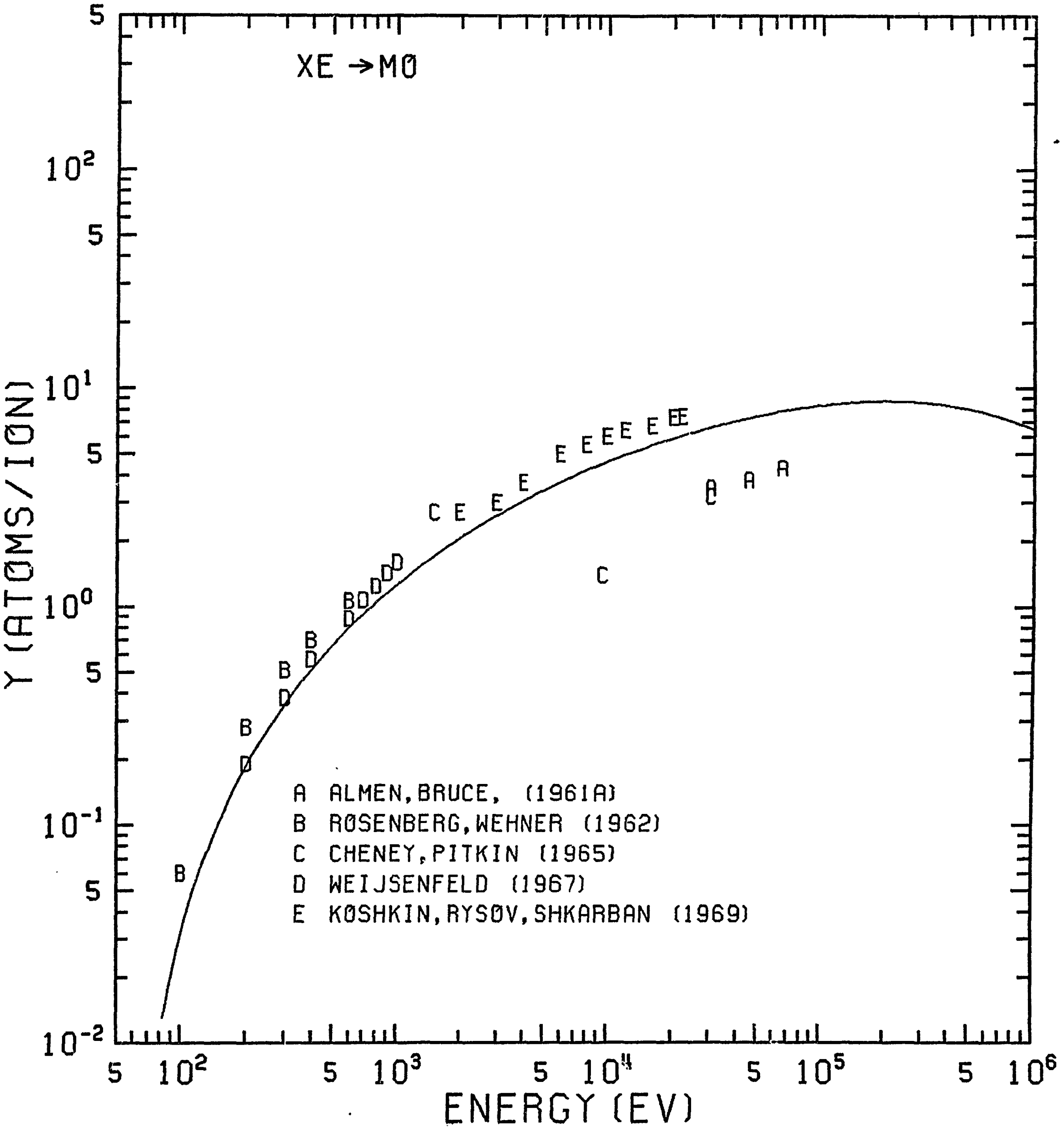

NE →MO
Y (ATOMS/ION)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A
B
C
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1961)
C WEIJSENFELD (1967)

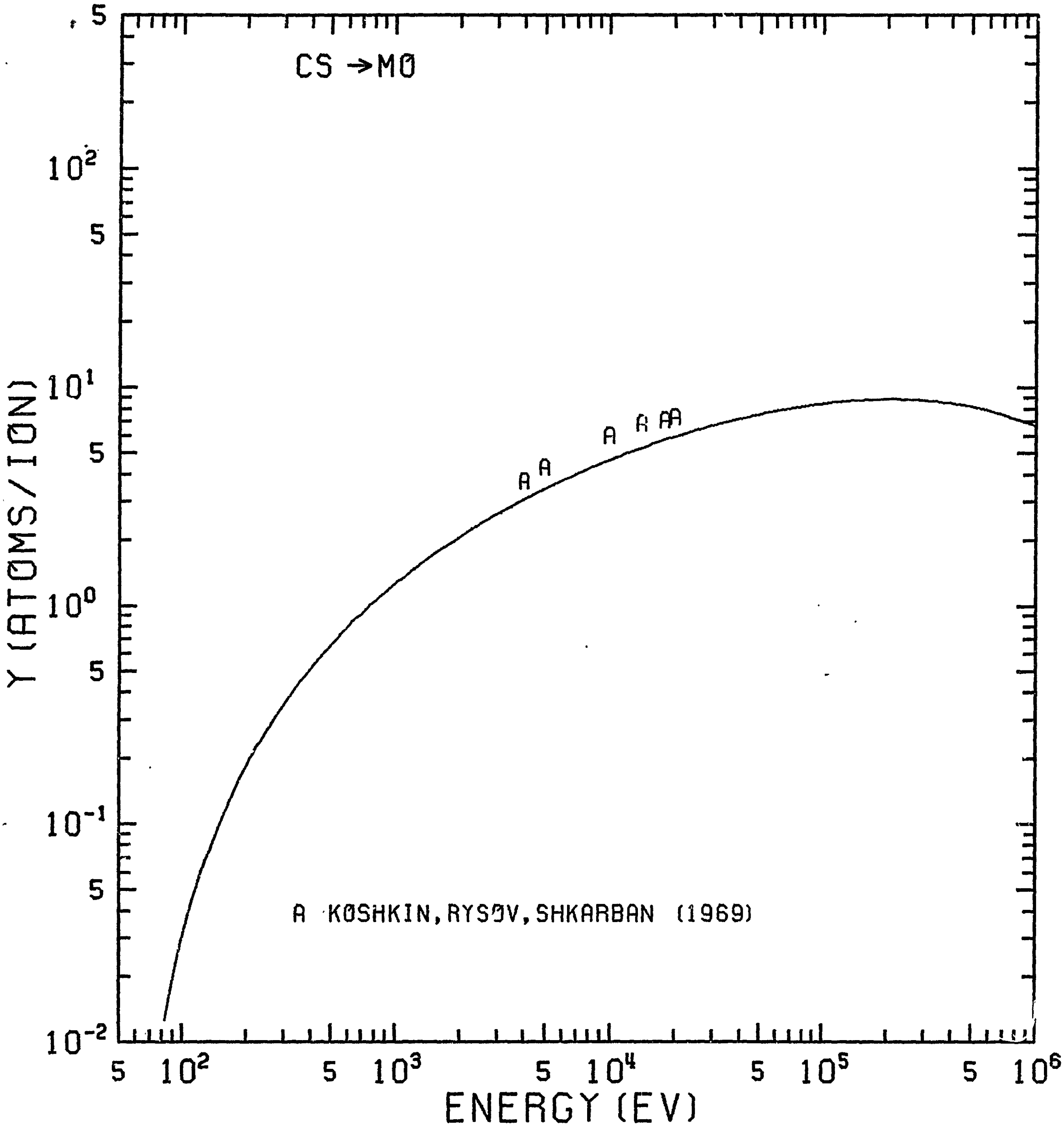

AR →MO
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A YONTS, NORMAND, HARRISON (1960)
B ALMEN, BRUCE (1961A)
C LAEGREID, WEHNER (1959, 1961)
D WEIJSENFELD (1967)
E GURMIN, MARTYNENKO, RYZHOV (1968)
F KOSHKIN, RYSOV, SHKARBAN (1969)
G SLETTEN, KNUDSEN (1972)
H SWITKOWSKI, MANN, KNEFF (1976)
I EMMOTH, FRIED, BRAUN (1978)

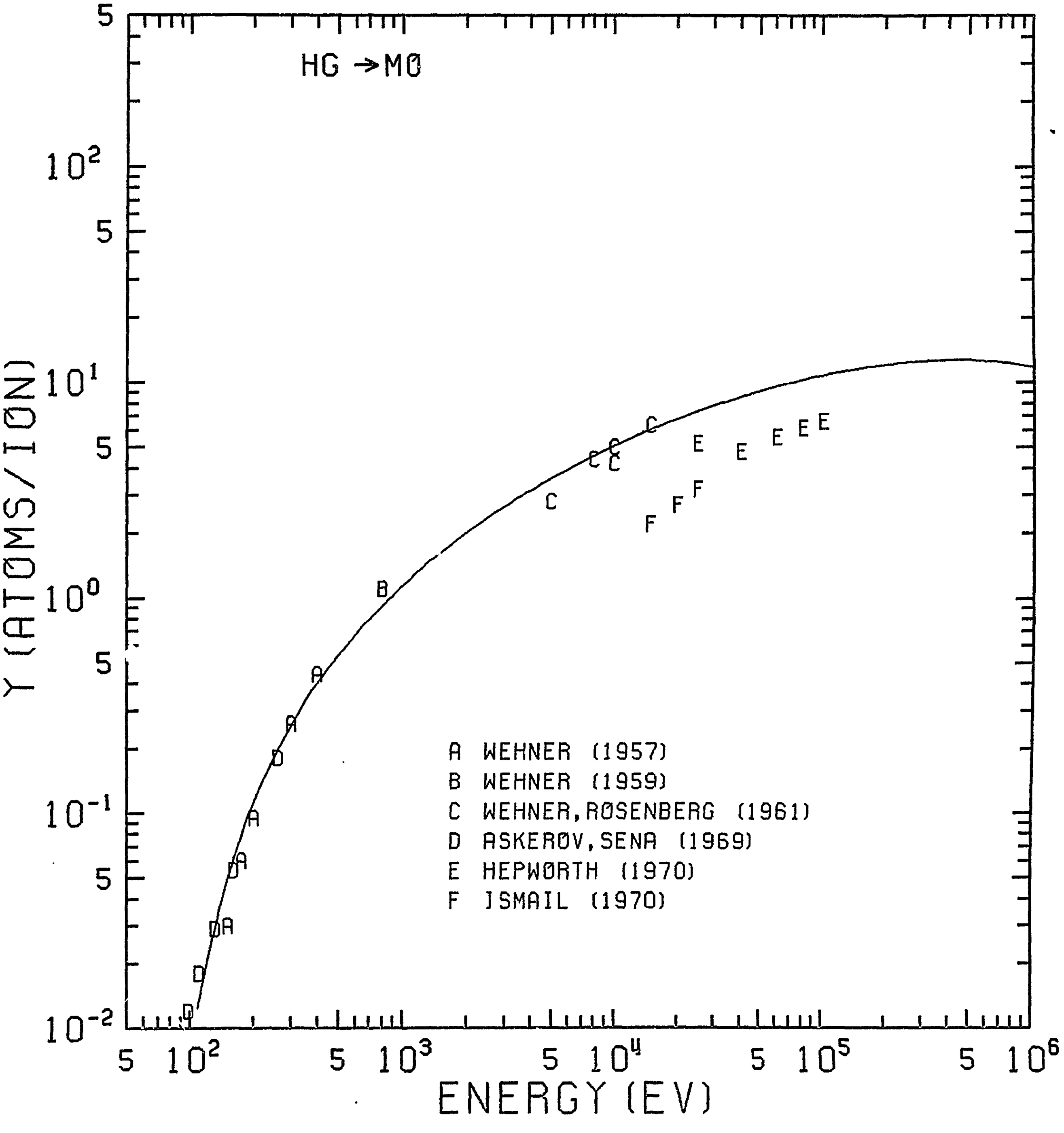

KR →MO
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)
C WEIJSENFELD (1967)
D KOSHKIN, RYSOV, SHKARBAN (1969)

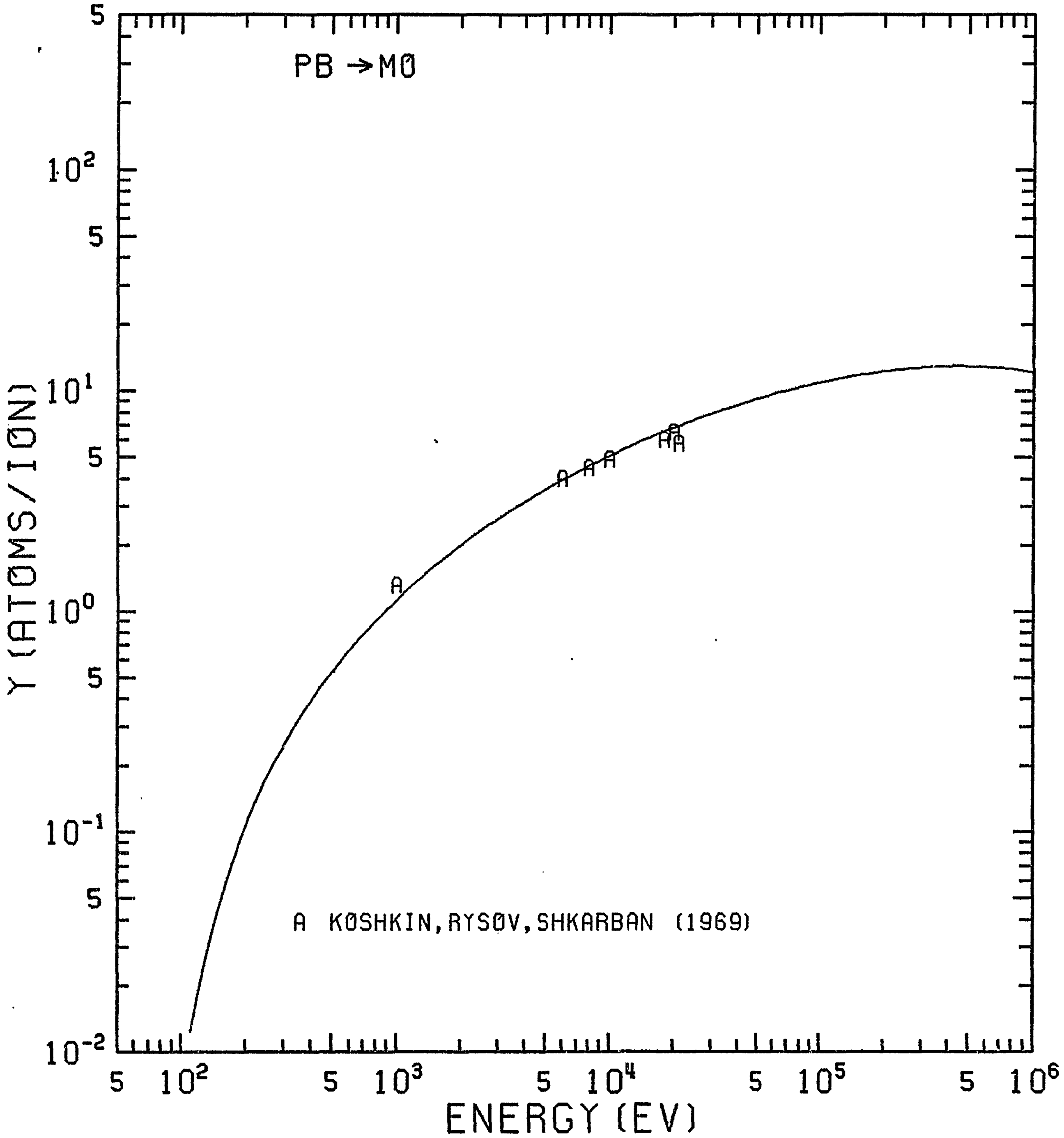

MO →MO
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961B)
B SAIDOH, SONE (1983)
A
B

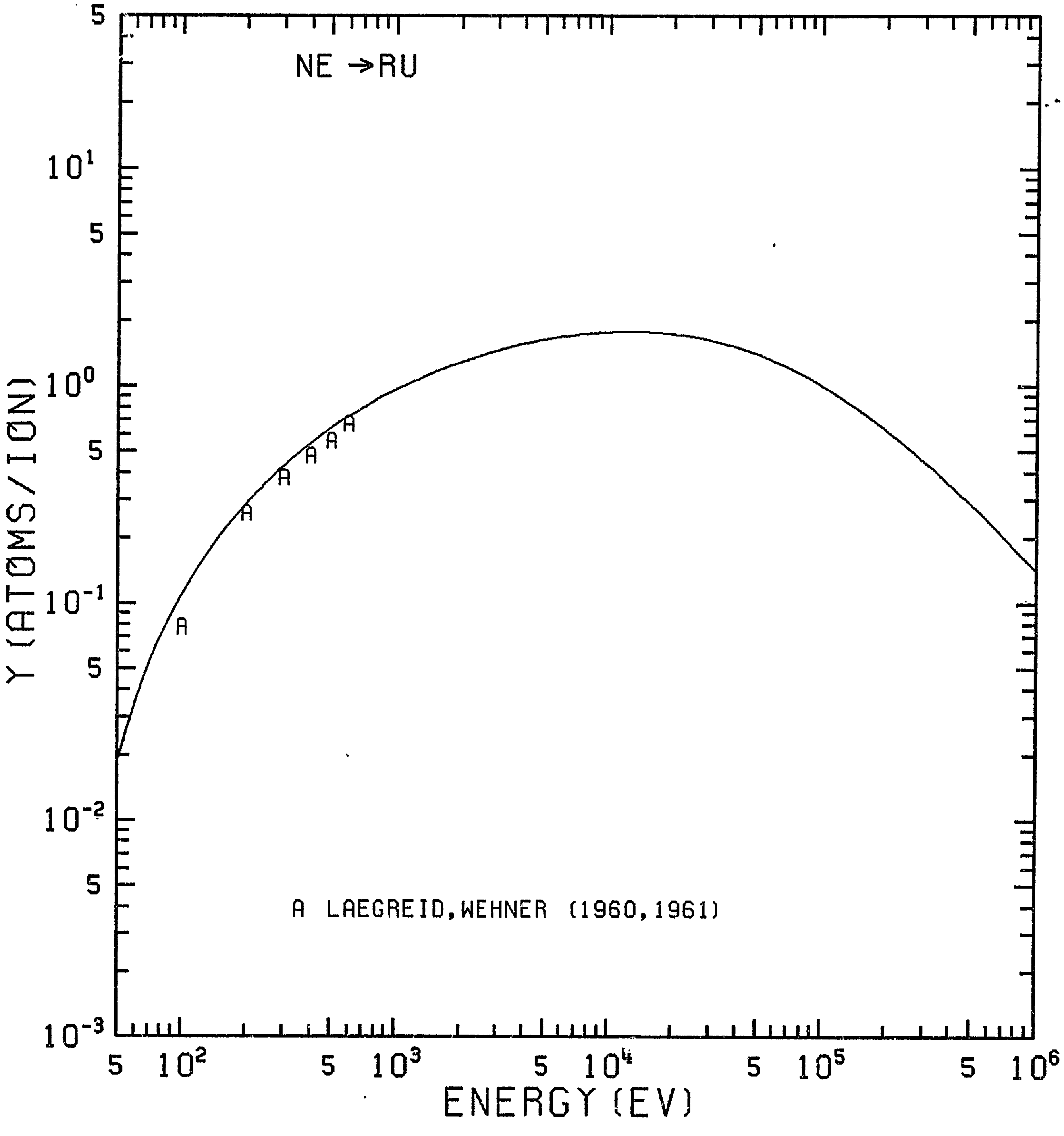

CD →MO
A MARTYNENKO (1968)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

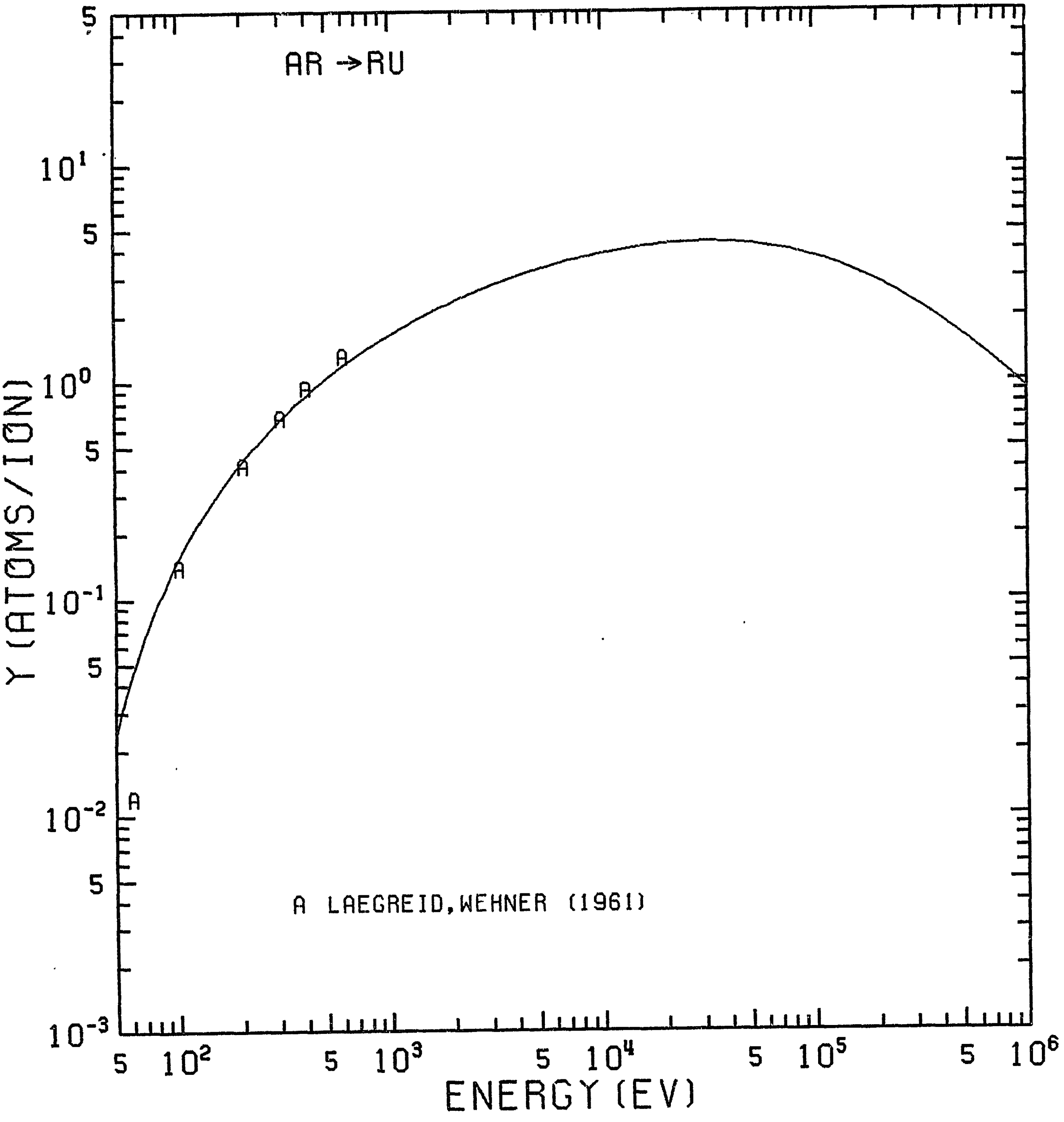

XE → MO
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE, (1961A)
B ROSENBERG, WEHNER (1962)
C CHENEY, PITKIN (1965)
D WEIJSENFELD (1967)
E KOSHKIN, RYSOV, SHKARBAN (1969)

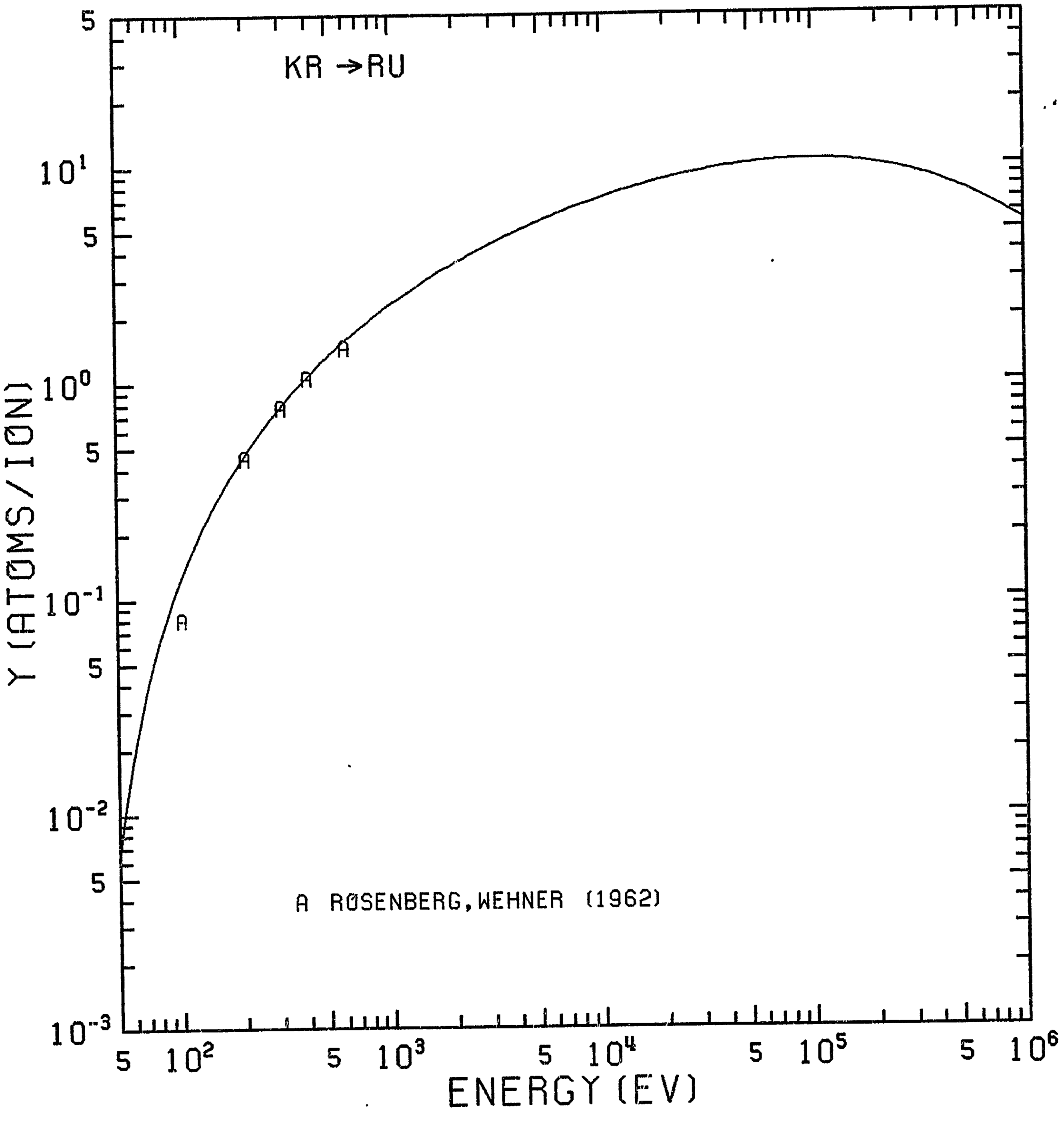

CS →M0
A KOSHKIN,RYSOV,SHKARBAN (1969)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
A
A
A

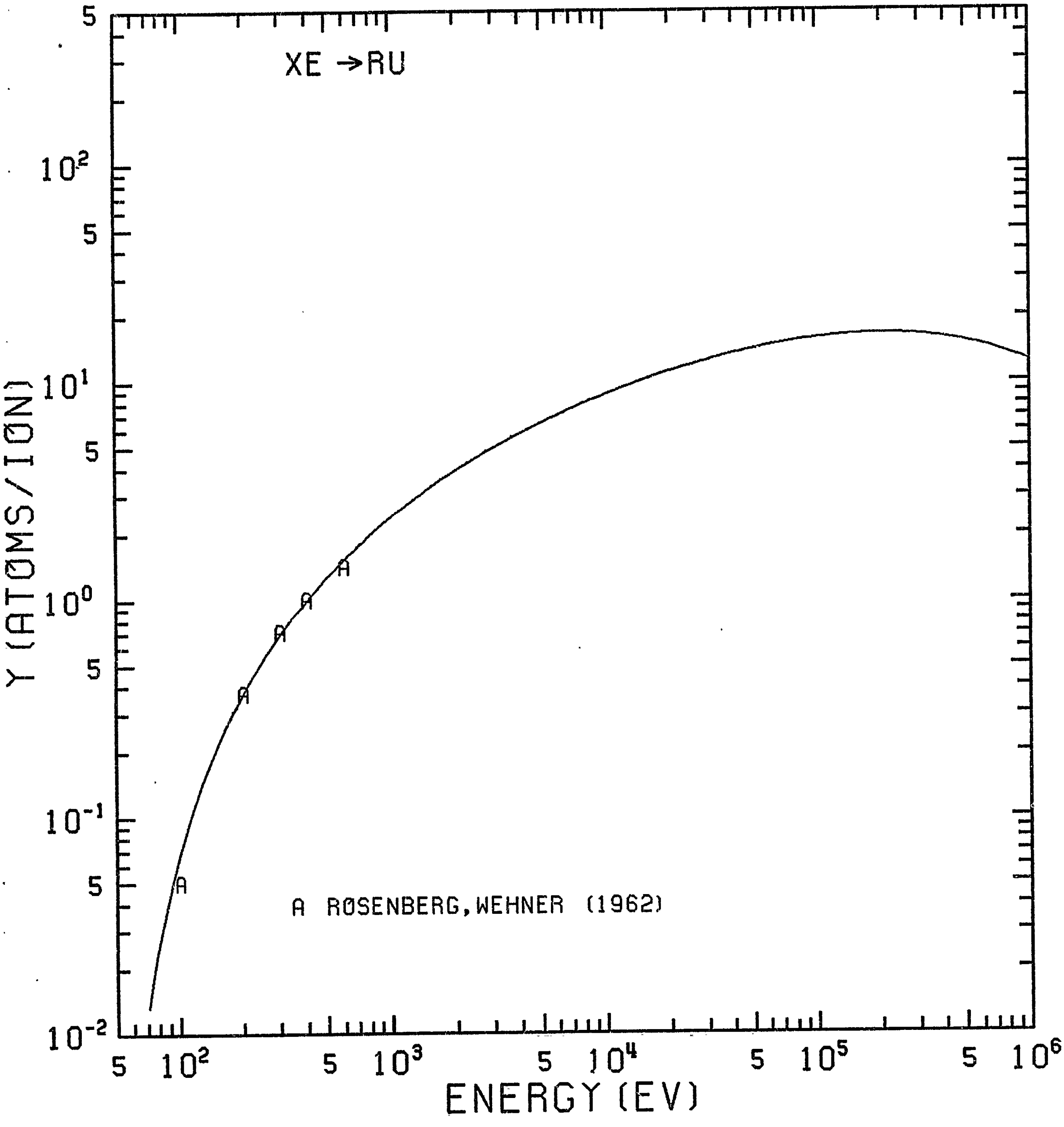

HG → M0
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A WEHNER (1957)
B WEHNER (1959)
C WEHNER, ROSENBERG (1961)
D ASKEROV, SENA (1969)
E HEPWORTH (1970)
F ISMAIL (1970)

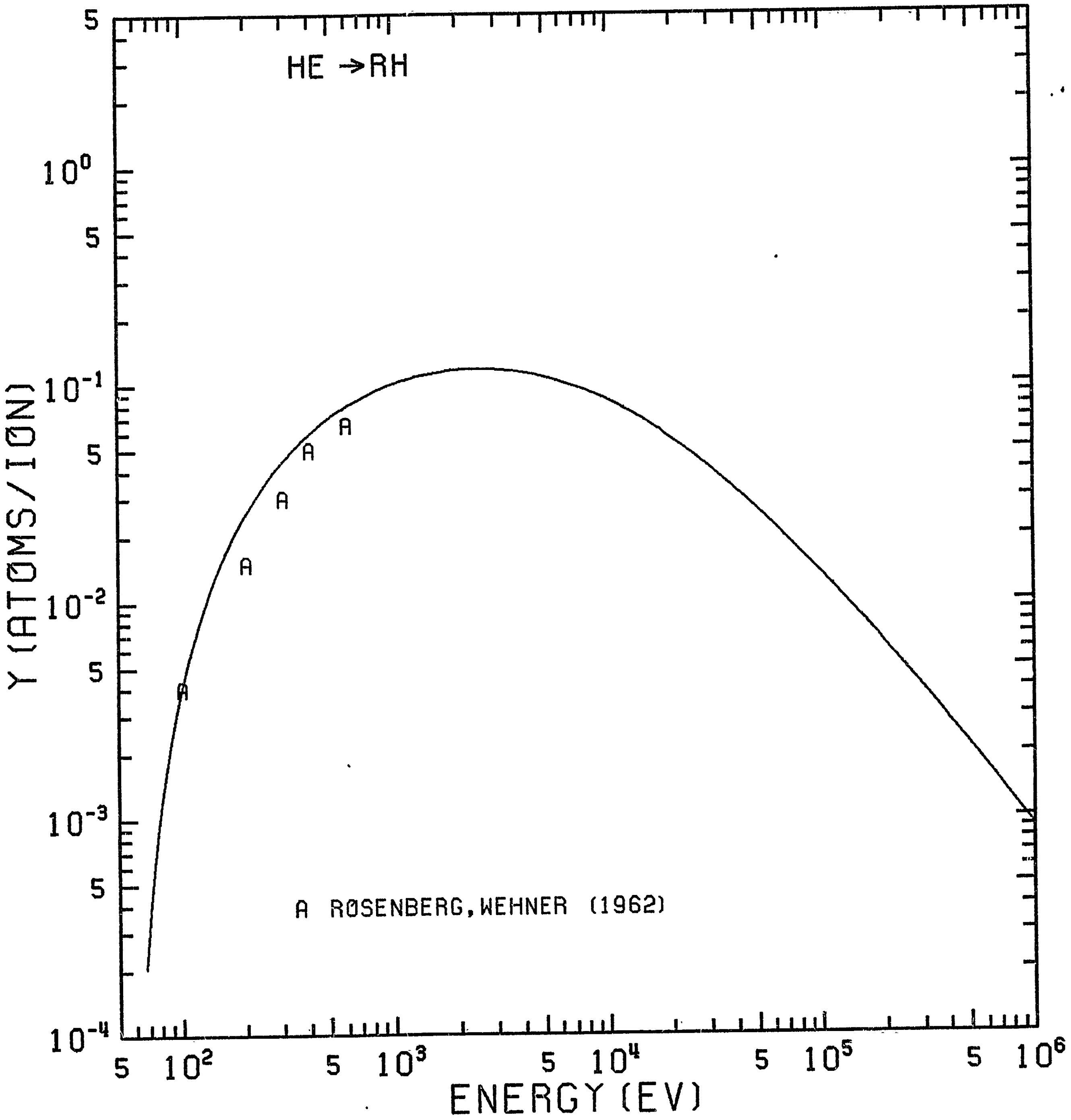

PB →MO
A KOSHKIN,RYSOV,SHKARBAN (1969)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

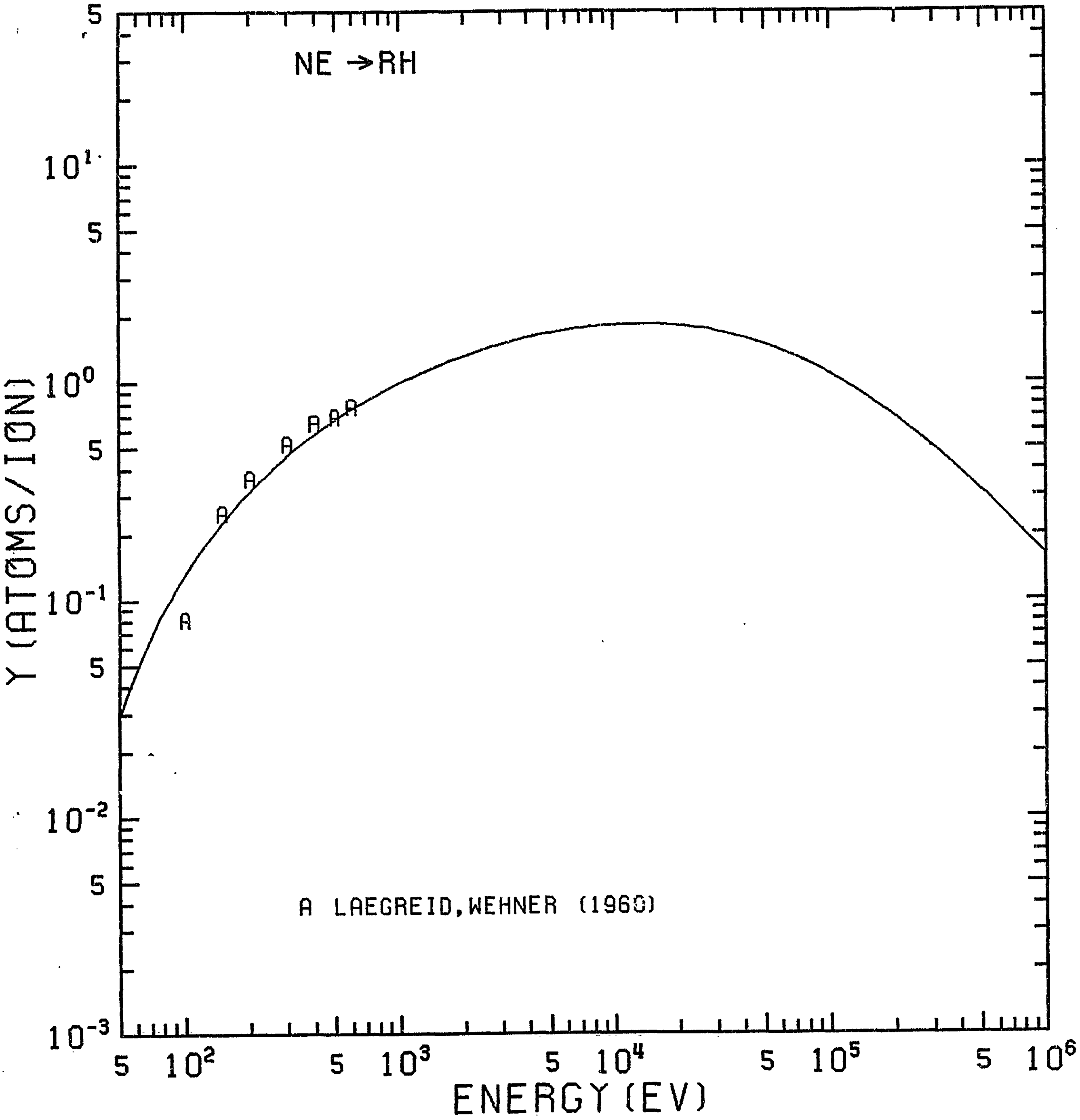

NE →RU
A LAEGREID,WEHNER (1960,1961)
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

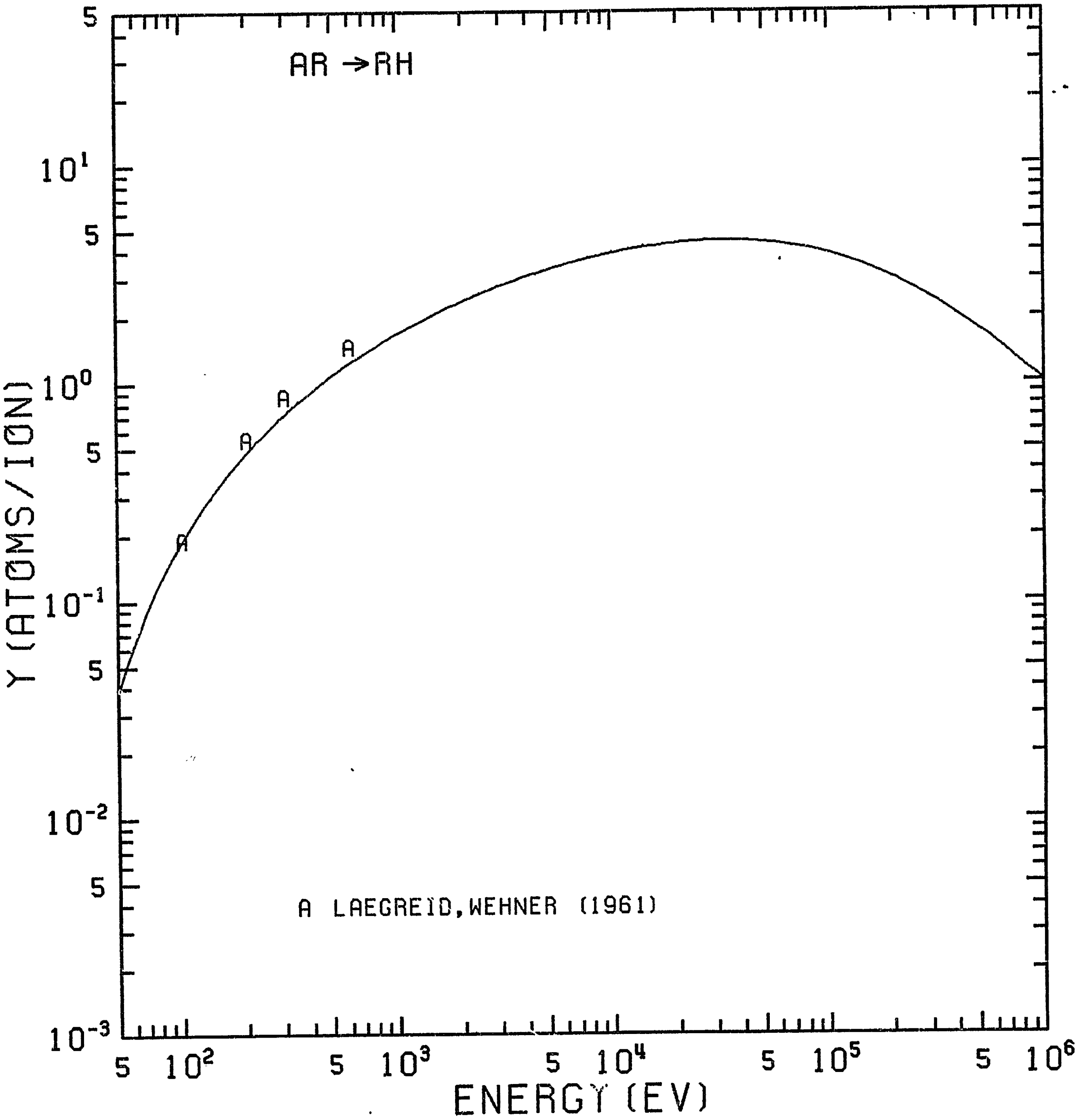

AR → RU
A LAEGREID, WEHNER (1961)
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶


KR →RU
Y (ATOMS/ION)
ENERGY (EV)
A ROSENBERG, WEHNER (1962)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶

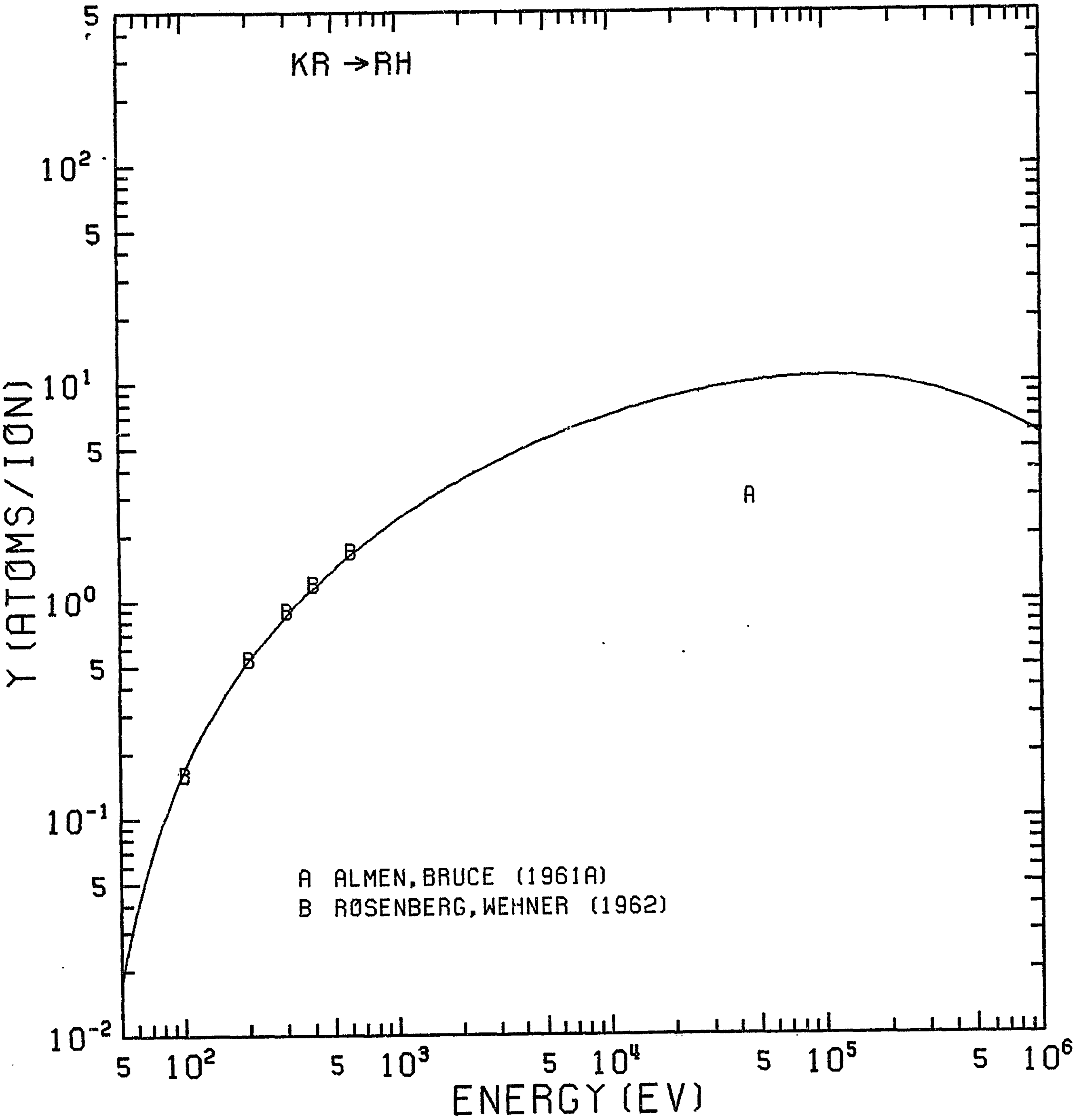

XE →RU
Y (ATOMS/ION)
ENERGY (EV)
A ROSENBERG,WEHNER (1962)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶

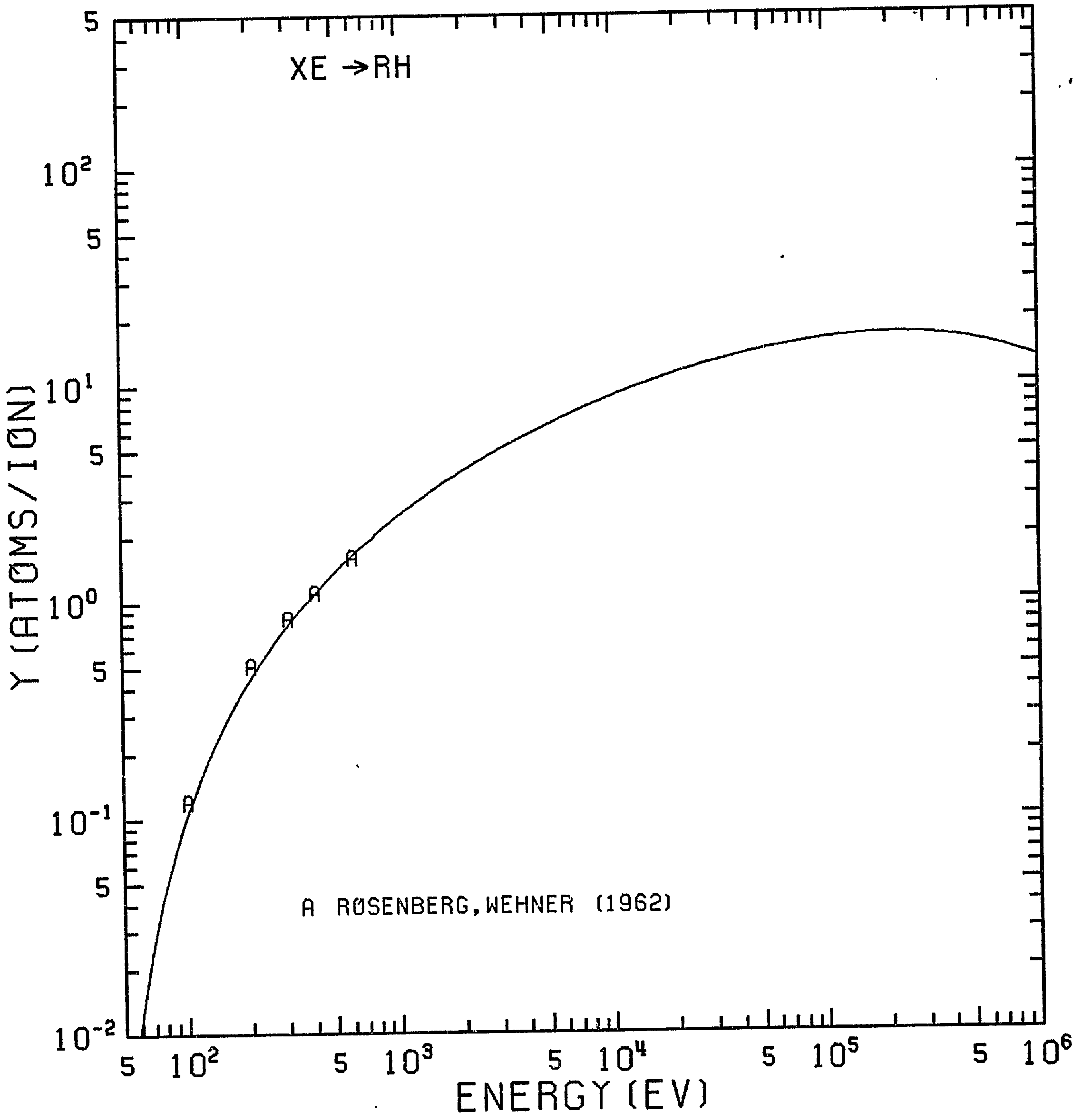

HE →RH
Y (ATOMS/ION)
ENERGY (EV)
A ROSENBERG,WEHNER (1962)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A

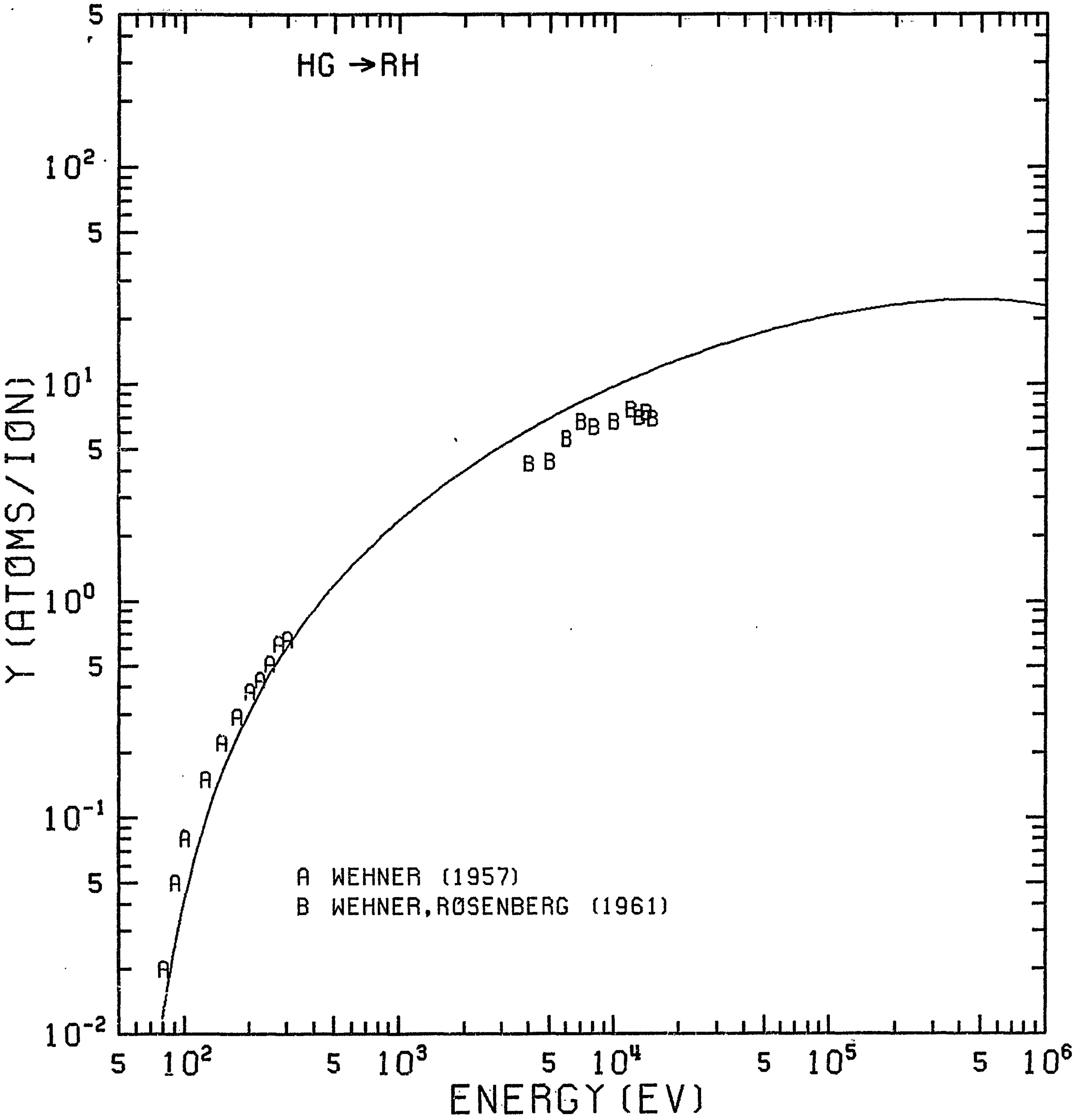

NE →RH
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A LAEGREID, WEHNER (1960)

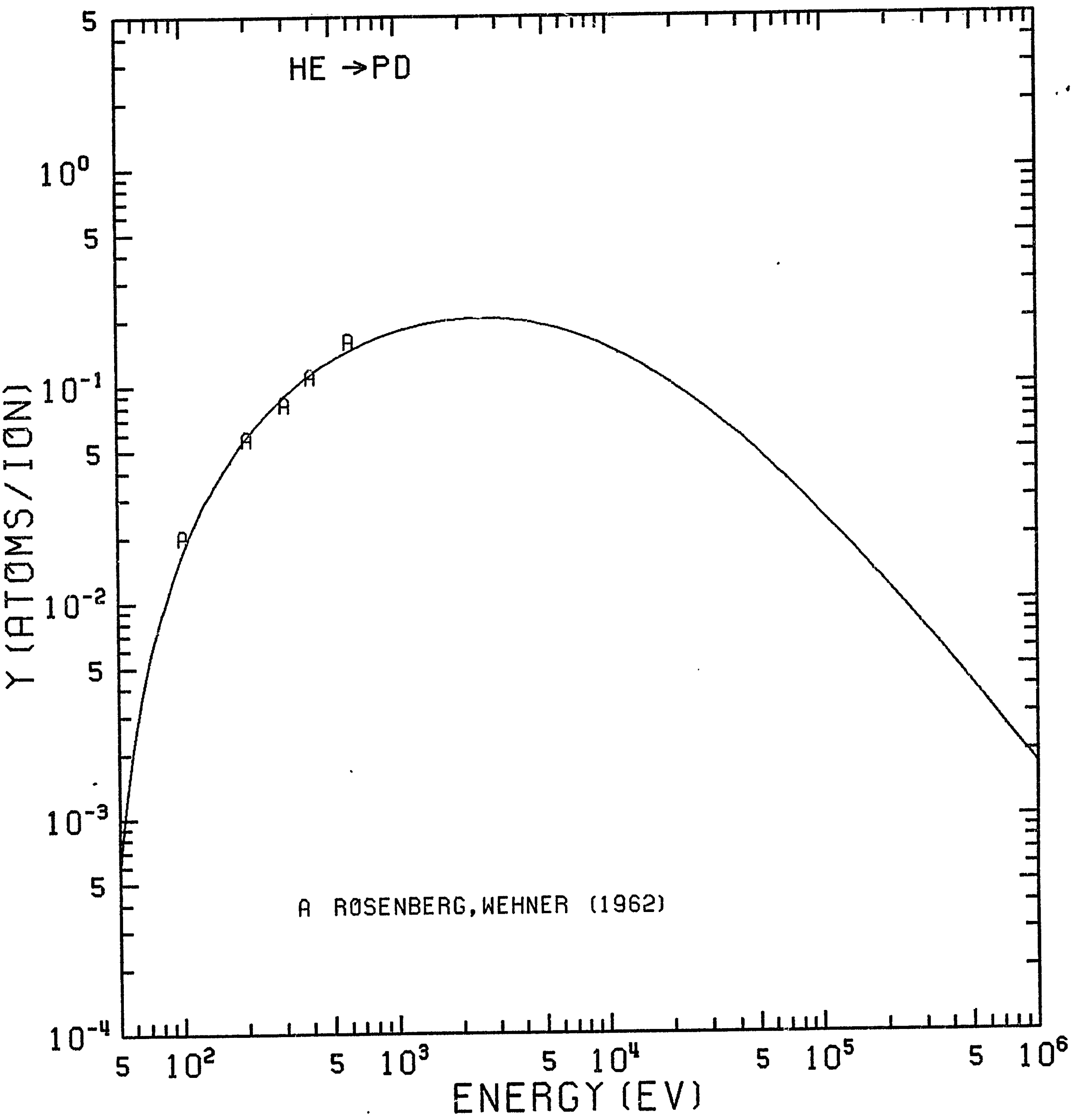


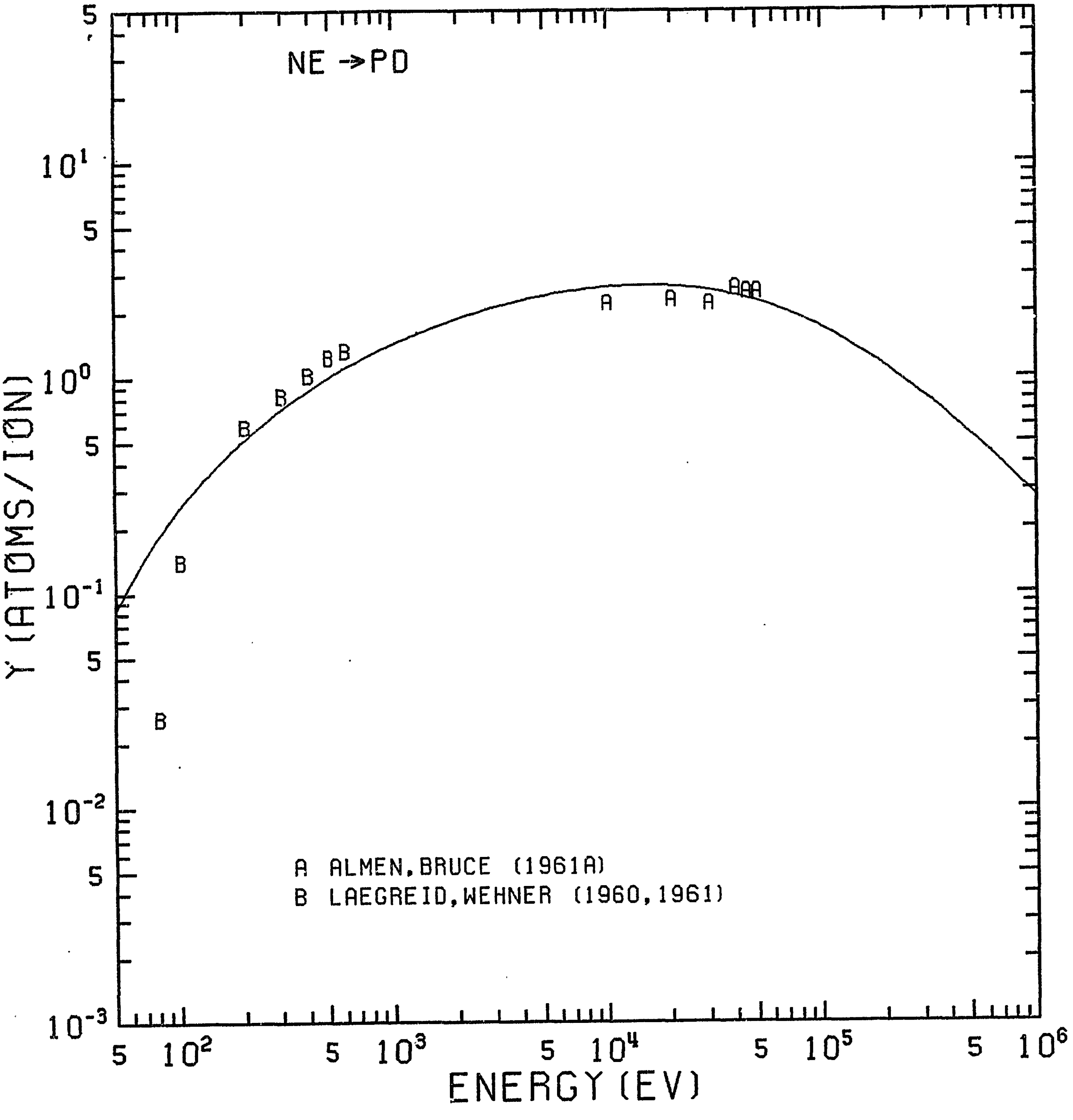
AR → RH
Y (ATOMS/ION)
ENERGY (EV)
A LAEGREID, WEHNER (1961)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A

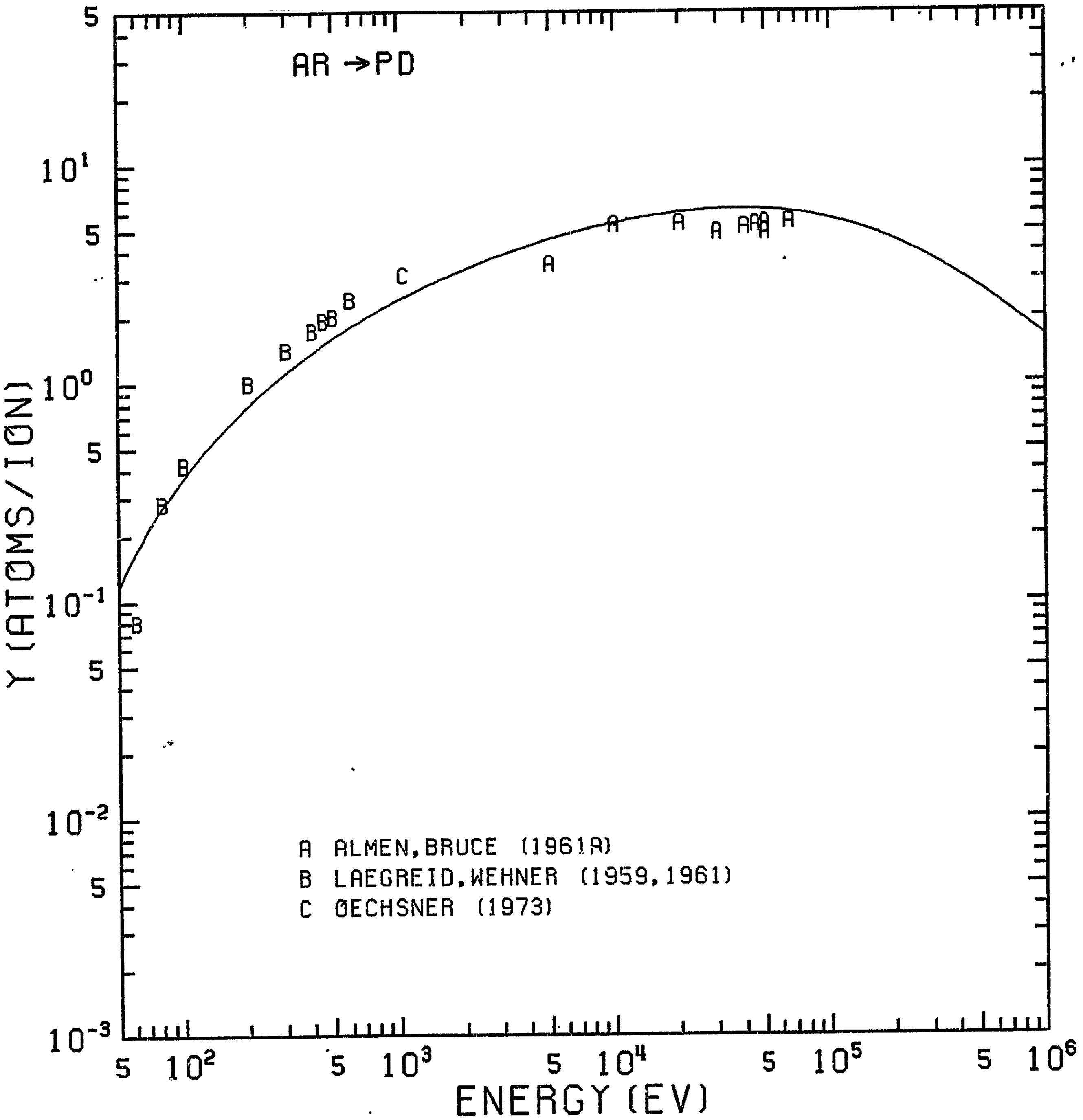

KR → RH
Y (ATØMS/IØN)
ENERGY (EV)
A ALMEN, BRUCE (1961A)
B RØSENBERG, WEHNER (1962)
A
B
10^-2
10^-1
10^0
10^1
10^2
5
5 10^2 5 10^3 5 10^4 5 10^5 5 10^6

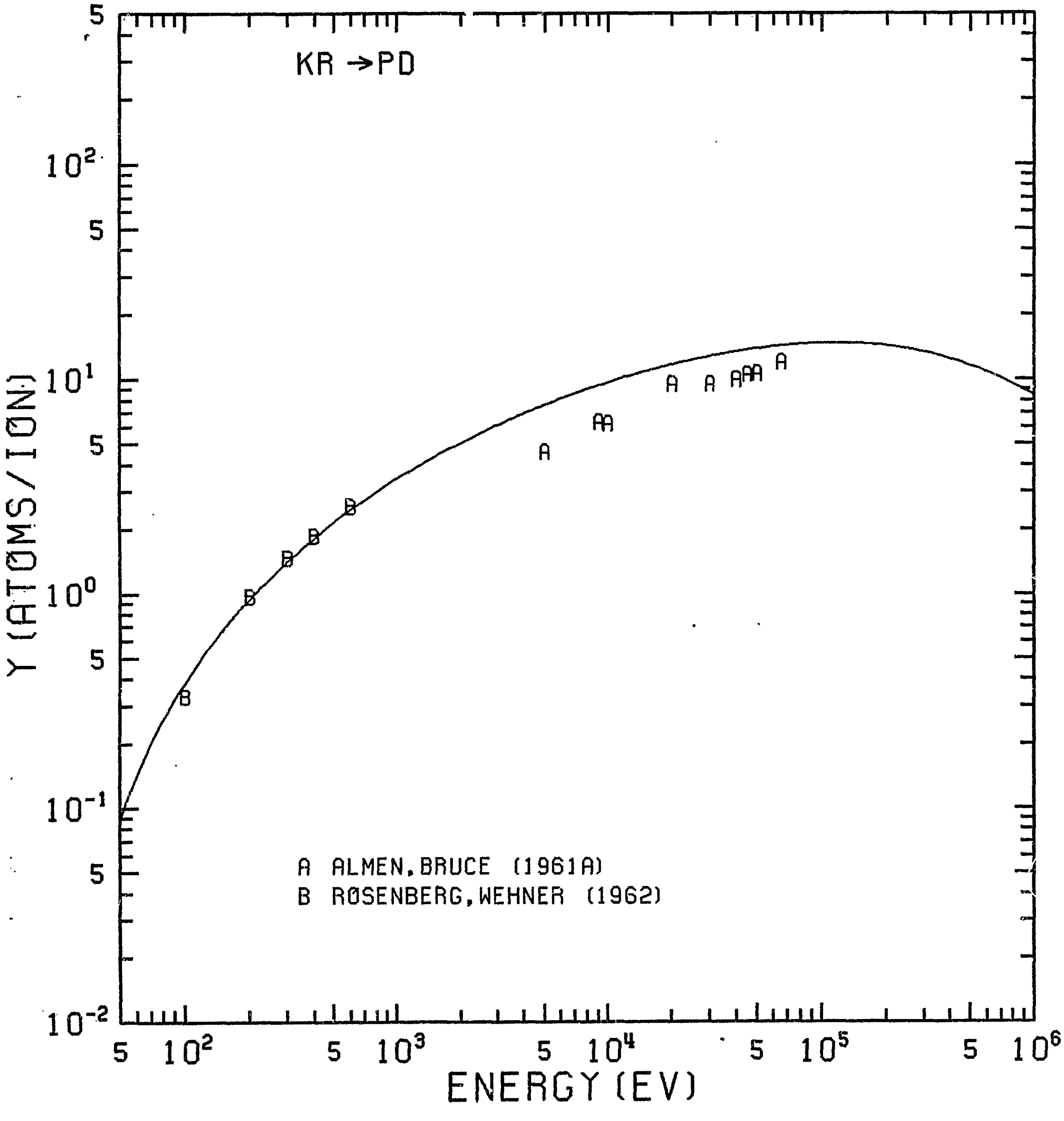

XE →RH
Y (ATOMS/ION)
ENERGY (EV)
A ROSENBERG,WEHNER (1962)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶

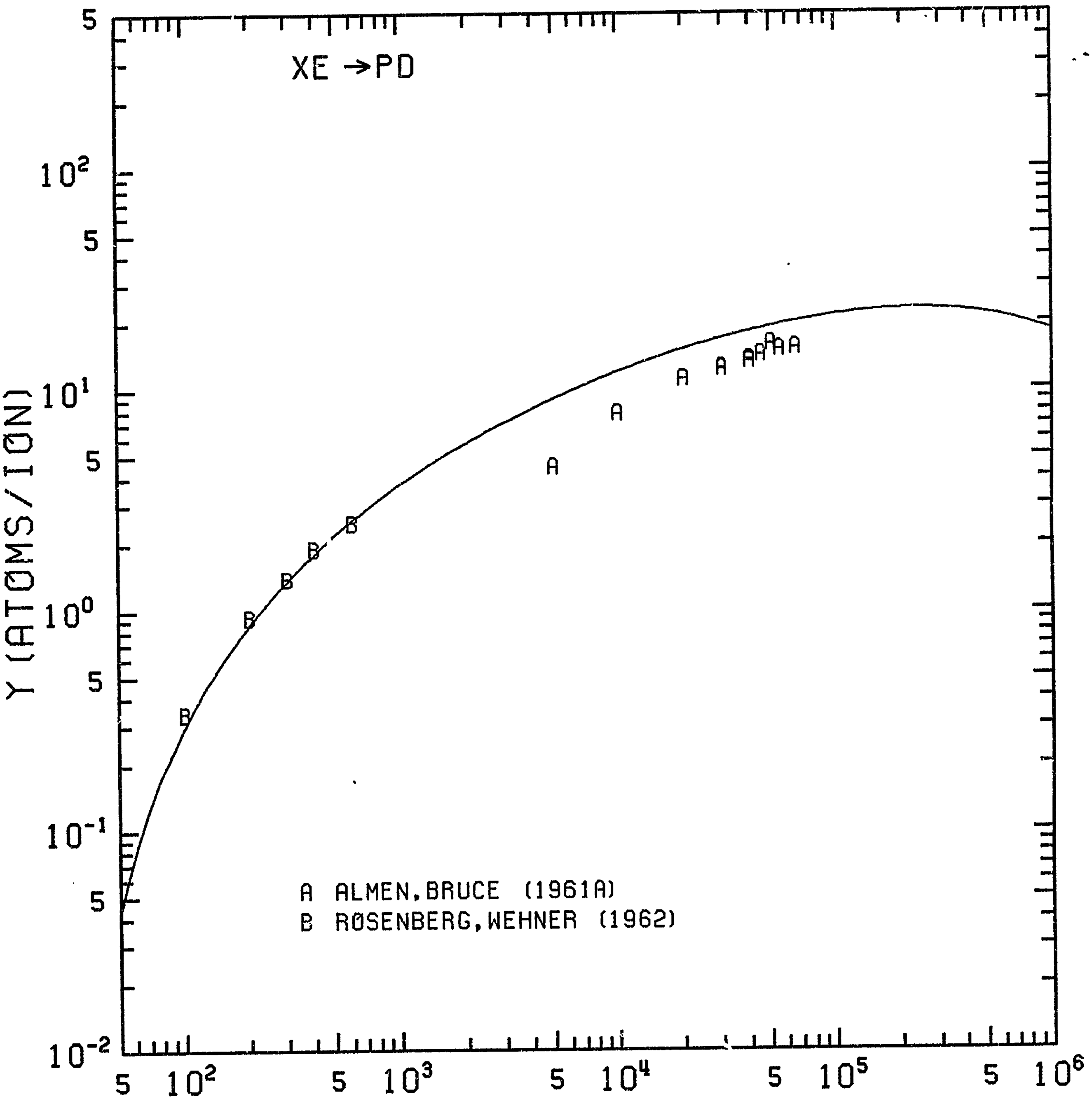

HG →RH
Y (ATOMS/ION)
ENERGY (EV)
10⁻²
5
10⁻¹
5
10⁰
5
10¹
5
10²
5
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A WEHNER (1957)
B WEHNER, ROSENBERG (1961)

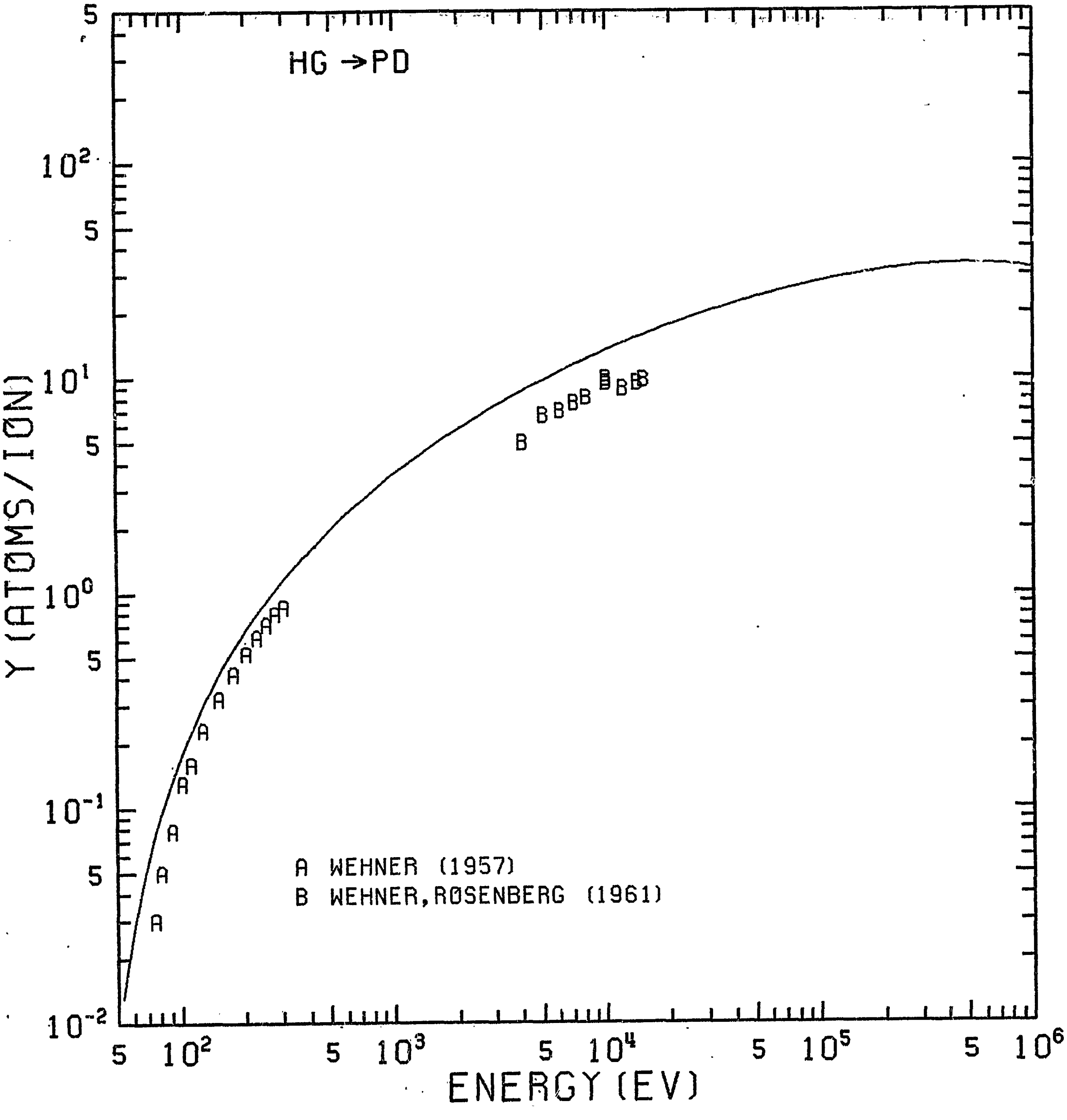

HE →PD
Y (ATØMS/IØN)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A RØSENBERG,WEHNER (1962)

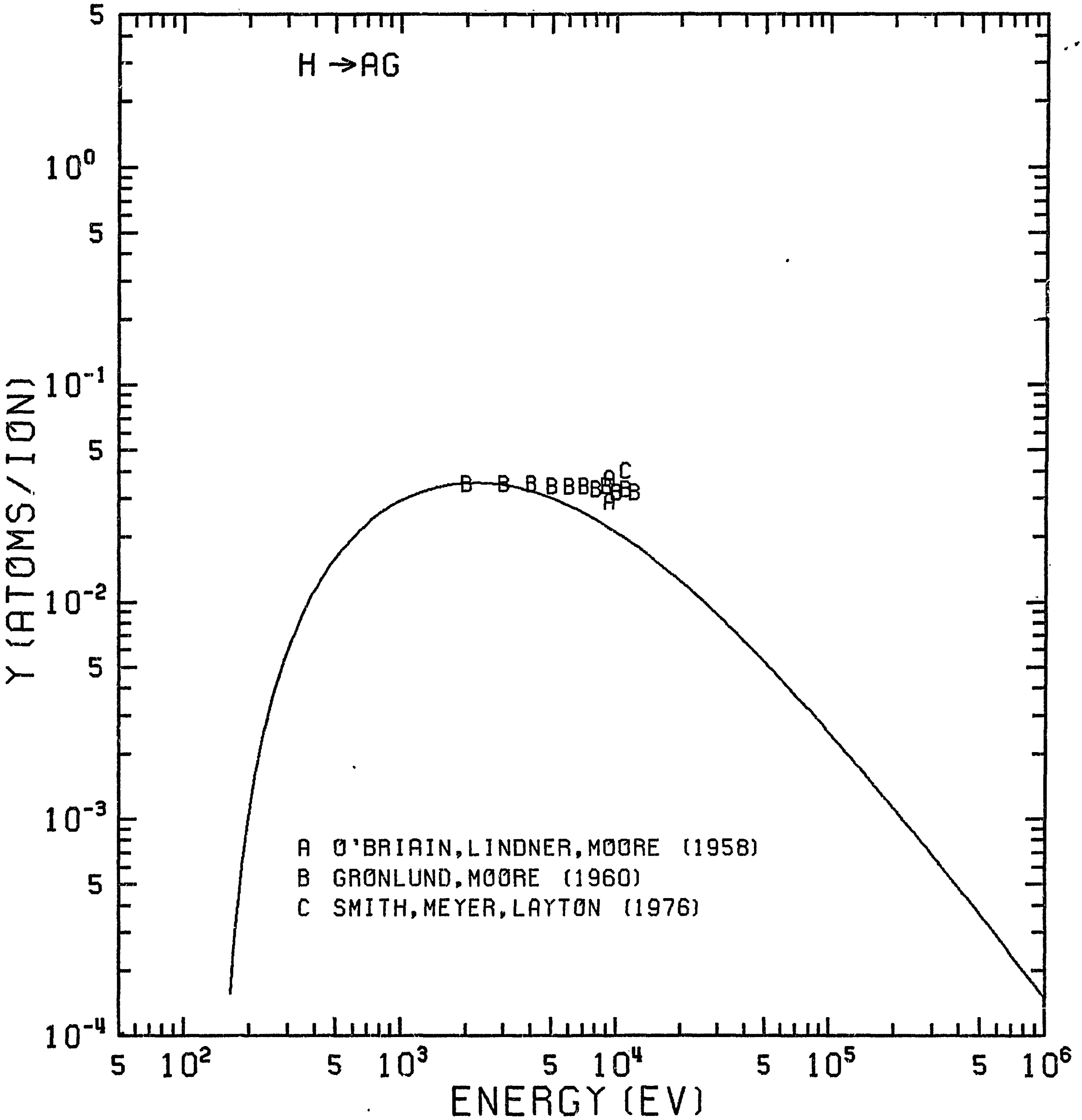

NE ->PD
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1960, 1961)

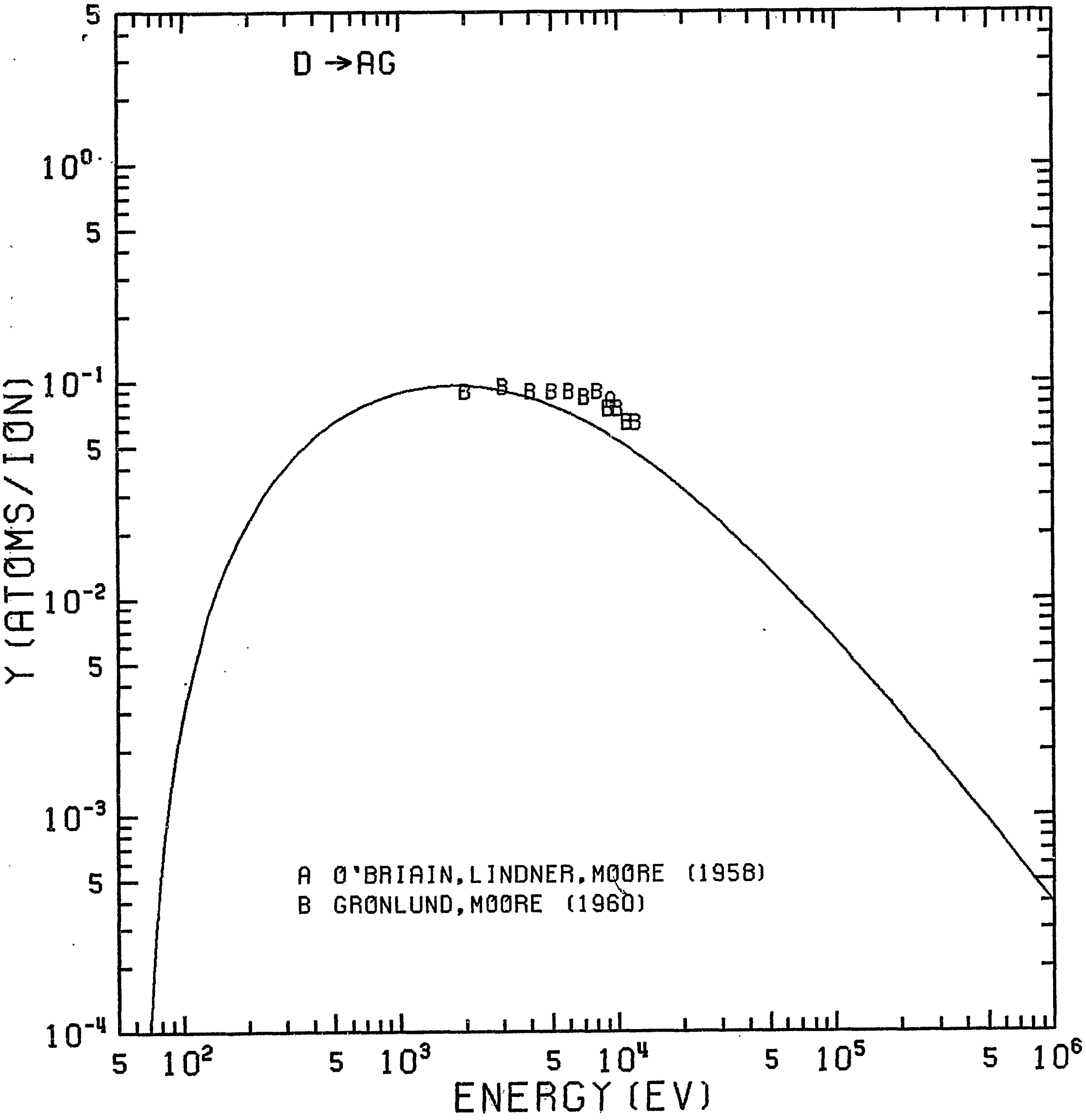

AR →PD
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1959, 1961)
C OECHSNER (1973)

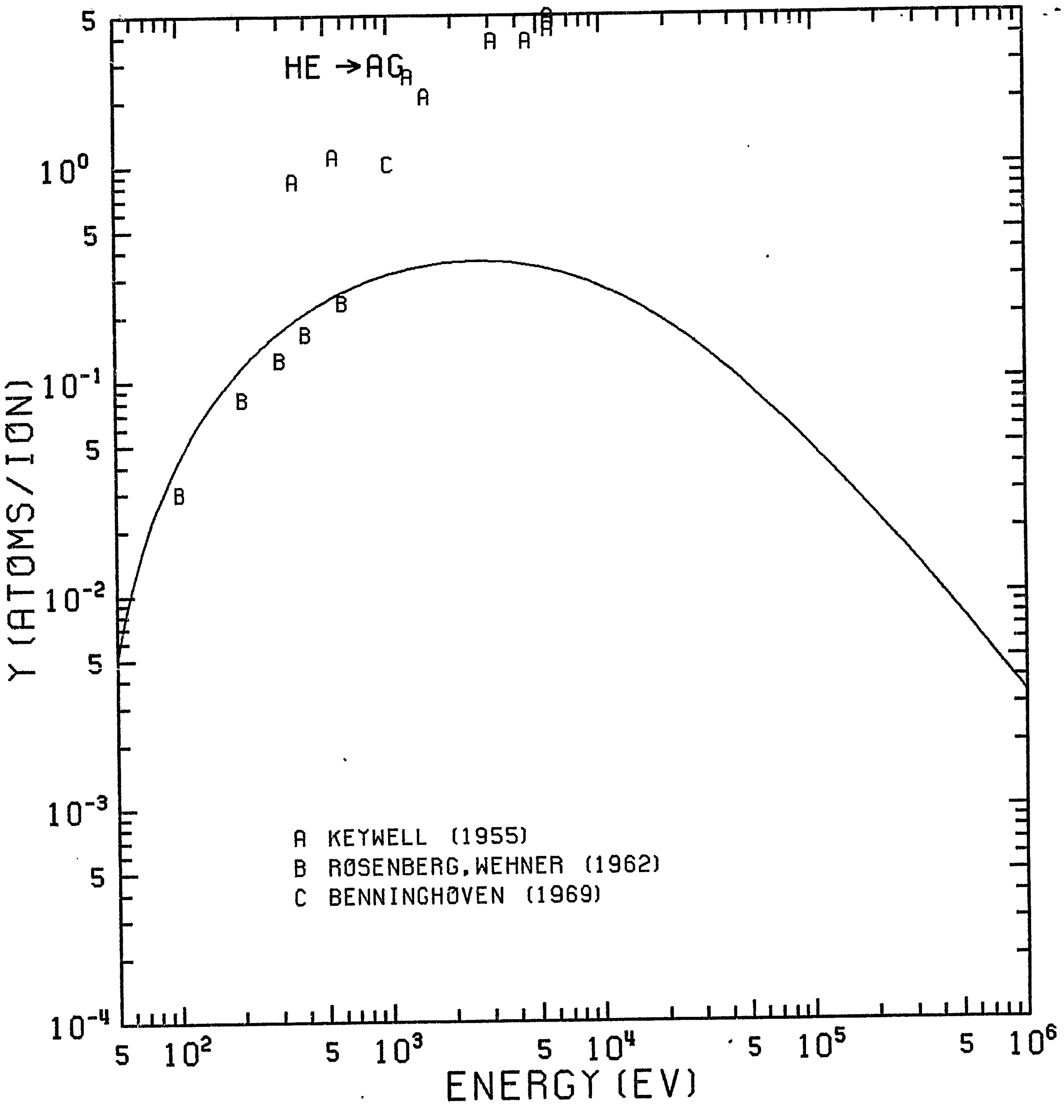

KR →PD
Y (ATØMS/IØN)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B RØSENBERG, WEHNER (1962)

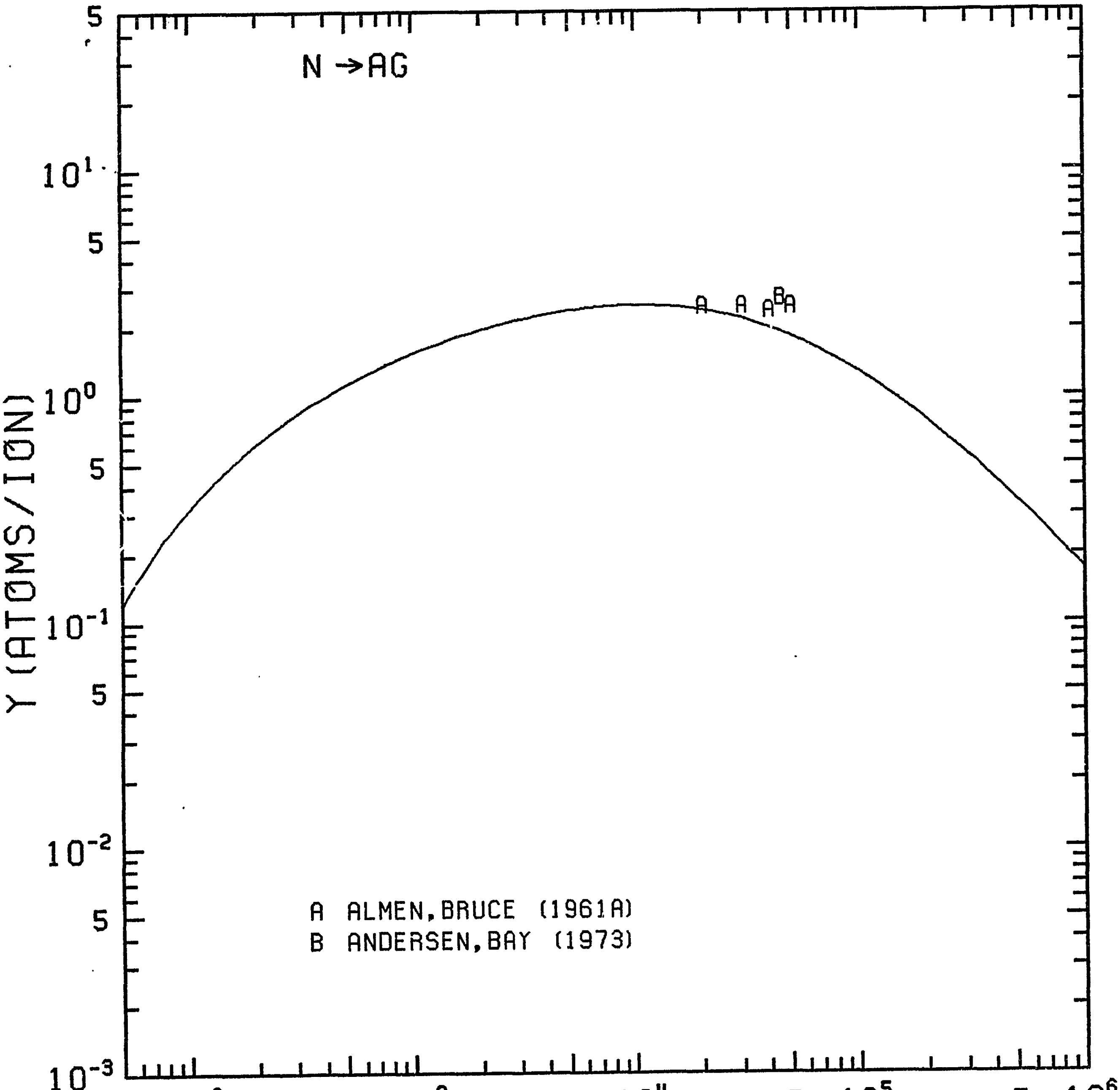

XE →PD
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)

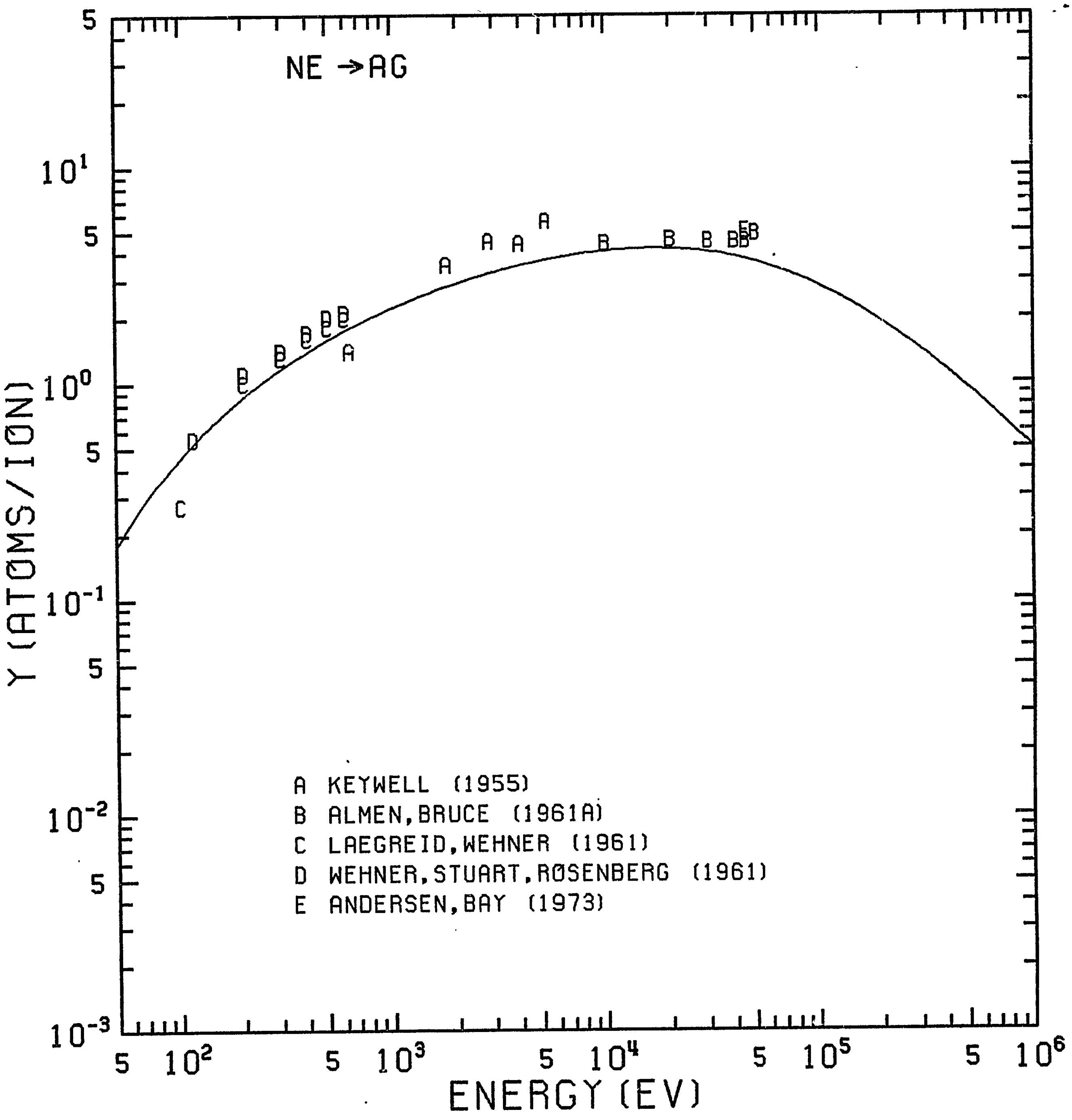

HG → PD
A WEHNER (1957)
B WEHNER, RØSENBERG (1961)
Y (ATØMS/IØN)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

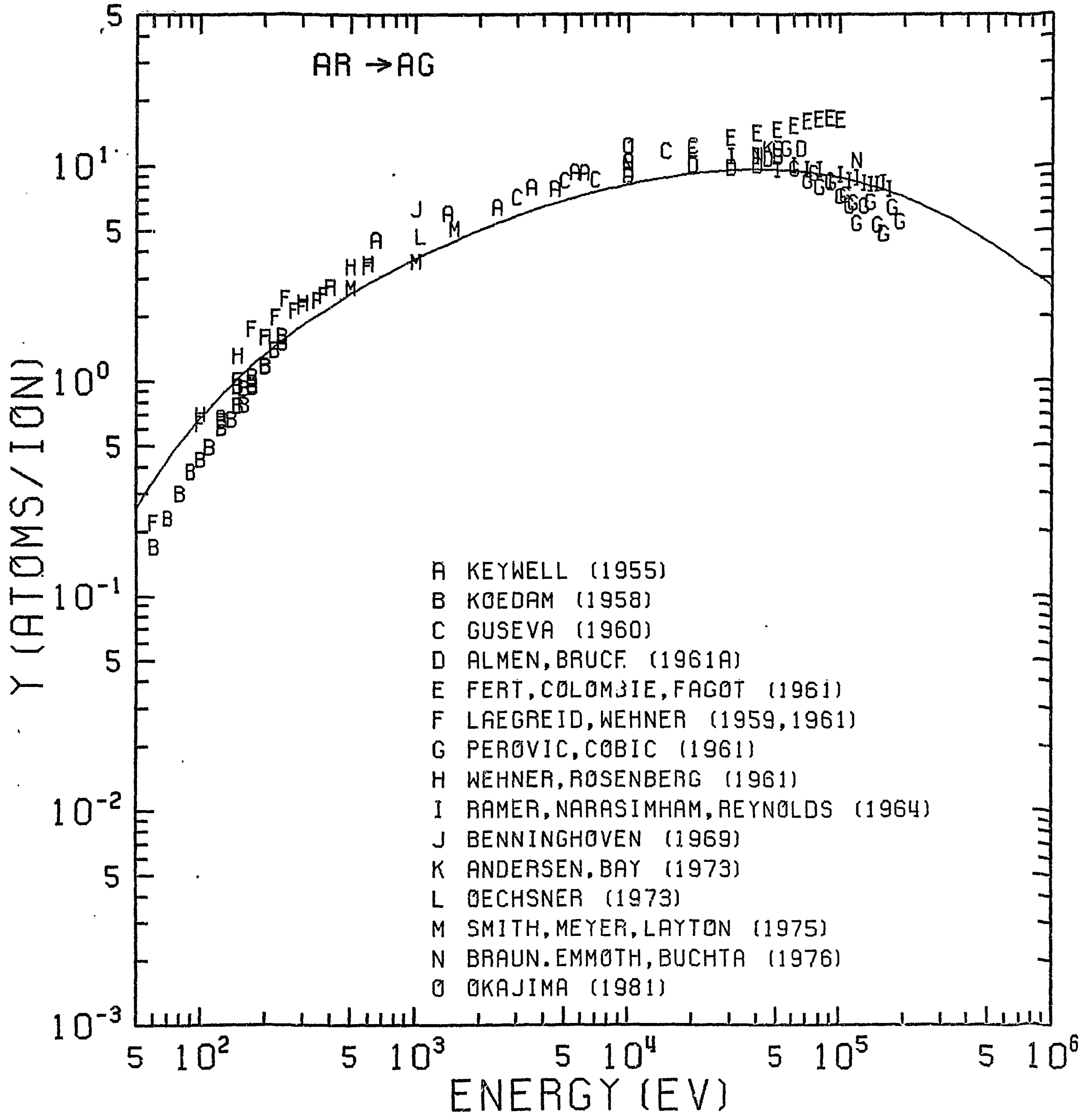

H →AG
Y (ATOMS/ION)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A O'BRAIAN, LINDNER, MOORE (1958)
B GRONLUND, MOORE (1960)
C SMITH, MEYER, LAYTON (1976)

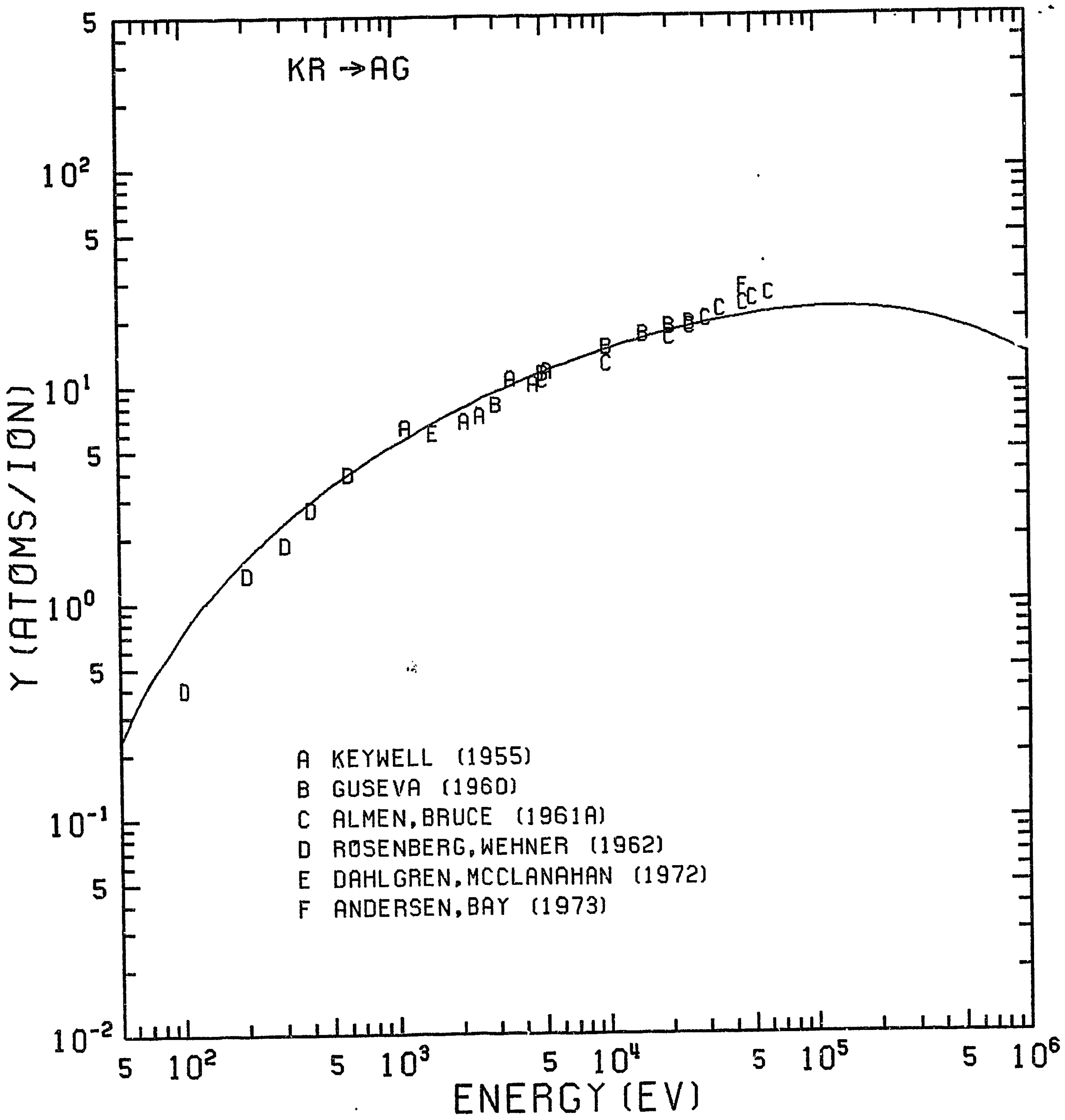

D →AG
Y (ATOMS/ION)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A O'BRIAIN, LINDNER, MOORE (1958)
B GRONLUND, MOORE (1960)

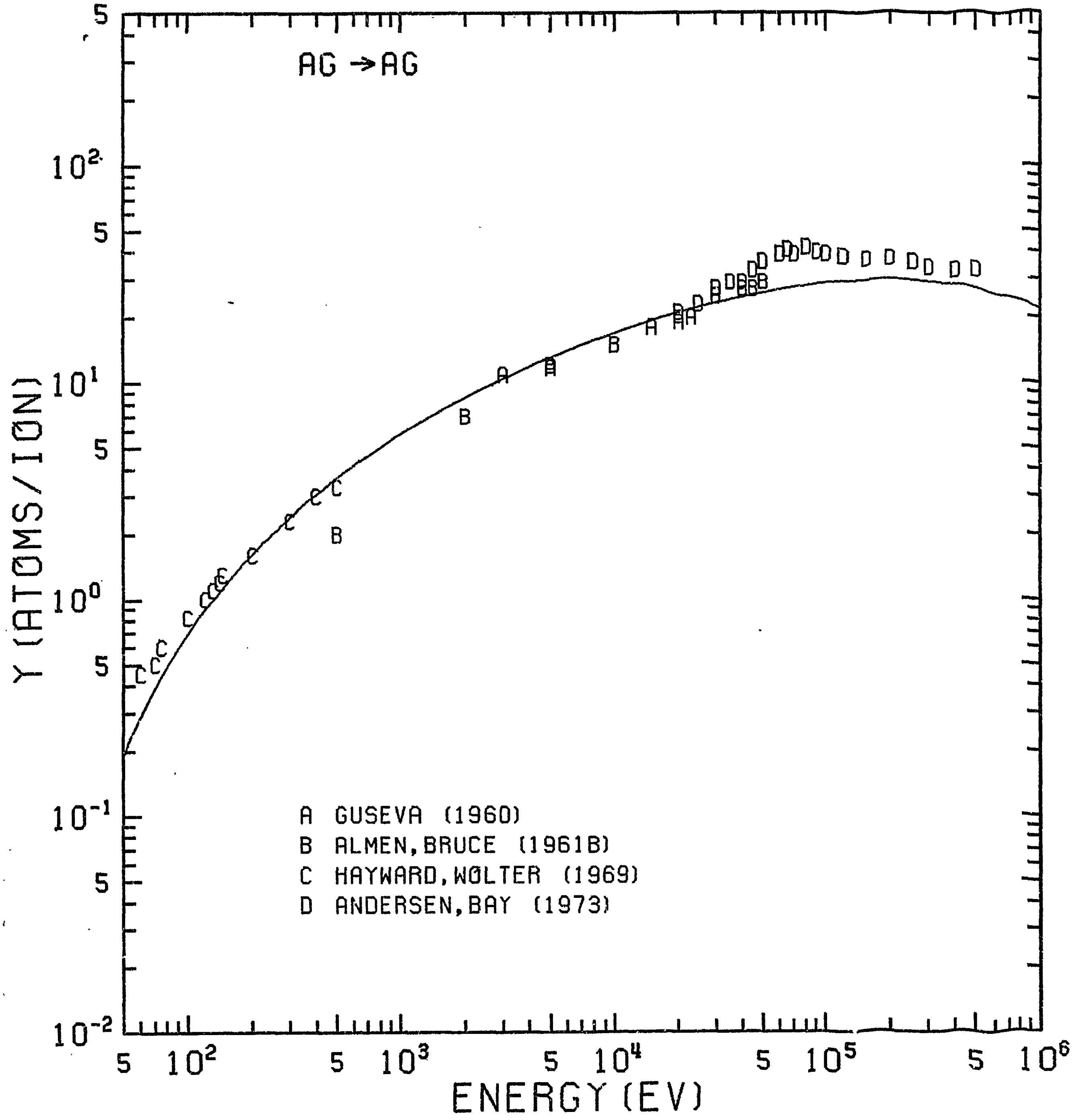

HE → AG
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A KEYWELL (1955)
B ROSENBERG, WEHNER (1962)
C BENNINGHOVEN (1969)

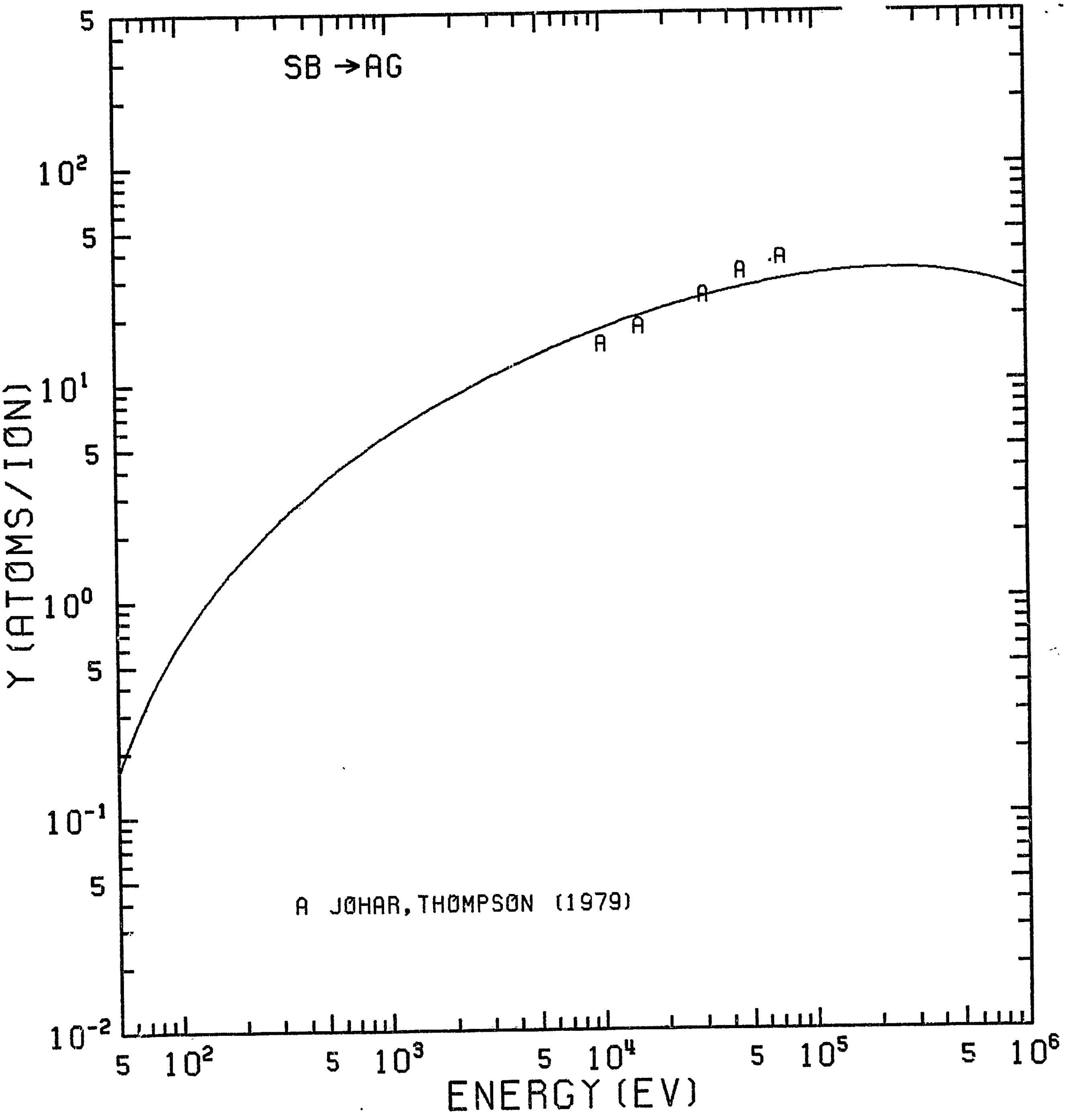

N →AG
A A ABA
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
Y (ATOMS/ION)
5 10²
5 10³
5 10⁴
5 10⁵
5 10⁶
ENERGY (EV)
A ALMEN, BRUCE (1961A)
B ANDERSEN, BAY (1973)

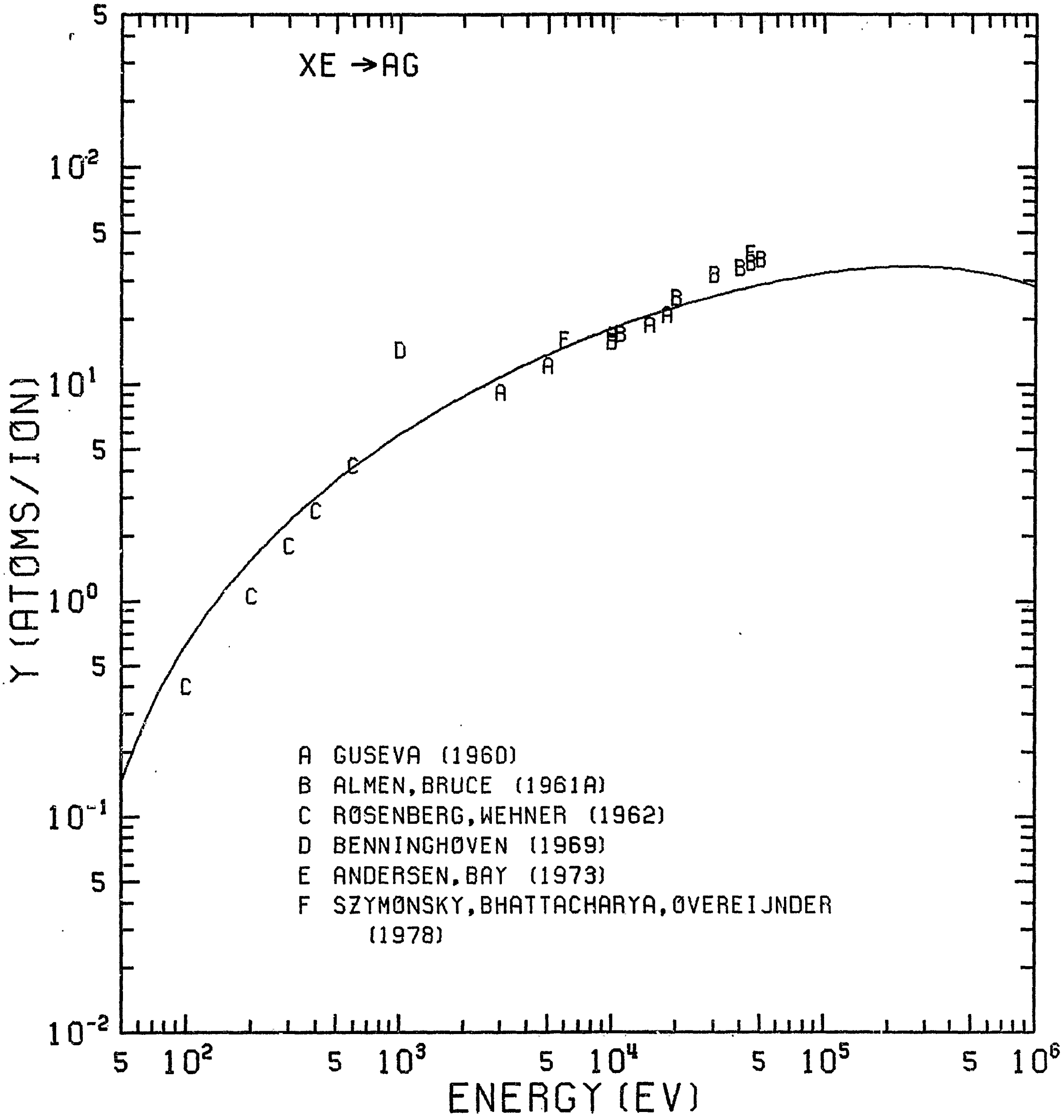

NE → AG
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A KEYWELL (1955)
B ALMEN, BRUCE (1961A)
C LAEGREID, WEHNER (1961)
D WEHNER, STUART, ROSENBERG (1961)
E ANDERSEN, BAY (1973)

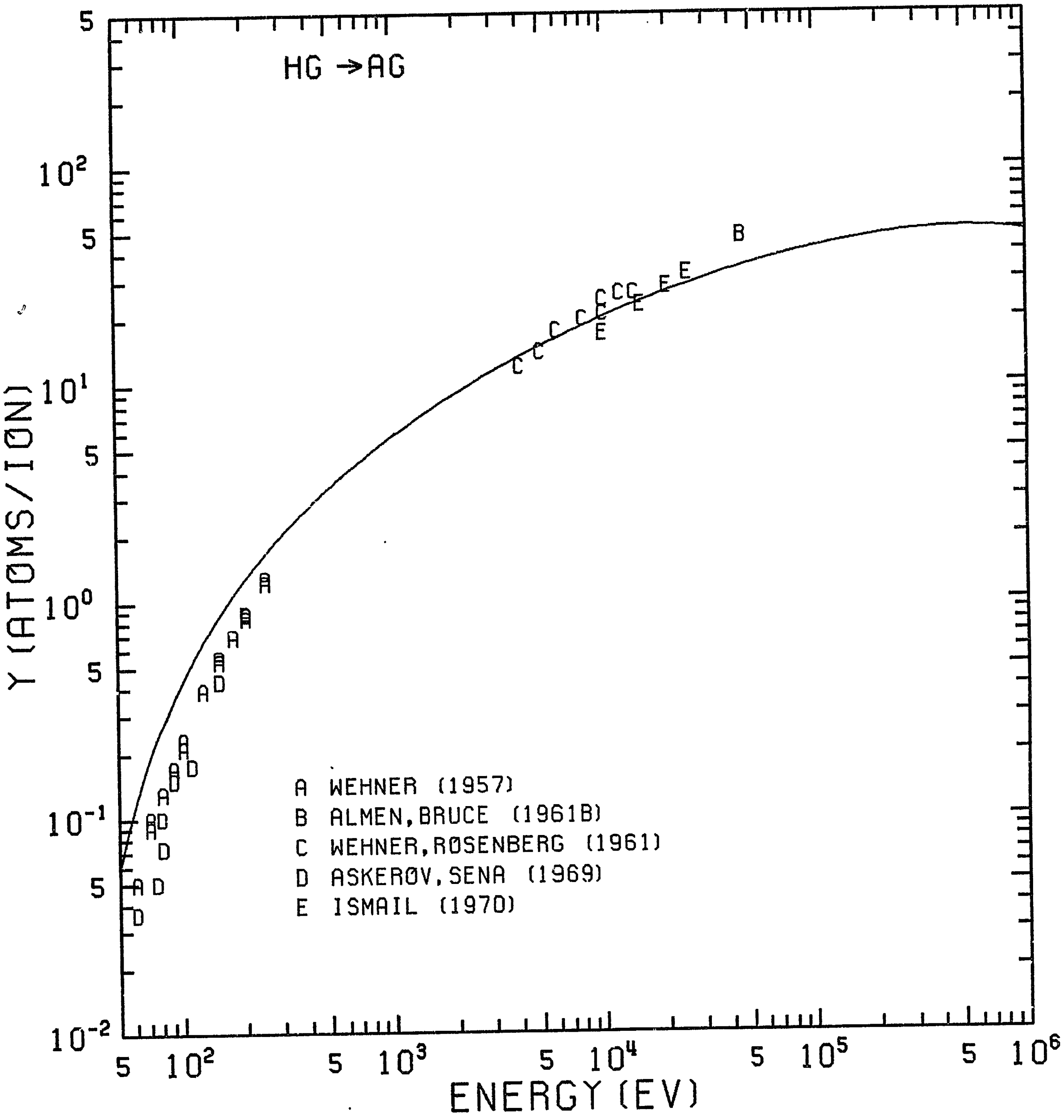

AR → AG
Y (ATOMS/ION)
ENERGY (EV)
.5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A KEYWELL (1955)
B KOEDAM (1958)
C GUSEVA (1960)
D ALMEN,BRUCE (1961A)
E FERT,COLOMBIE,FAGOT (1961)
F LAEGREID,WEHNER (1959,1961)
G PEROVIC,COBIC (1961)
H WEHNER,ROSENBERG (1961)
I RAMER,NARASIMHAM,REYNOLDS (1964)
J BENNINGHOVEN (1969)
K ANDERSEN,BAY (1973)
L OECHSNER (1973)
M SMITH,MEYER,LAYTON (1975)
N BRAUN.EMMOTH,BUCHTA (1976)
O OKAJIMA (1981)

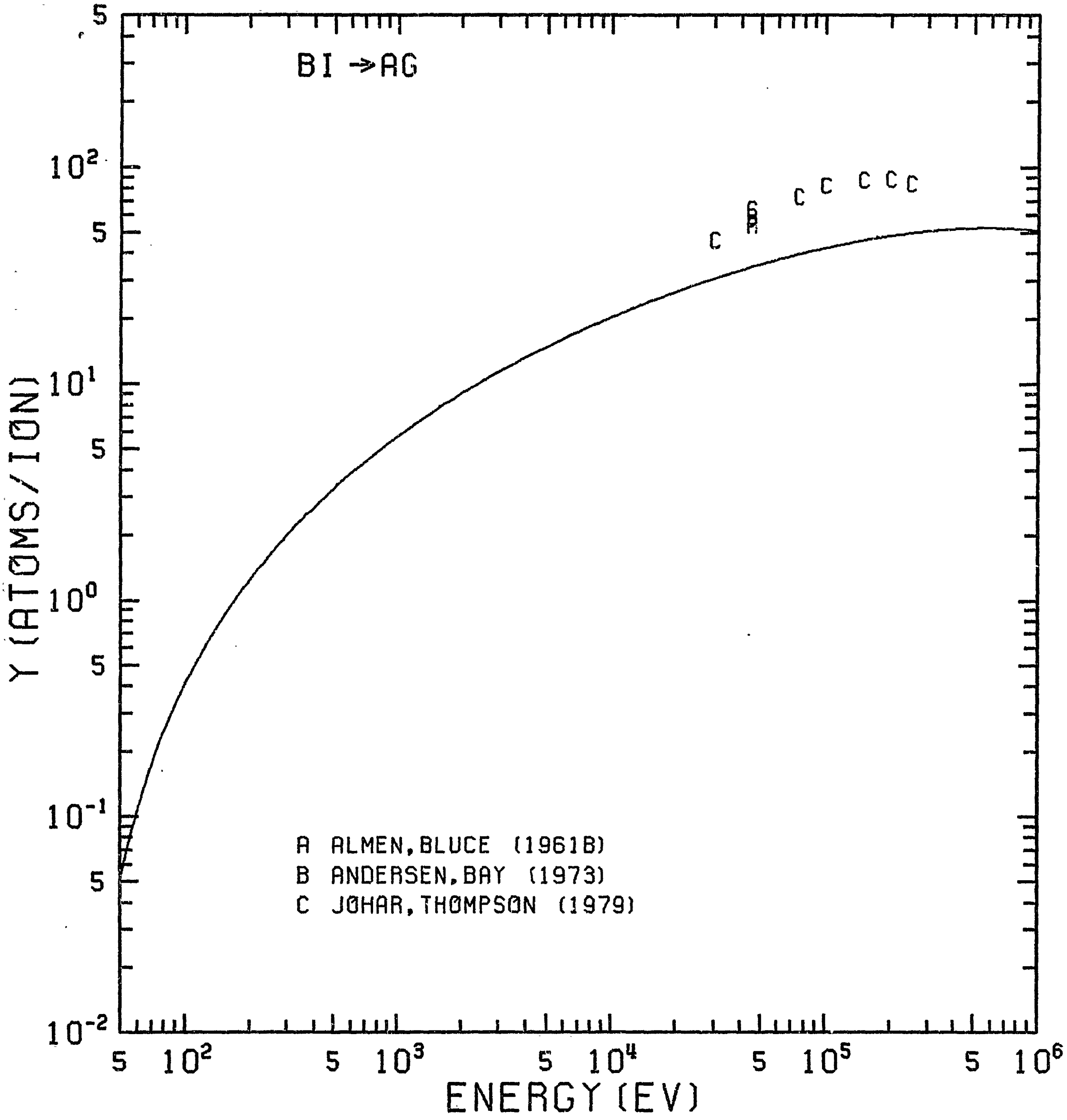

KR → AG
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A KEYWELL (1955)
B GUSEVA (1960)
C ALMEN, BRUCE (1961A)
D ROSENBERG, WEHNER (1962)
E DAHLGREN, MCCLANAHAN (1972)
F ANDERSEN, BAY (1973)

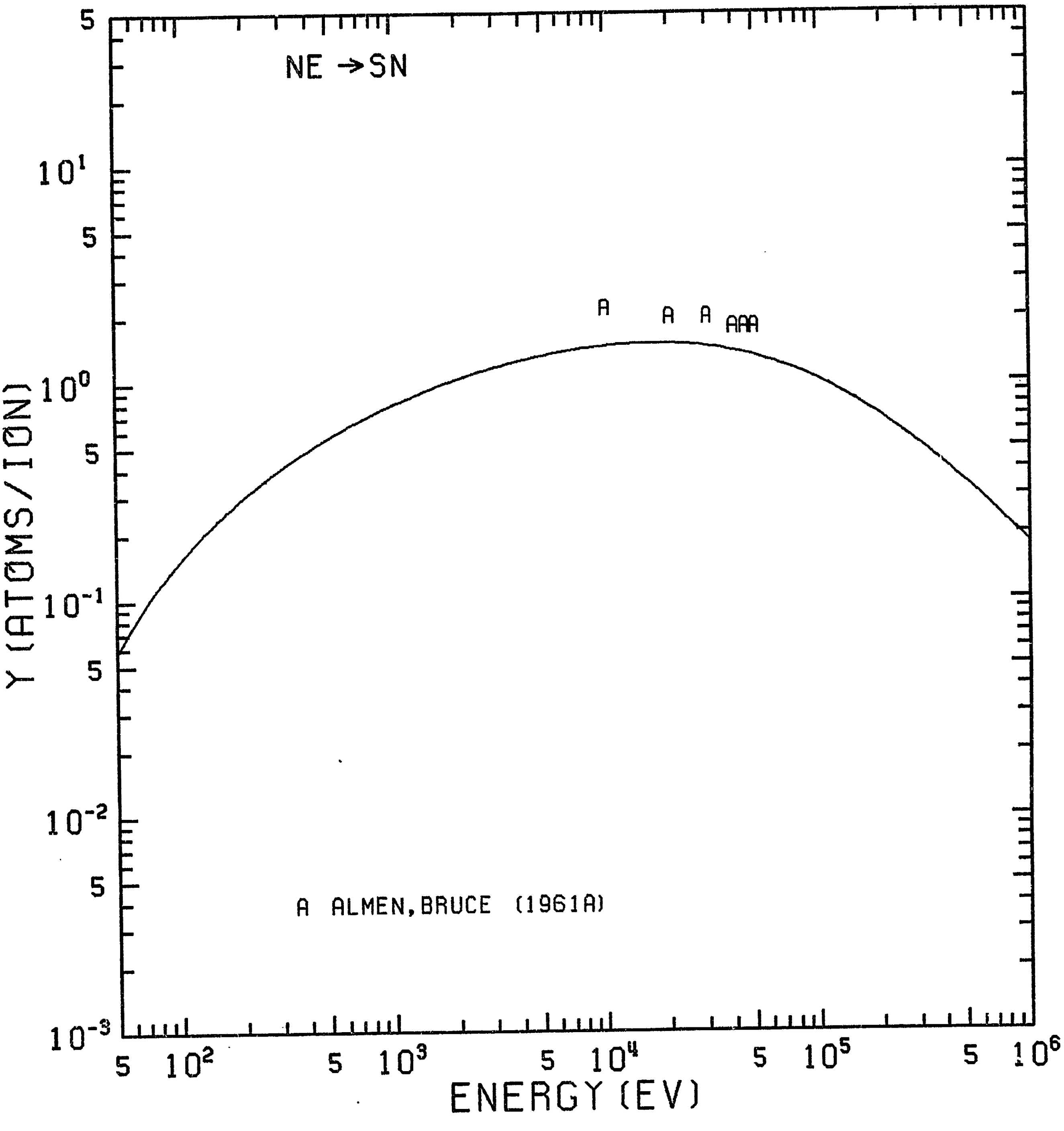

AG → AG
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A GUSEVA (1960)
B ALMEN, BRUCE (1961B)
C HAYWARD, WOLTER (1969)
D ANDERSEN, BAY (1973)

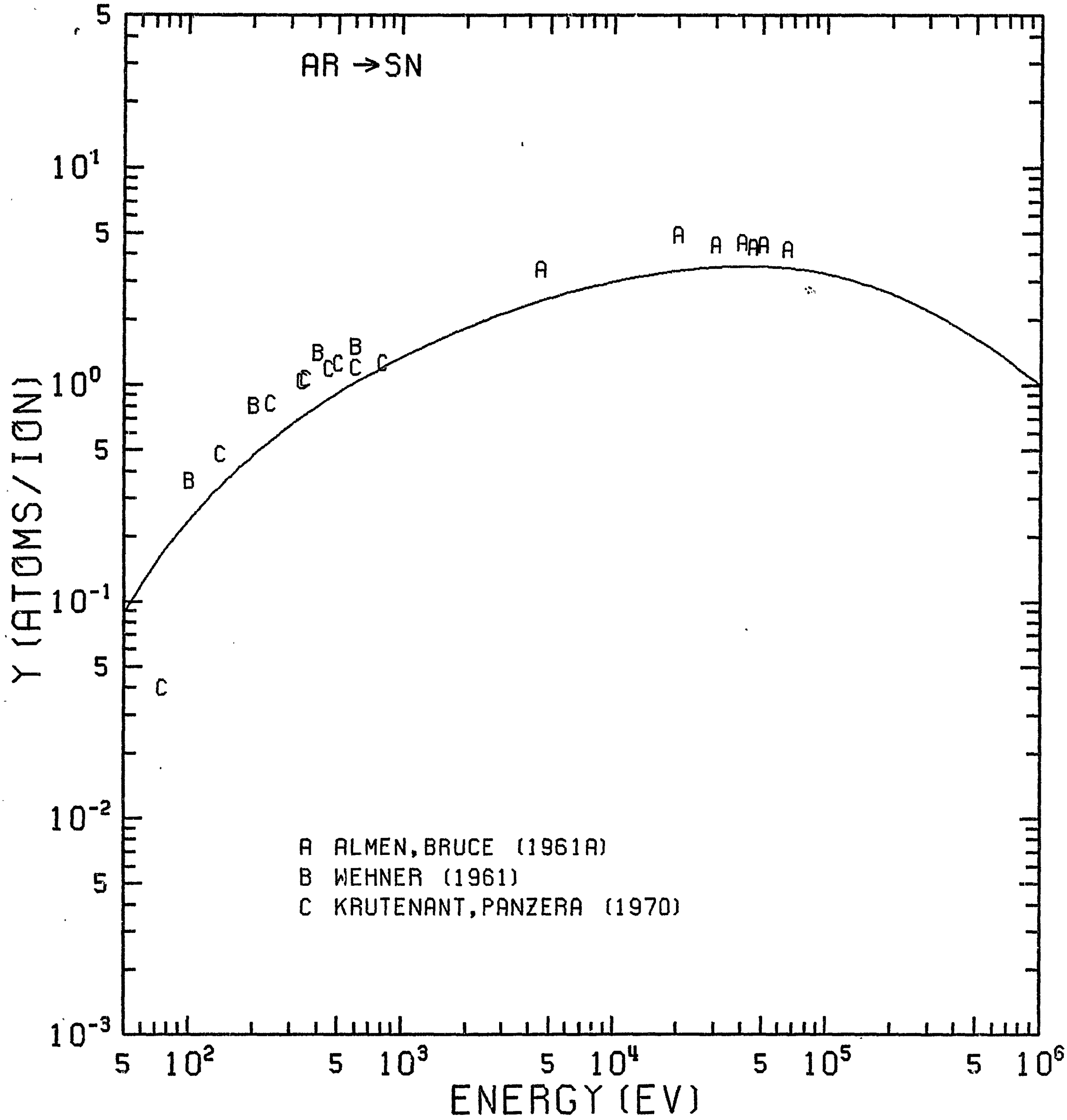

SB →AG
Y (ATOMS/ION)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A JOHAR, THOMPSON (1979)
A
A
A
A
A
A

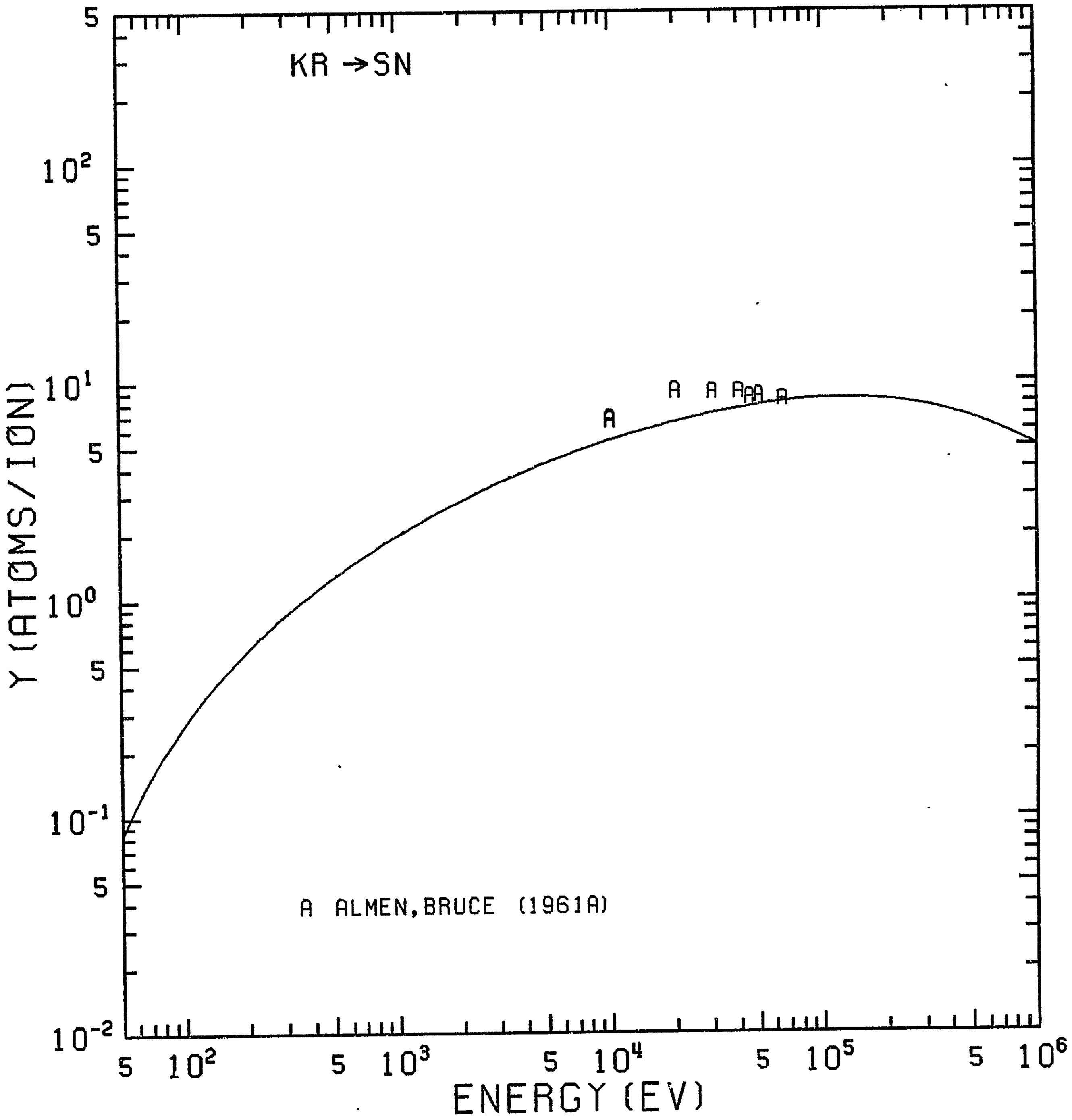

XE →AG
Y (ATØMS/IØN)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A GUSEVA (1960)
B ALMEN, BRUCE (1961A)
C RØSENBERG, WEHNER (1962)
D BENNINGHØVEN (1969)
E ANDERSEN, BAY (1973)
F SZYMØNSKY, BHATTACHARYA, ØVEREIJNDER (1978)

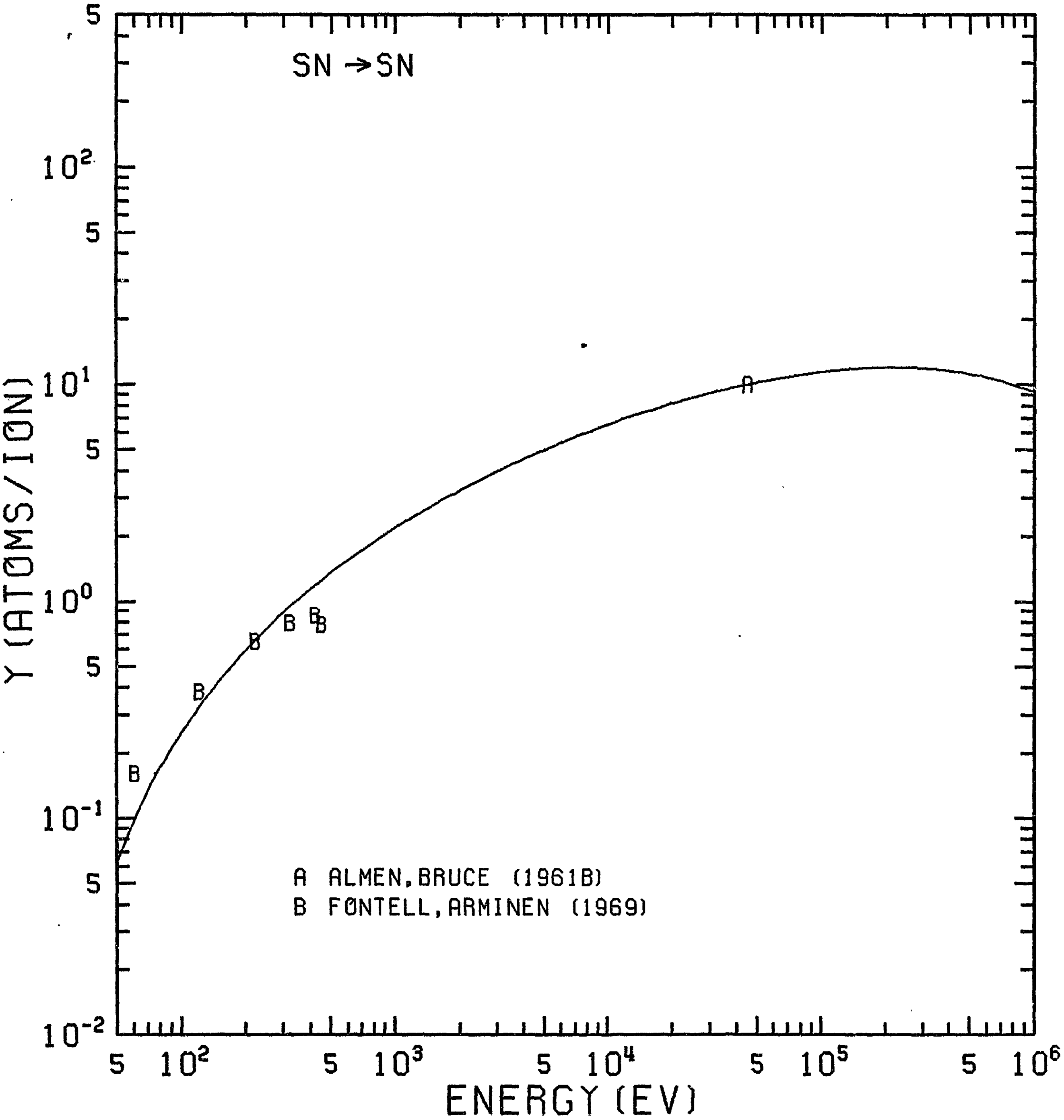

HG →AG
Y (ATOMS/ION)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A WEHNER (1957)
B ALMEN, BRUCE (1961B)
C WEHNER, ROSENBERG (1961)
D ASKEROV, SENA (1969)
E ISMAIL (1970)

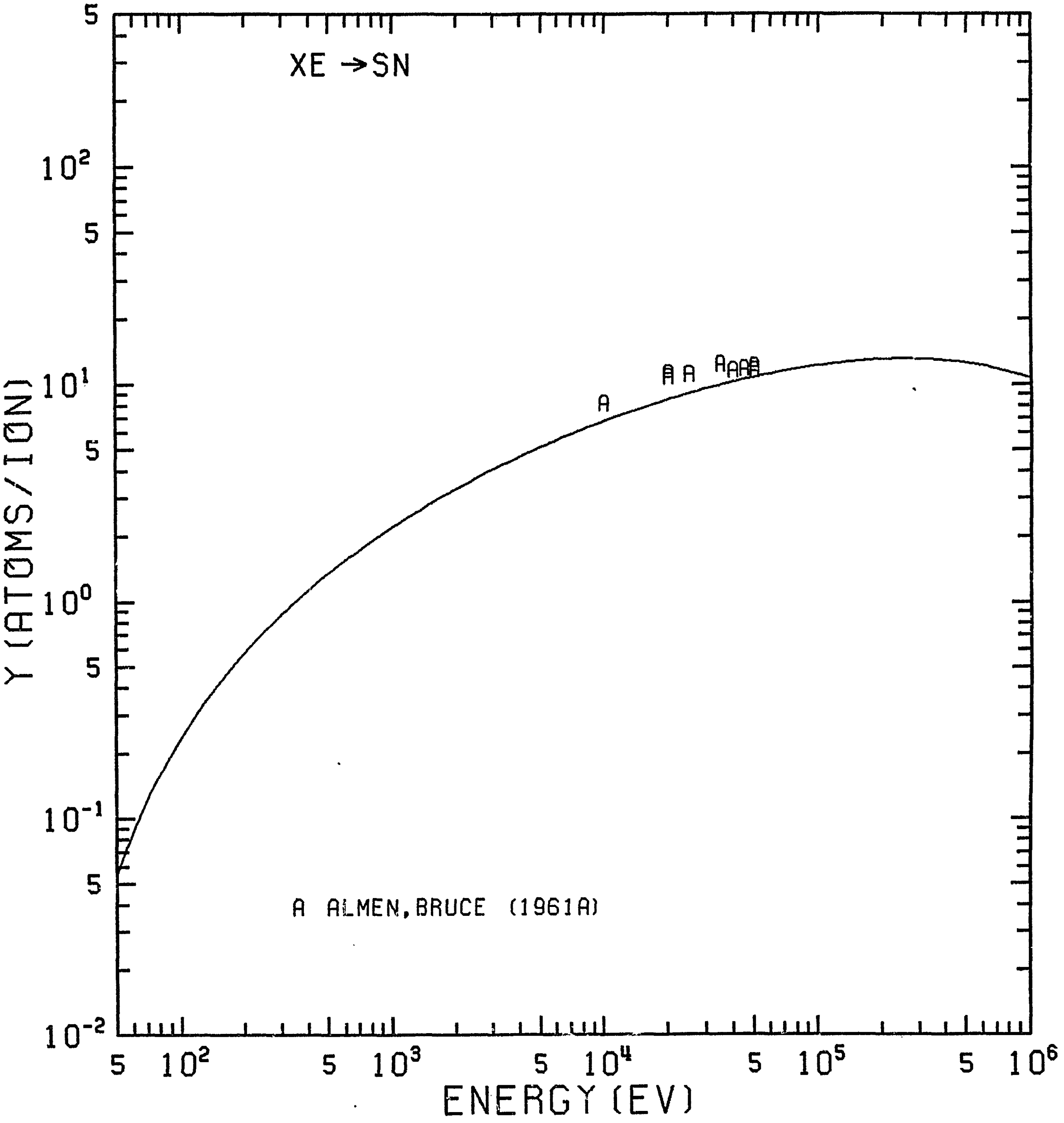

BI →AG
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BLUCE (1961B)
B ANDERSEN, BAY (1973)
C JOHAR, THOMPSON (1979)
C
B
A

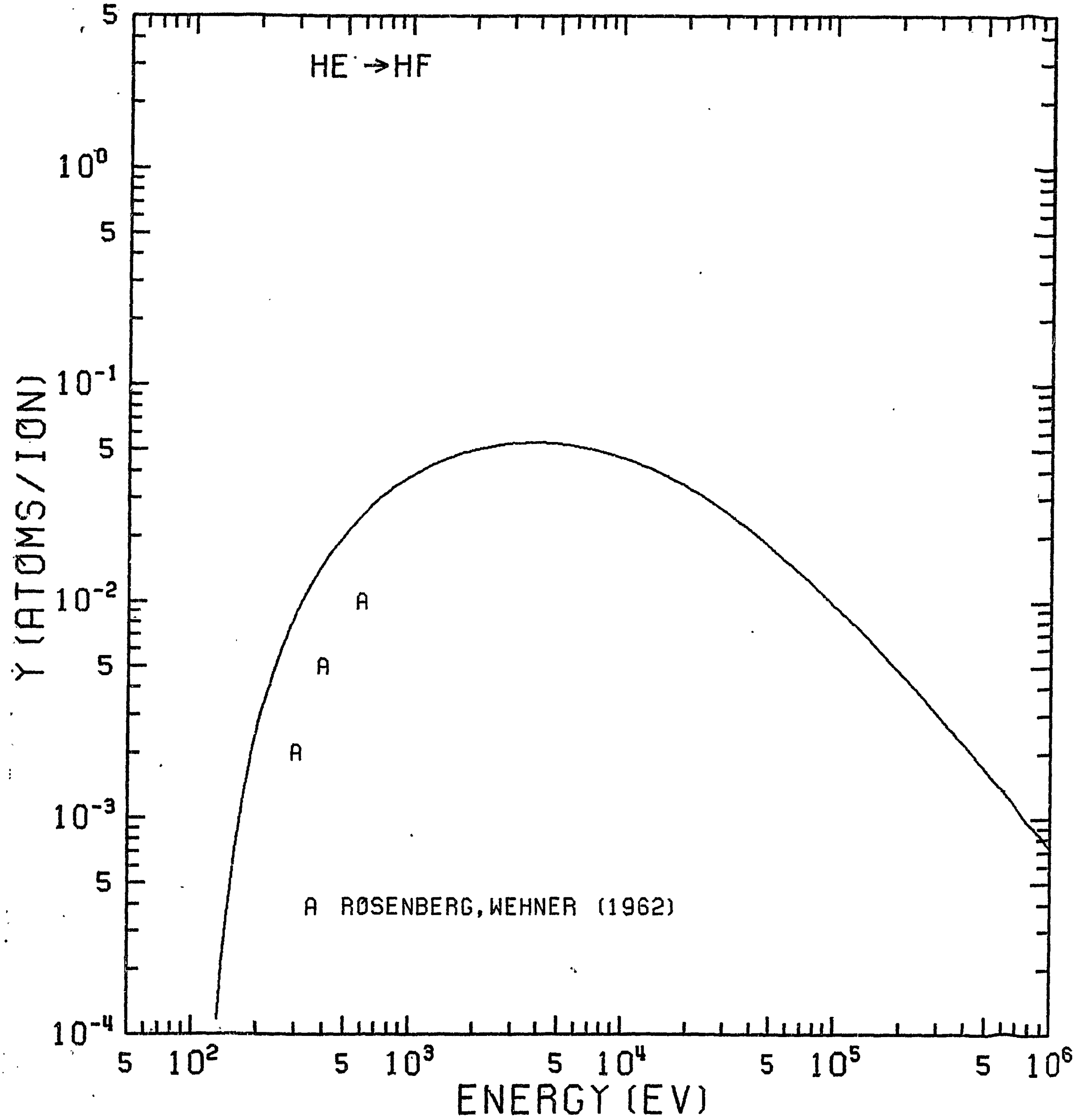

NE →SN
Y (ATOMS/ION)
ENERGY (EV)
A ALMEN, BRUCE (1961A)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
A
A
AAA

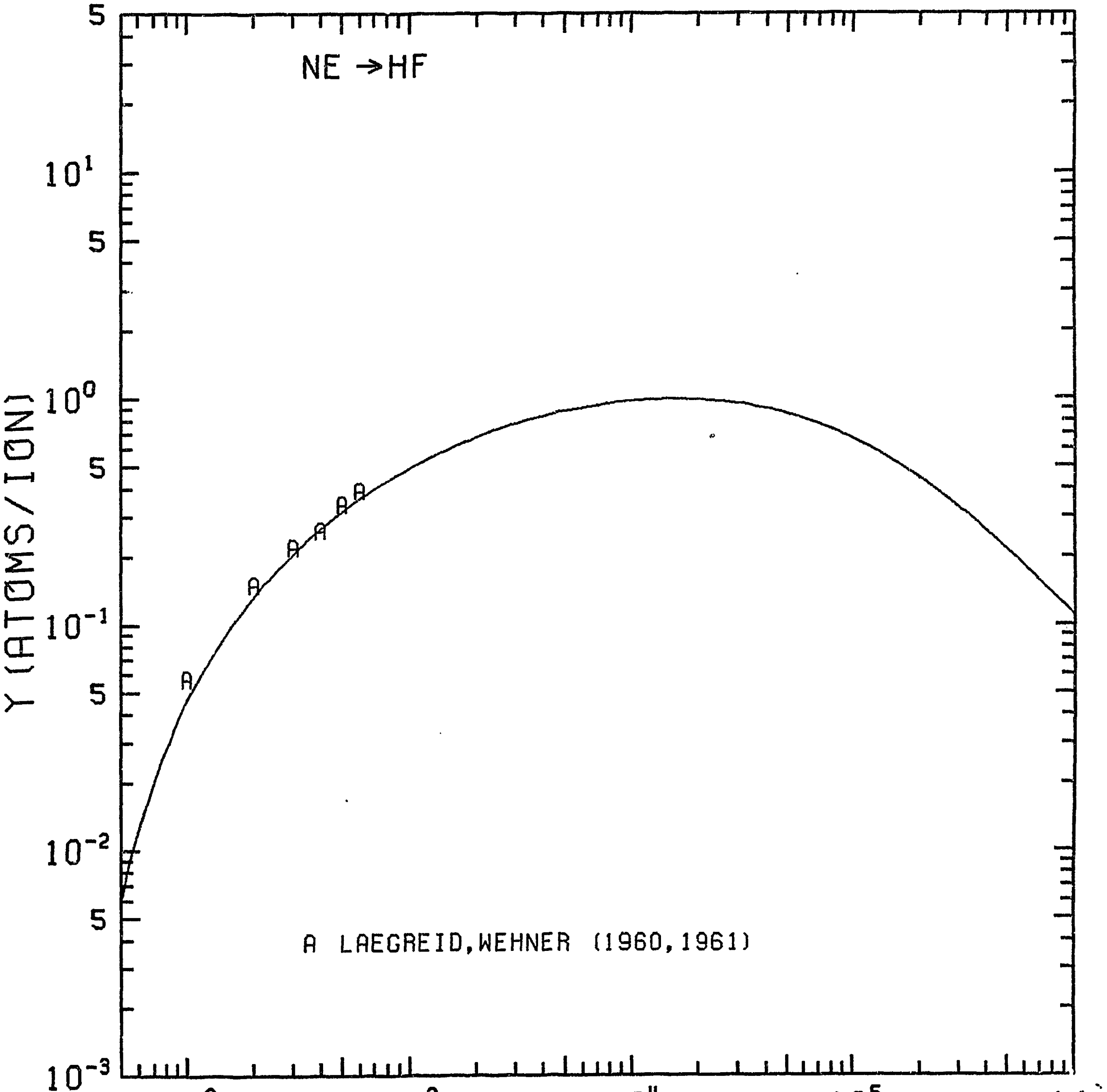

AR → SN
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961A)
B WEHNER (1961)
C KRUTENANT, PANZERA (1970)

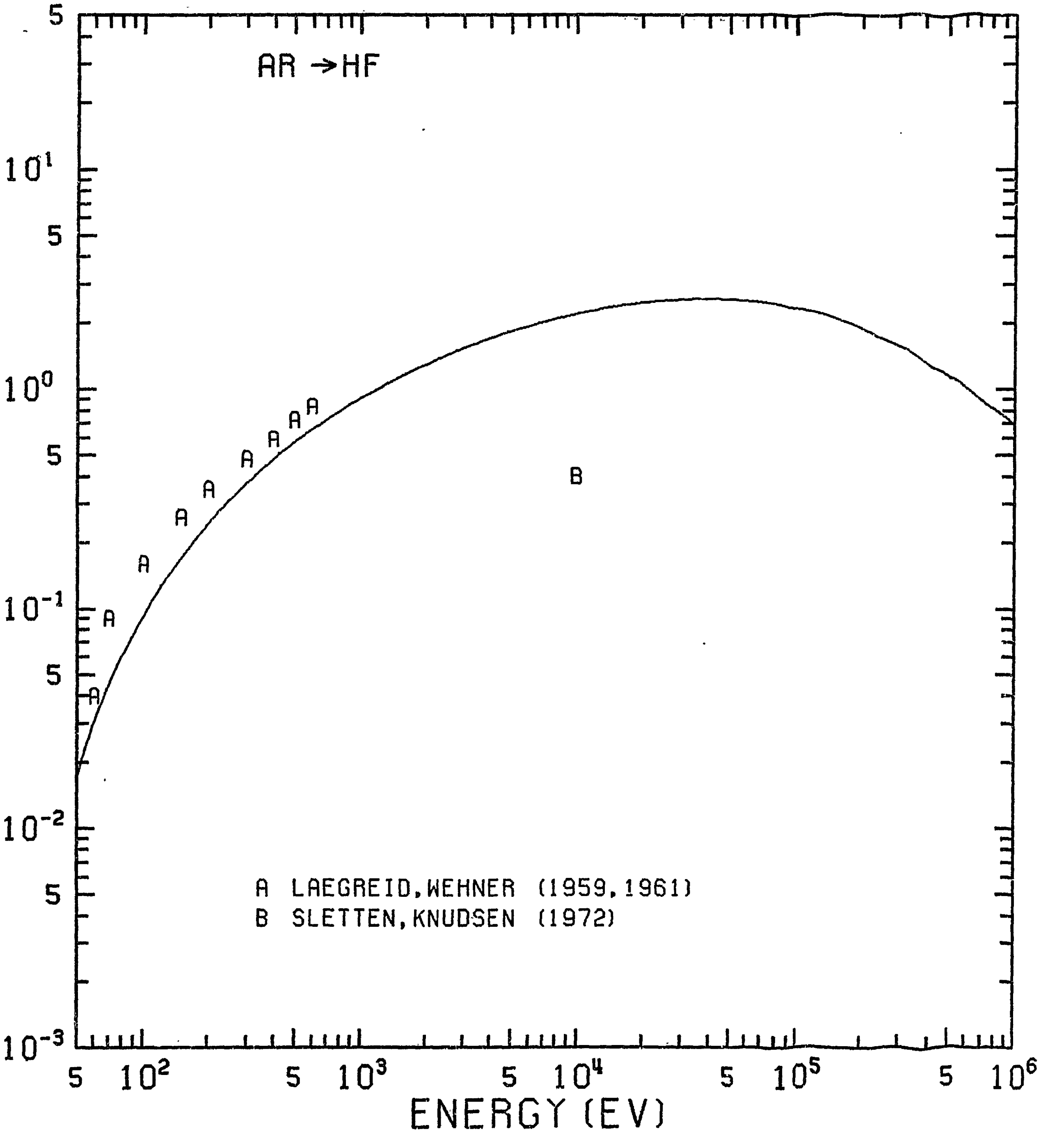

KR →SN
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
A ALMEN, BRUCE (1961A)

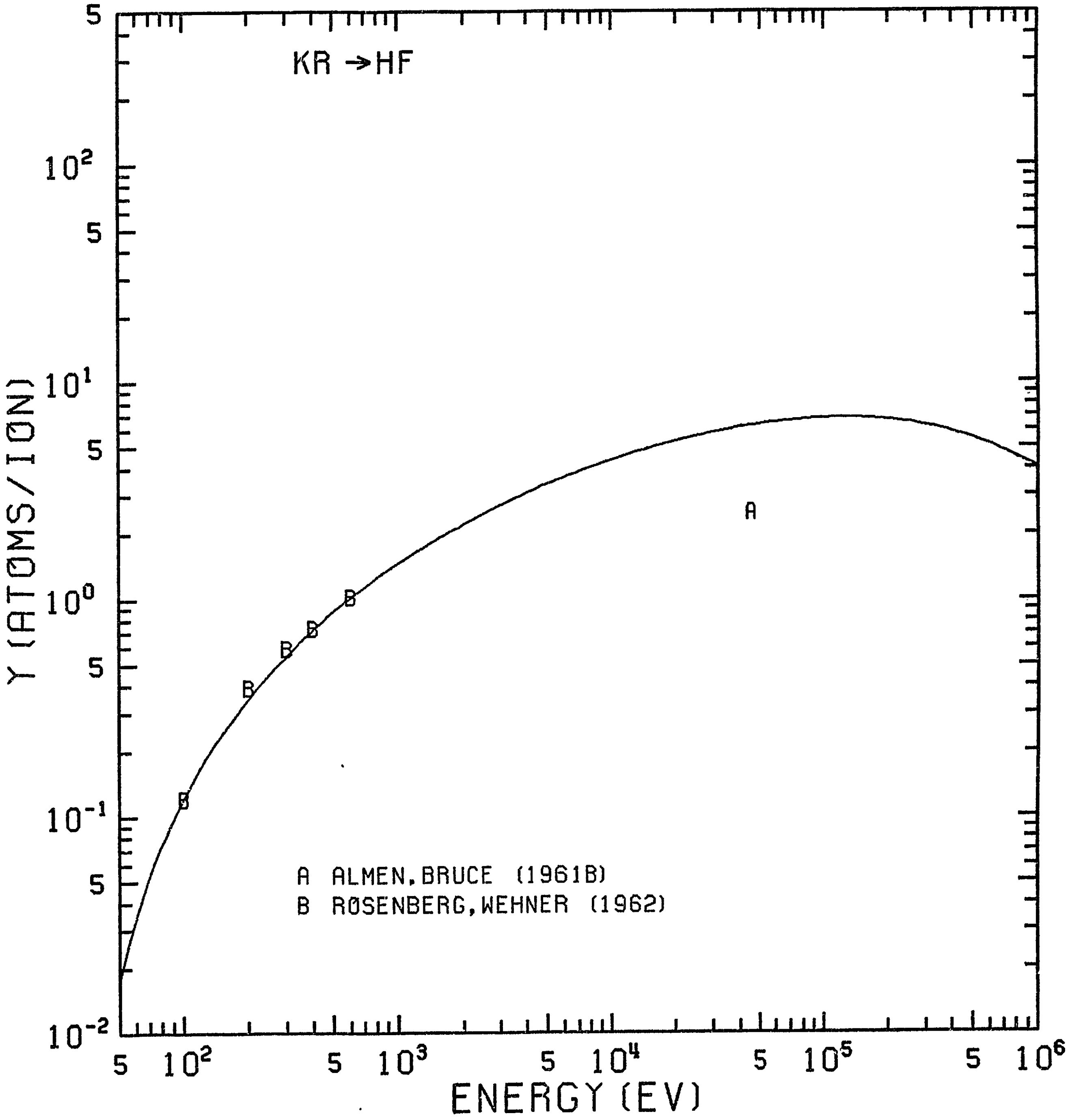

SN → SN
Y (ATØMS/IØN)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A ALMEN, BRUCE (1961B)
B FØNTELL, ARMINEN (1969)

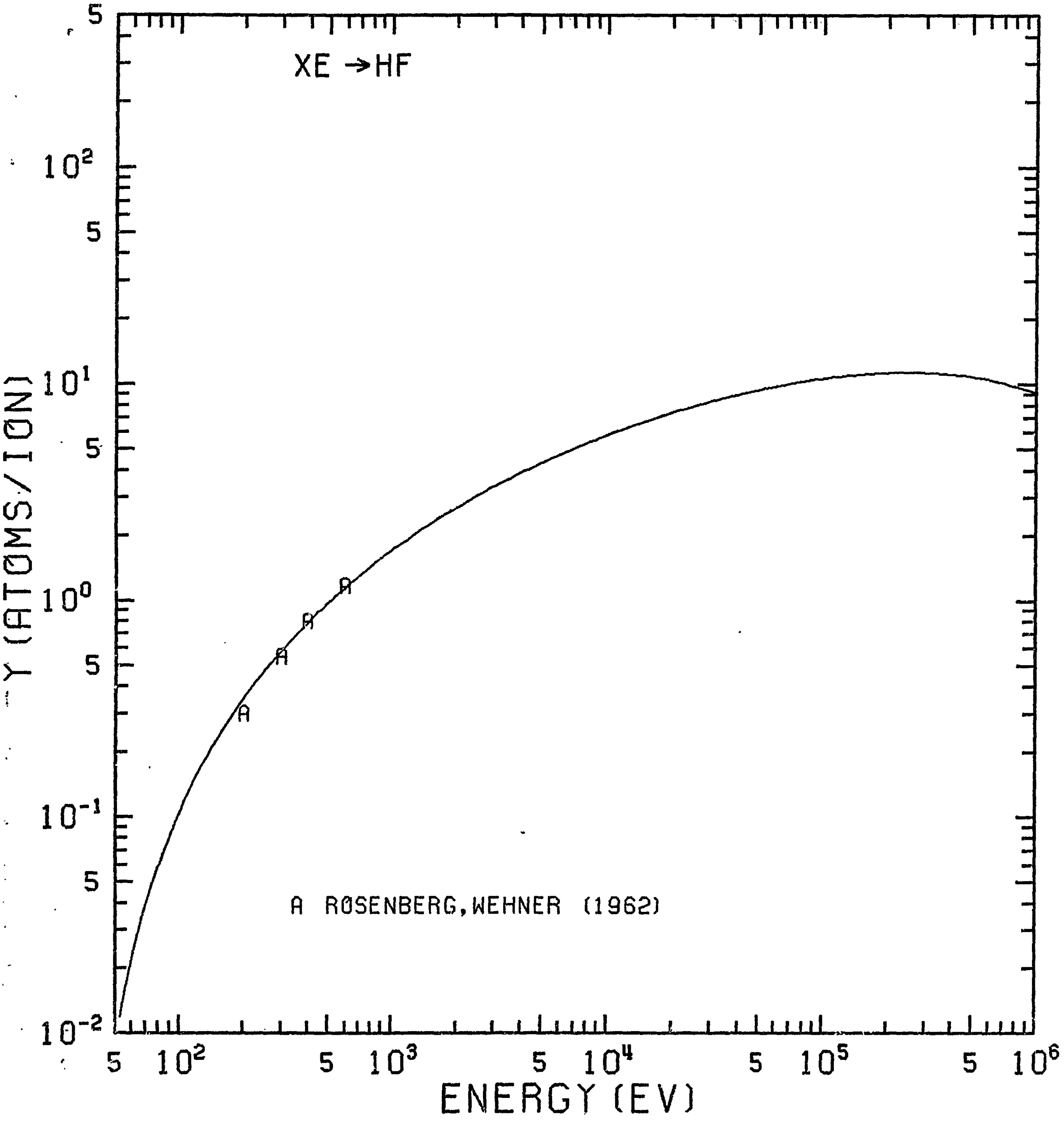

XE →SN
Y (ATOMS/ION)
ENERGY (EV)
A ALMEN, BRUCE (1961A)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A

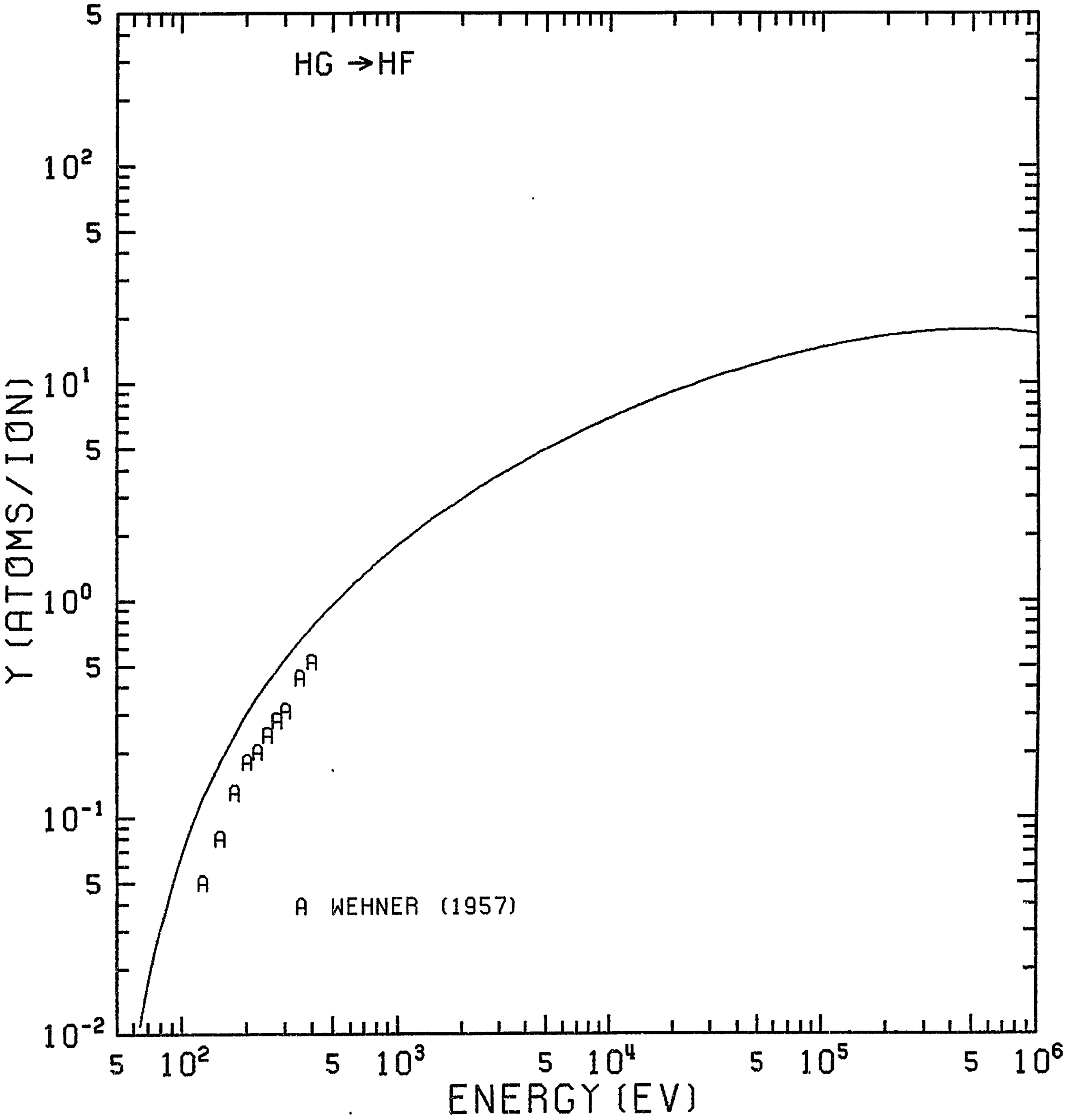

HE →HF
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A
A
A ROSENBERG, WEHNER (1962)

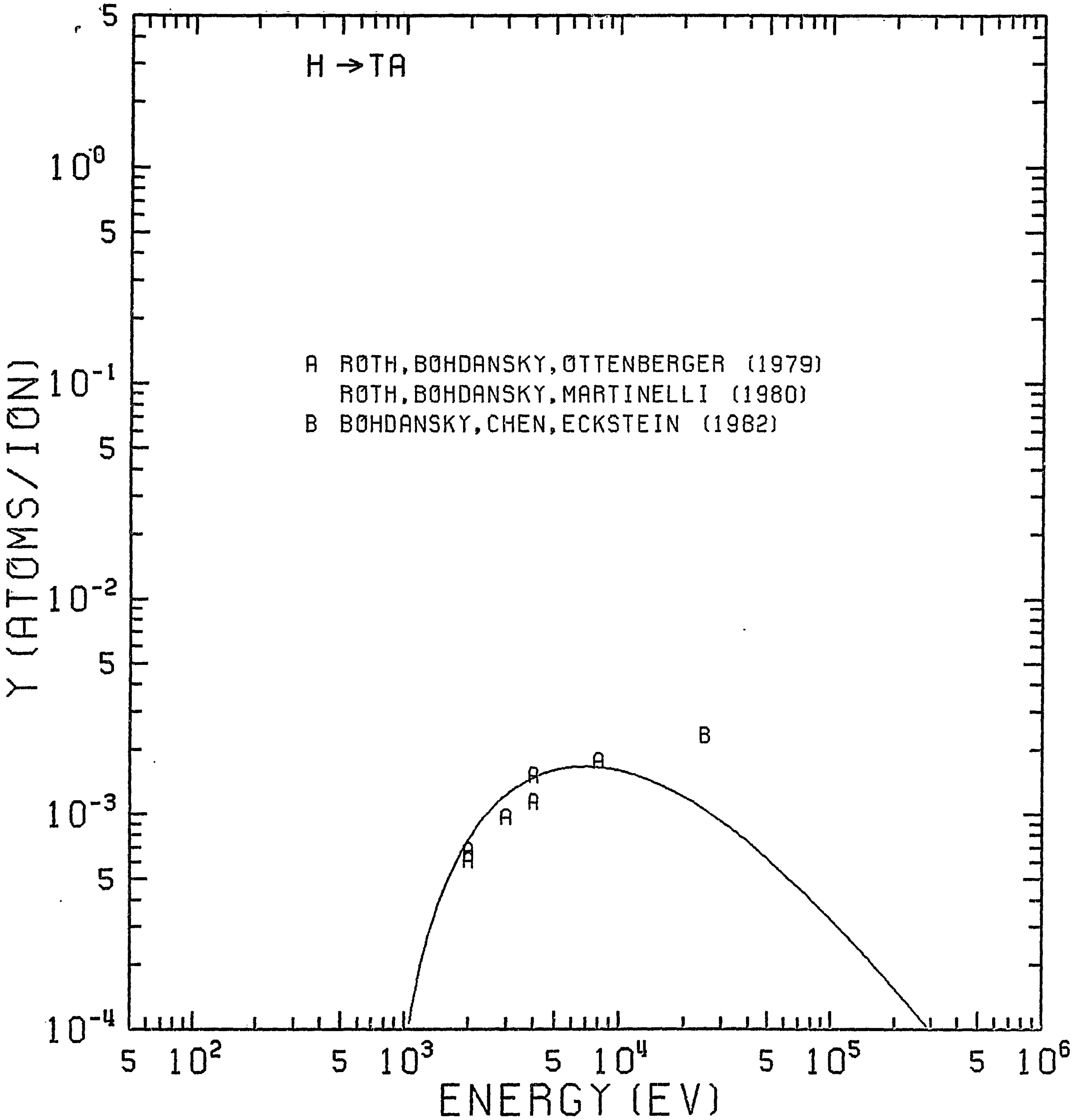

NE →HF
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
Y (ATOMS/ION)
A
A LAEGREID, WEHNER (1960, 1961)
5
10²
5
10³
5
10⁴
5
10⁵
5
ENERGY (EV)

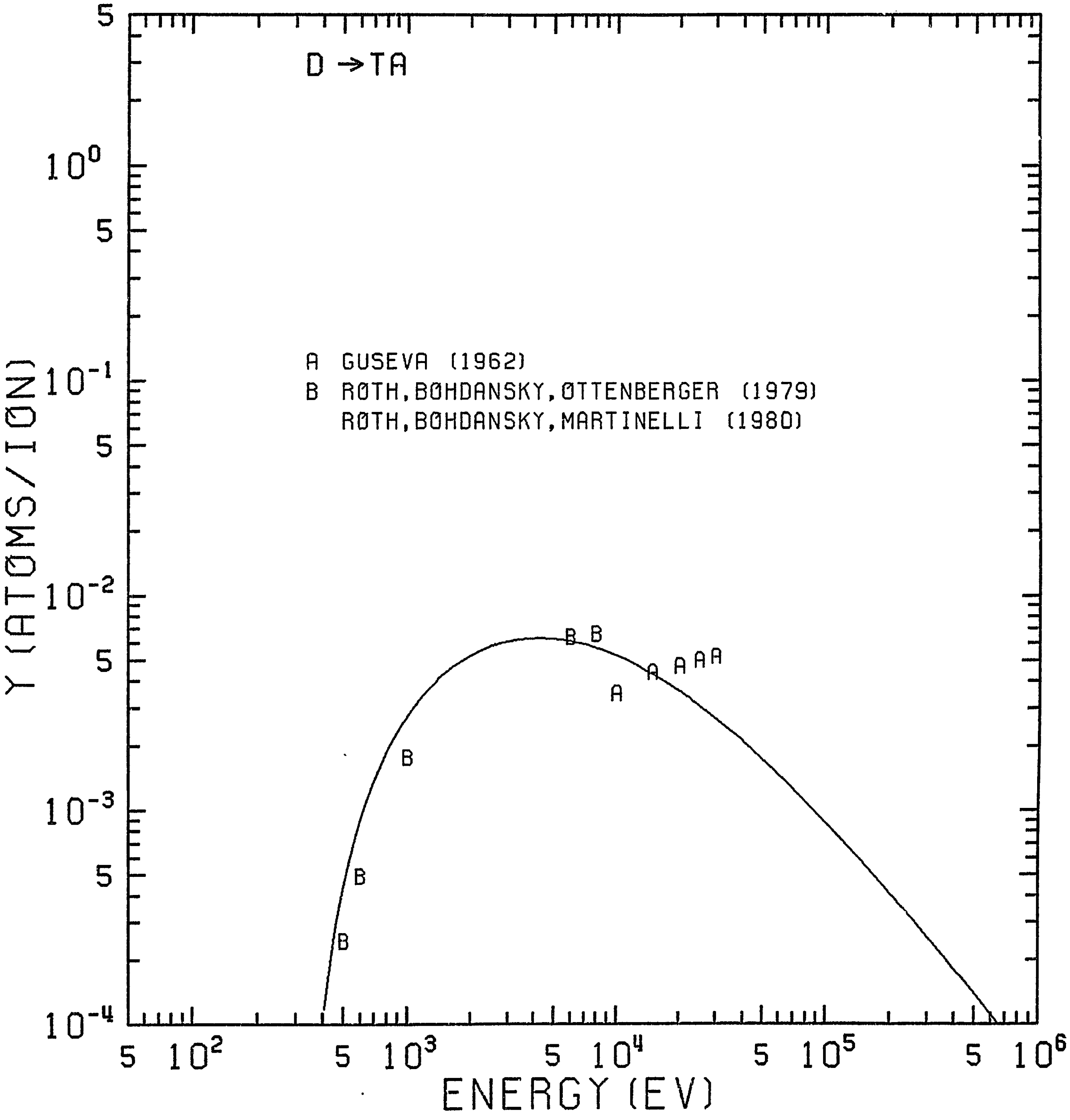

AR →HF
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A LAEGREID, WEHNER (1959, 1961)
B SLETTEN, KNUDSEN (1972)
A
B

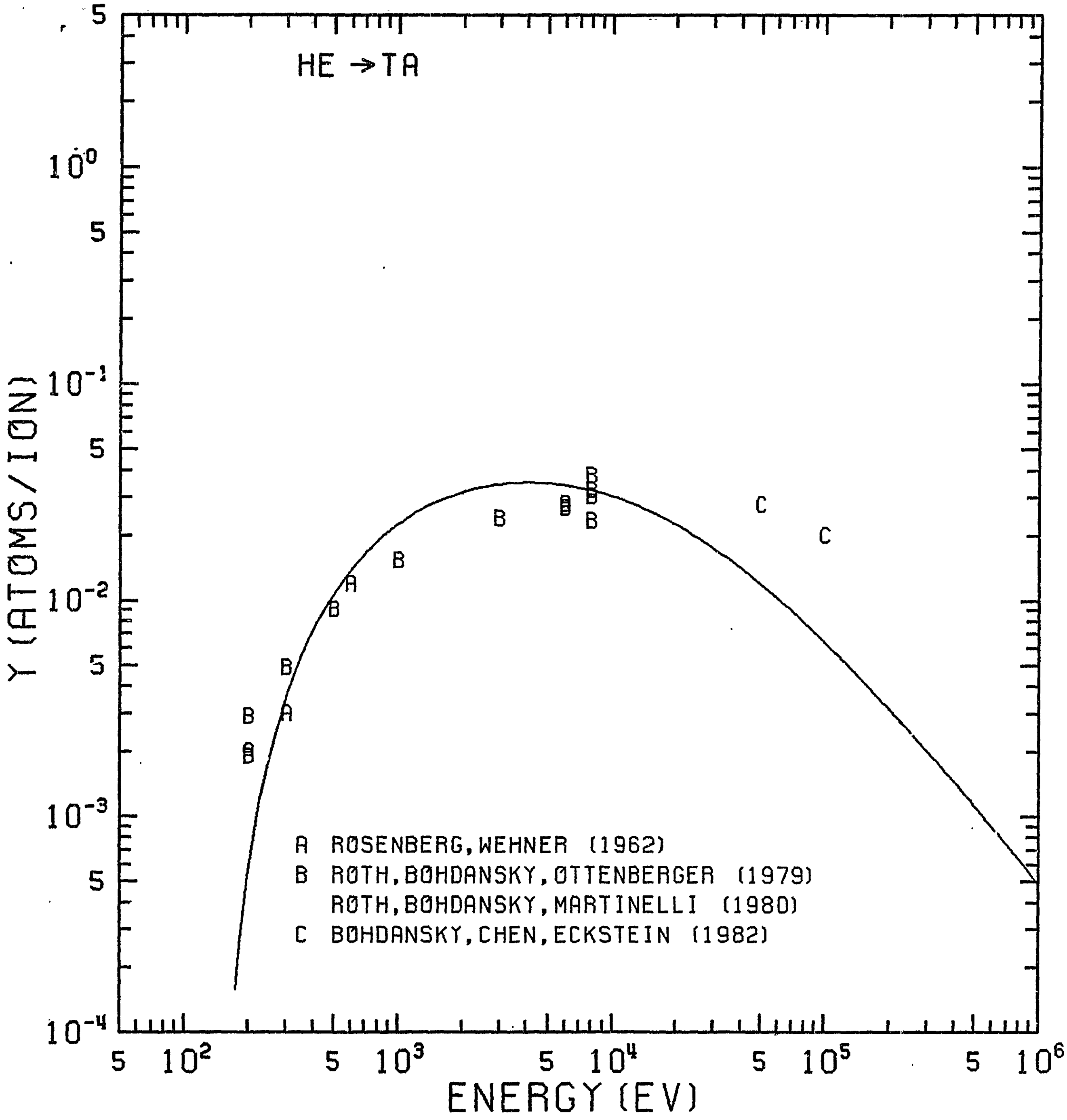

KR →HF
Y (ATOMS/ION)
ENERGY (EV)
A ALMEN, BRUCE (1961B)
B ROSENBERG, WEHNER (1962)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
B
B
B
B
B

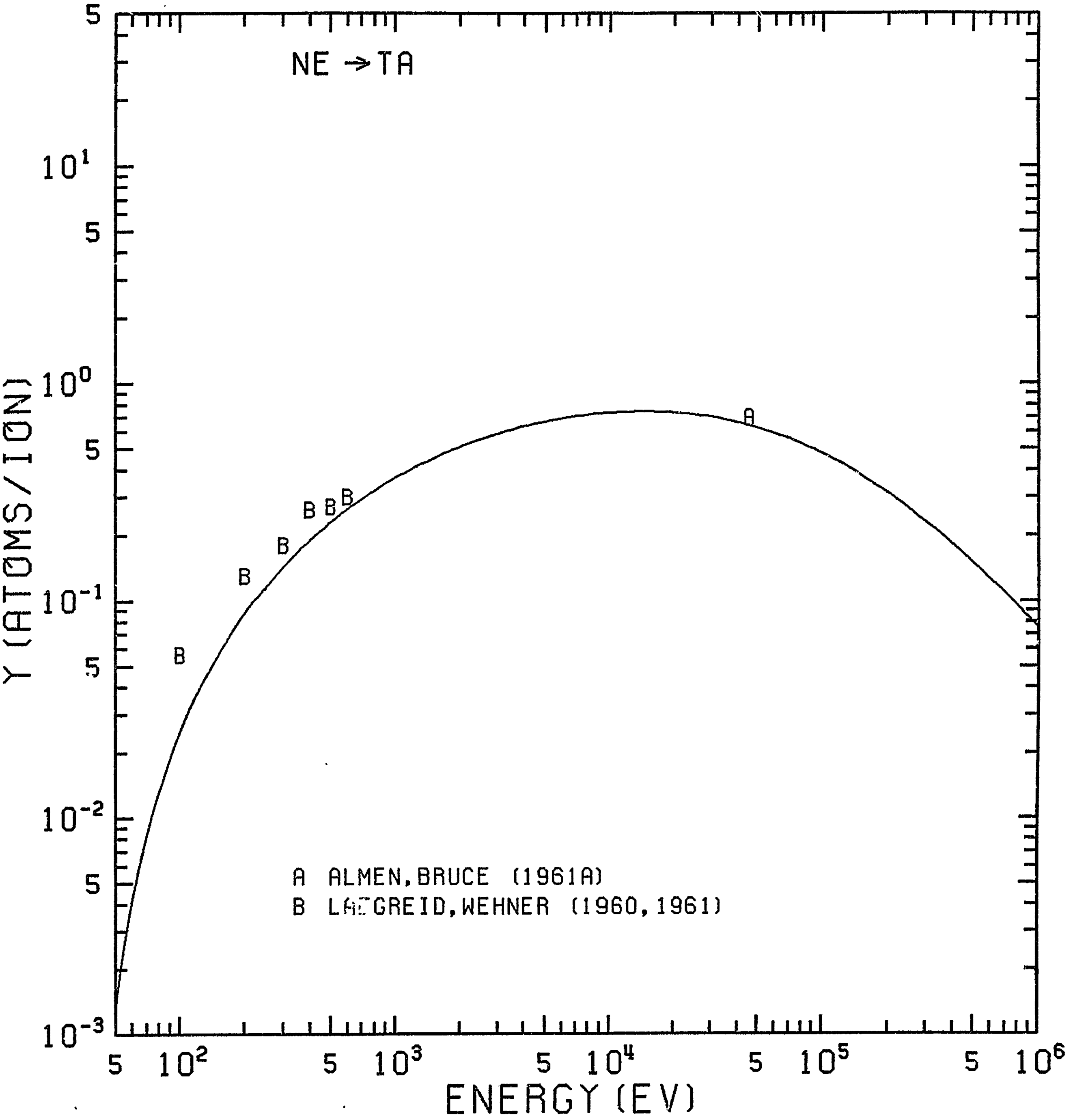

XE →HF
A ROSENBERG, WEHNER (1962)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

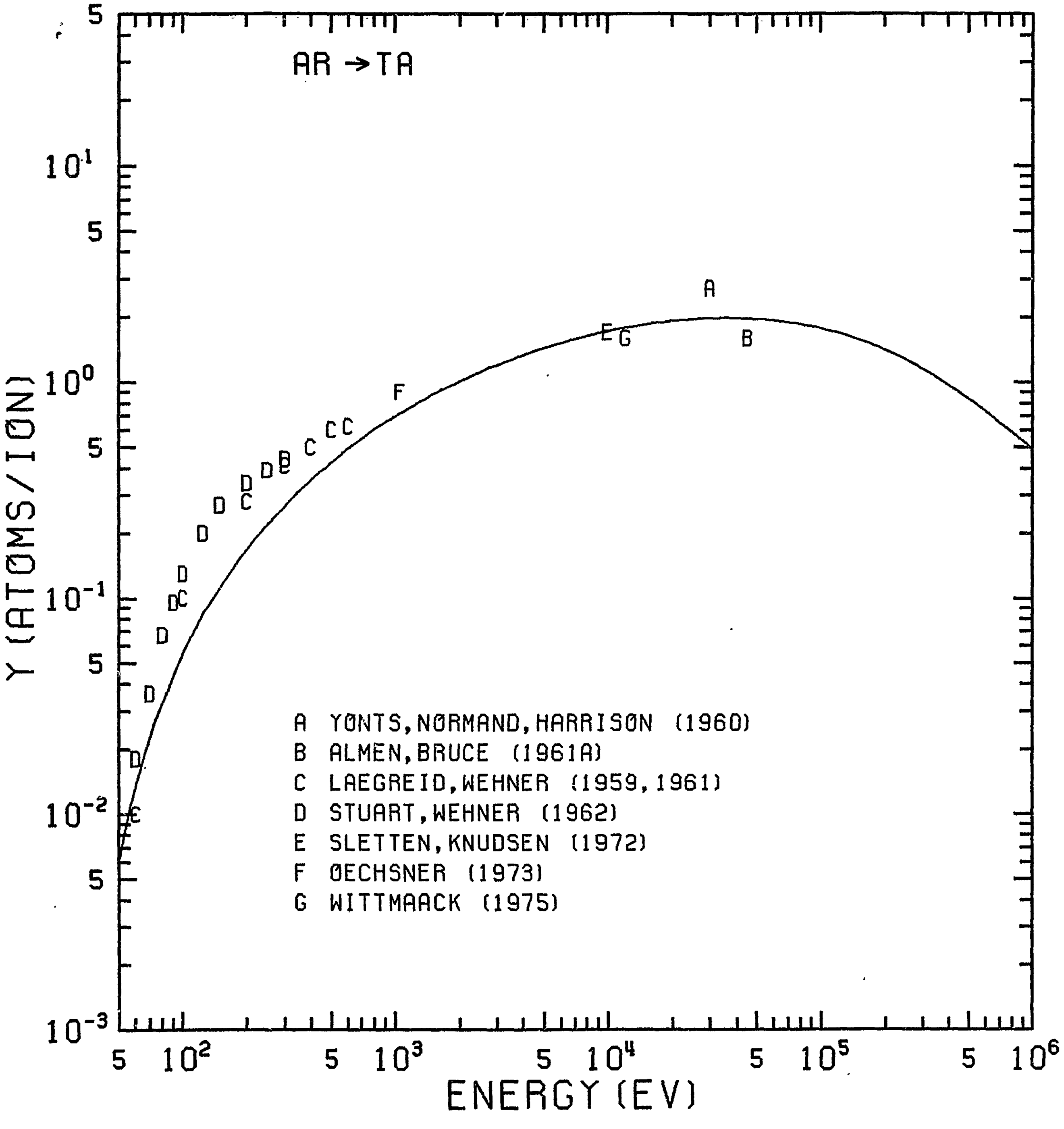

HG →HF
Y (ATOMS/ION)
ENERGY (EV)
A WEHNER (1957)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

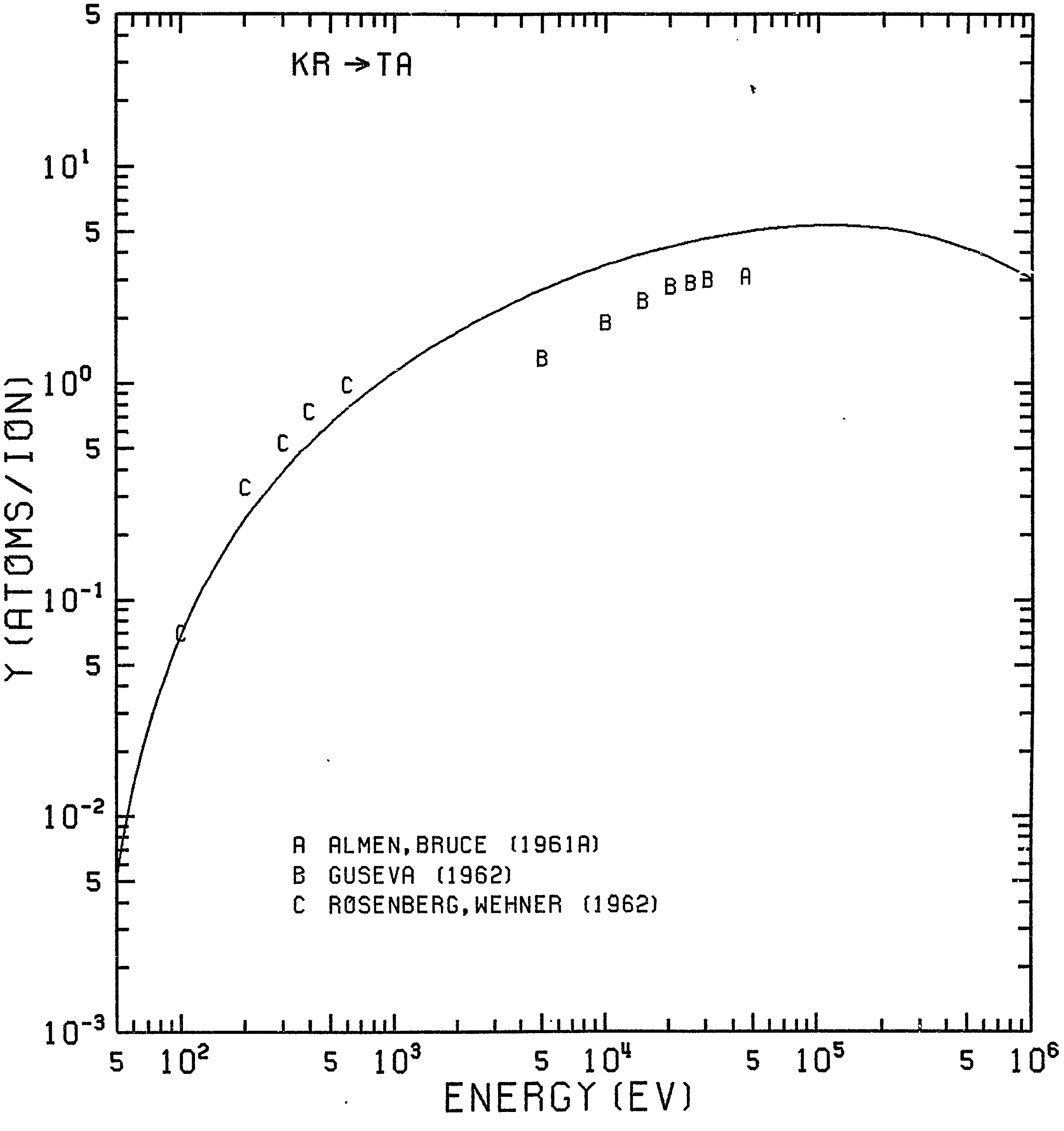

H →TA
A ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, MARTINELLI (1980)
B BOHDANSKY, CHEN, ECKSTEIN (1982)
Y (ATOMS/ION)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A
B

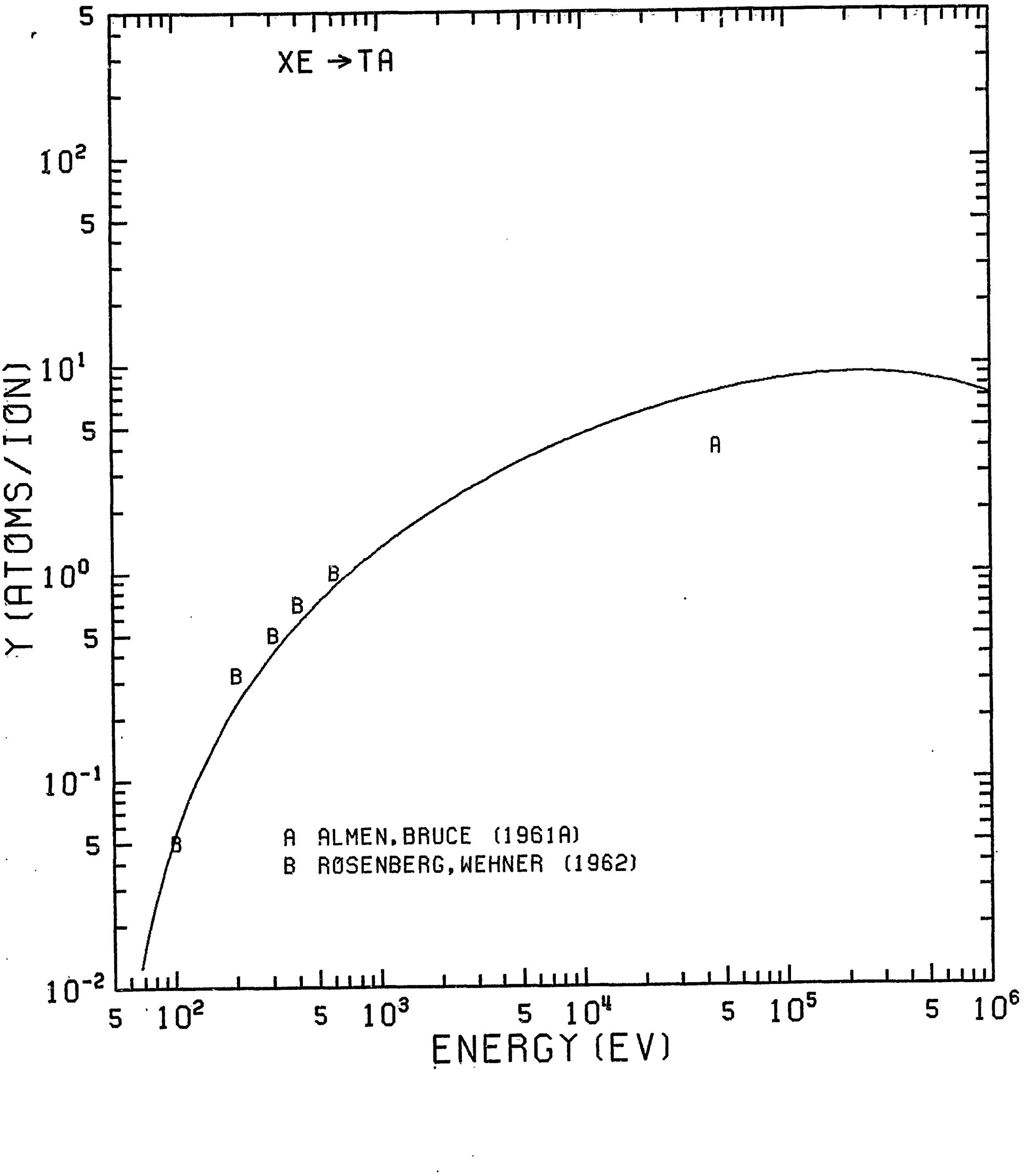

D → TA
A GUSEVA (1962)
B ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, MARTINELLI (1980)
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B

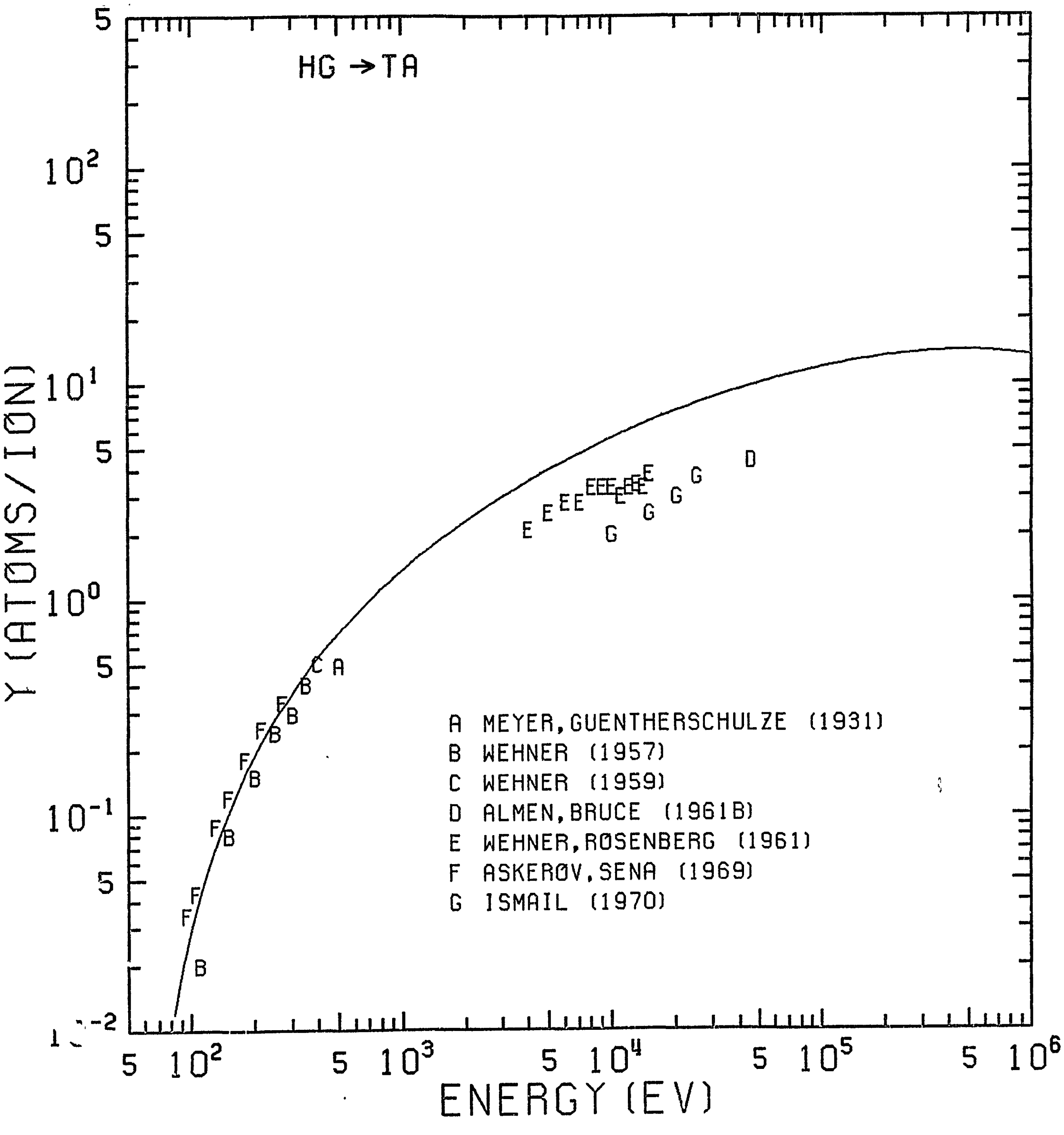

HE → TA
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ROSENBERG, WEHNER (1962)
B ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, MARTINELLI (1980)
C BOHDANSKY, CHEN, ECKSTEIN (1982)

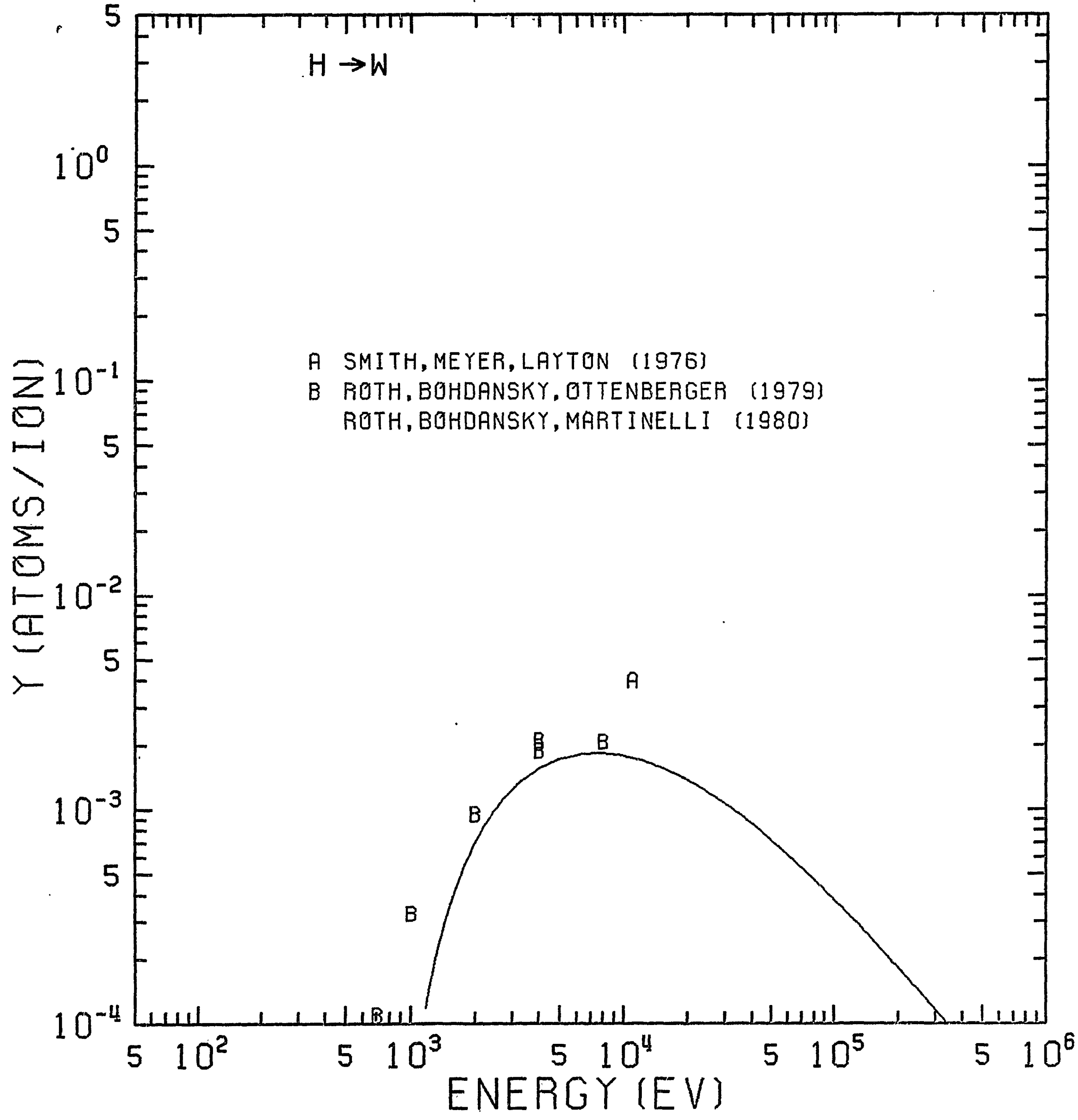

NE → TA
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1960, 1961)

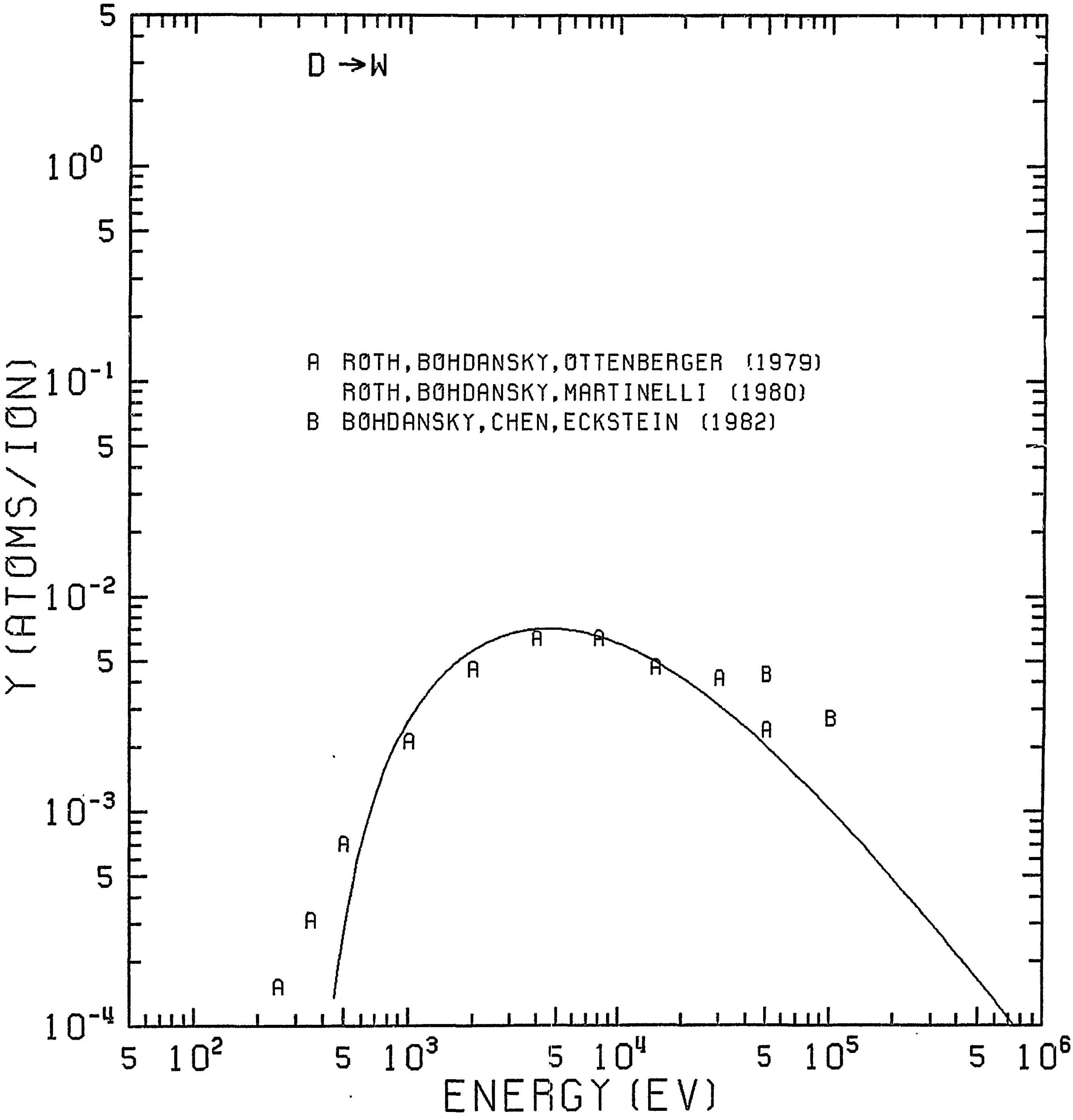
AR → TA
Y (ATOMS/ION)
ENERGY (EV)
10^-3
5
10^-2
5
10^-1
5
10^0
5
10^1
5
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A YONTS, NORMAND, HARRISON (1960)
B ALMEN, BRUCE (1961A)
C LAEGREID, WEHNER (1959, 1961)
D STUART, WEHNER (1962)
E SLETTEN, KNUDSEN (1972)
F OECHSNER (1973)
G WITTMAACK (1975)
A
B
C
D
E
F
G

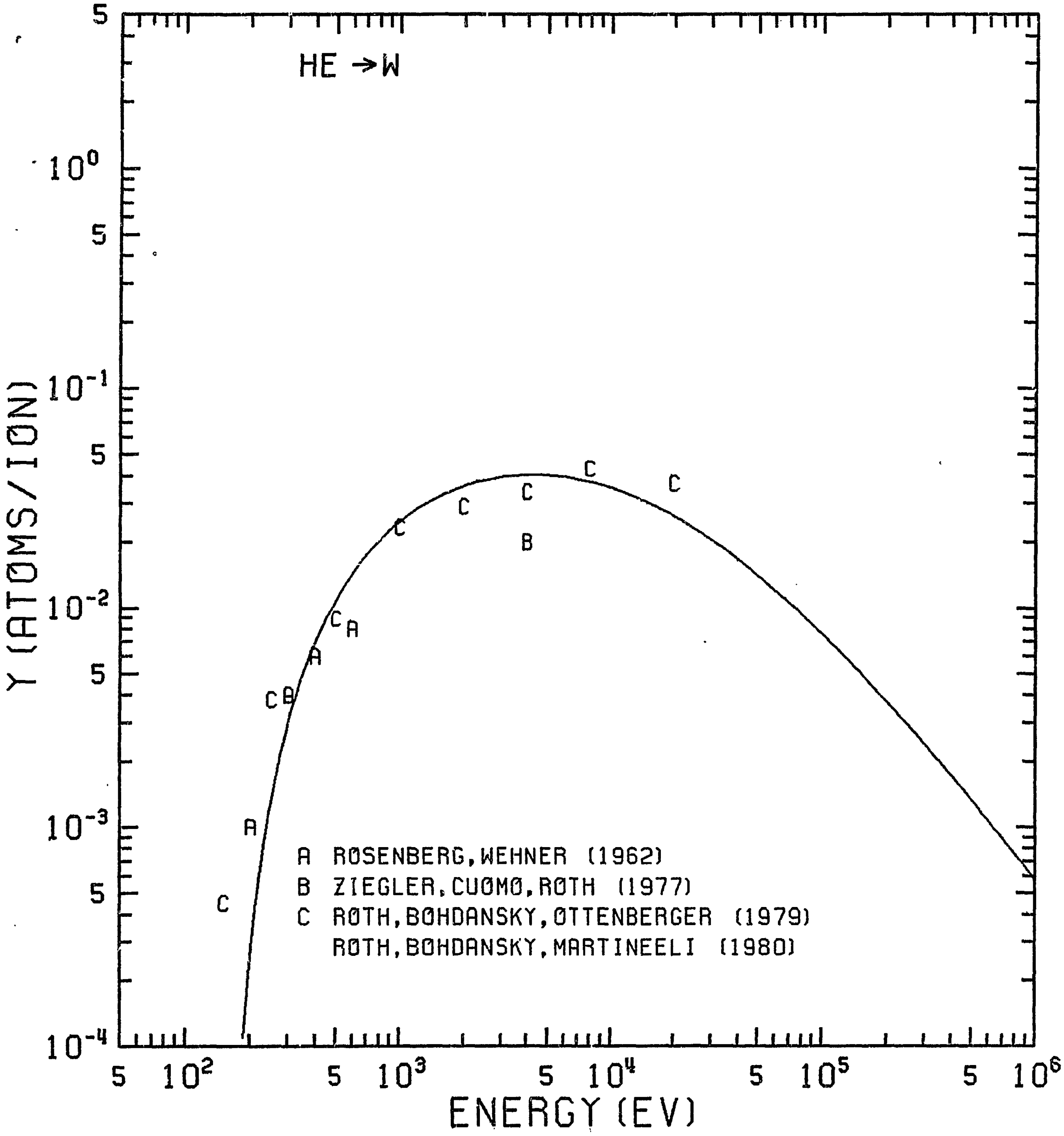

KR → TA
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961A)
B GUSEVA (1962)
C ROSENBERG, WEHNER (1962)
A
B
C

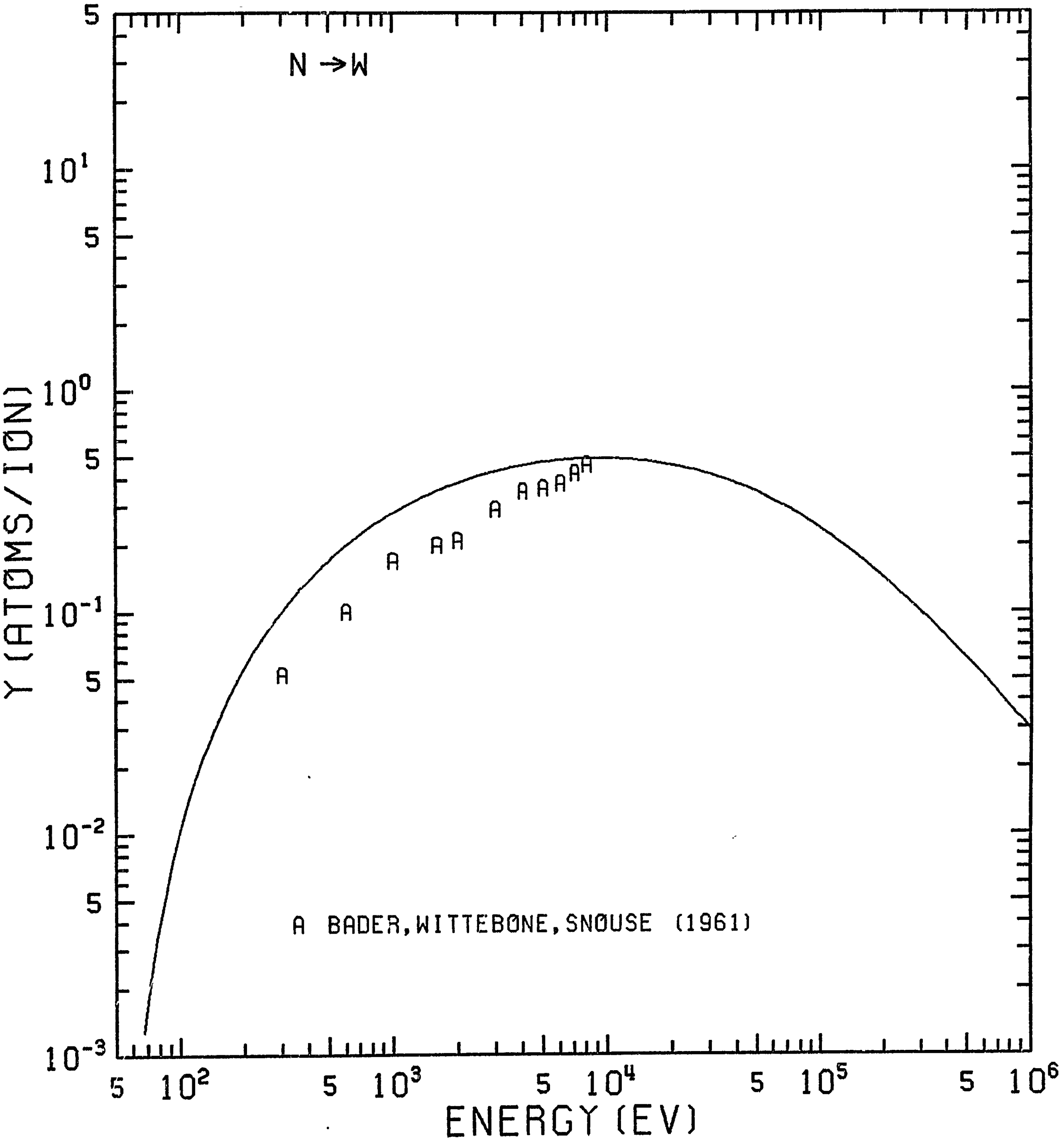

XE →TA
Y (ATØMS/IØN)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
B
A ALMEN, BRUCE (1961A)
B RØSENBERG, WEHNER (1962)

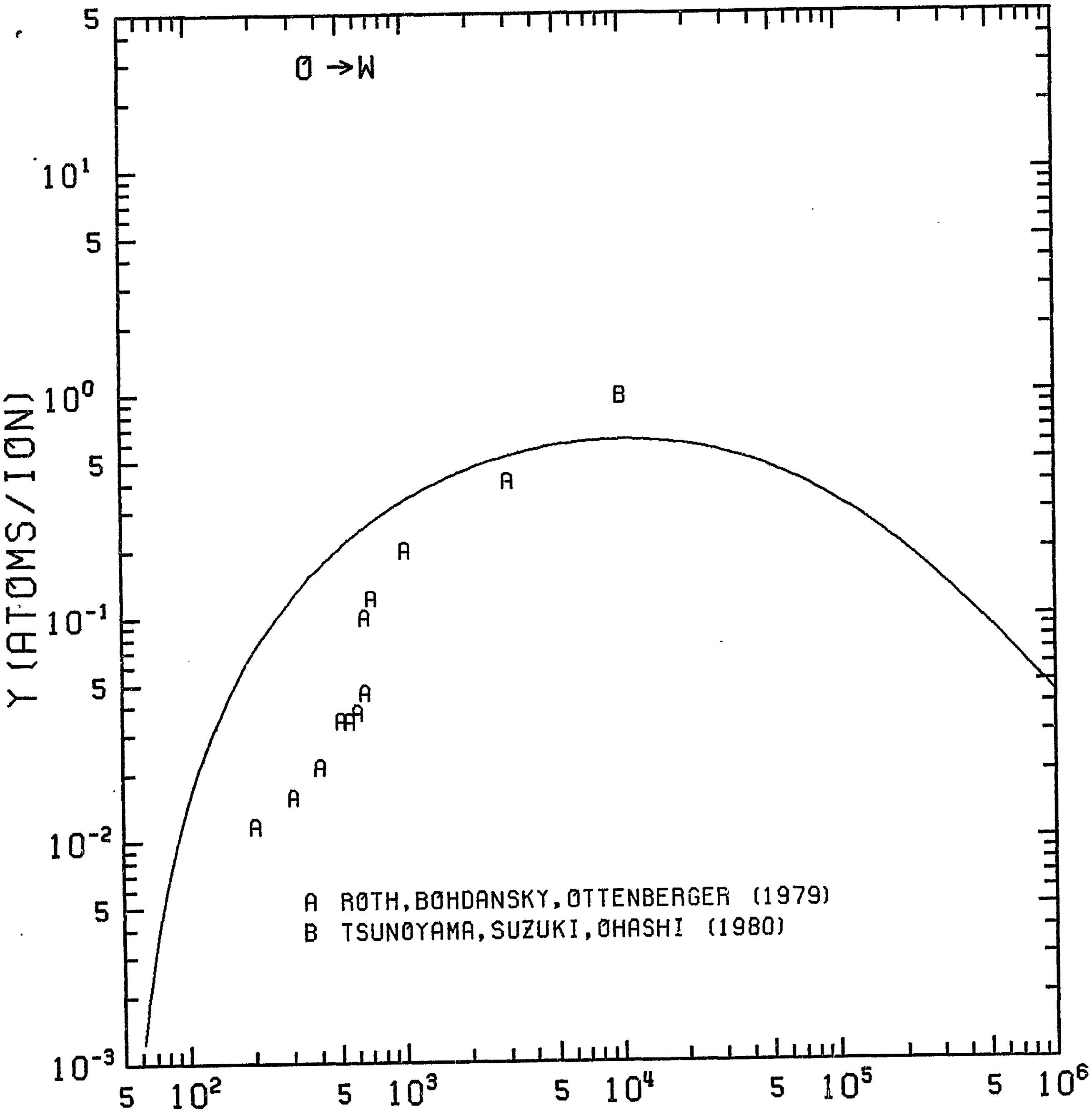

HG → TA
Y (ATØMS/IØN)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A MEYER, GUENTHERSCHULZE (1931)
B WEHNER (1957)
C WEHNER (1959)
D ALMEN, BRUCE (1961B)
E WEHNER, RØSENBERG (1961)
F ASKERØV, SENA (1969)
G ISMAIL (1970)

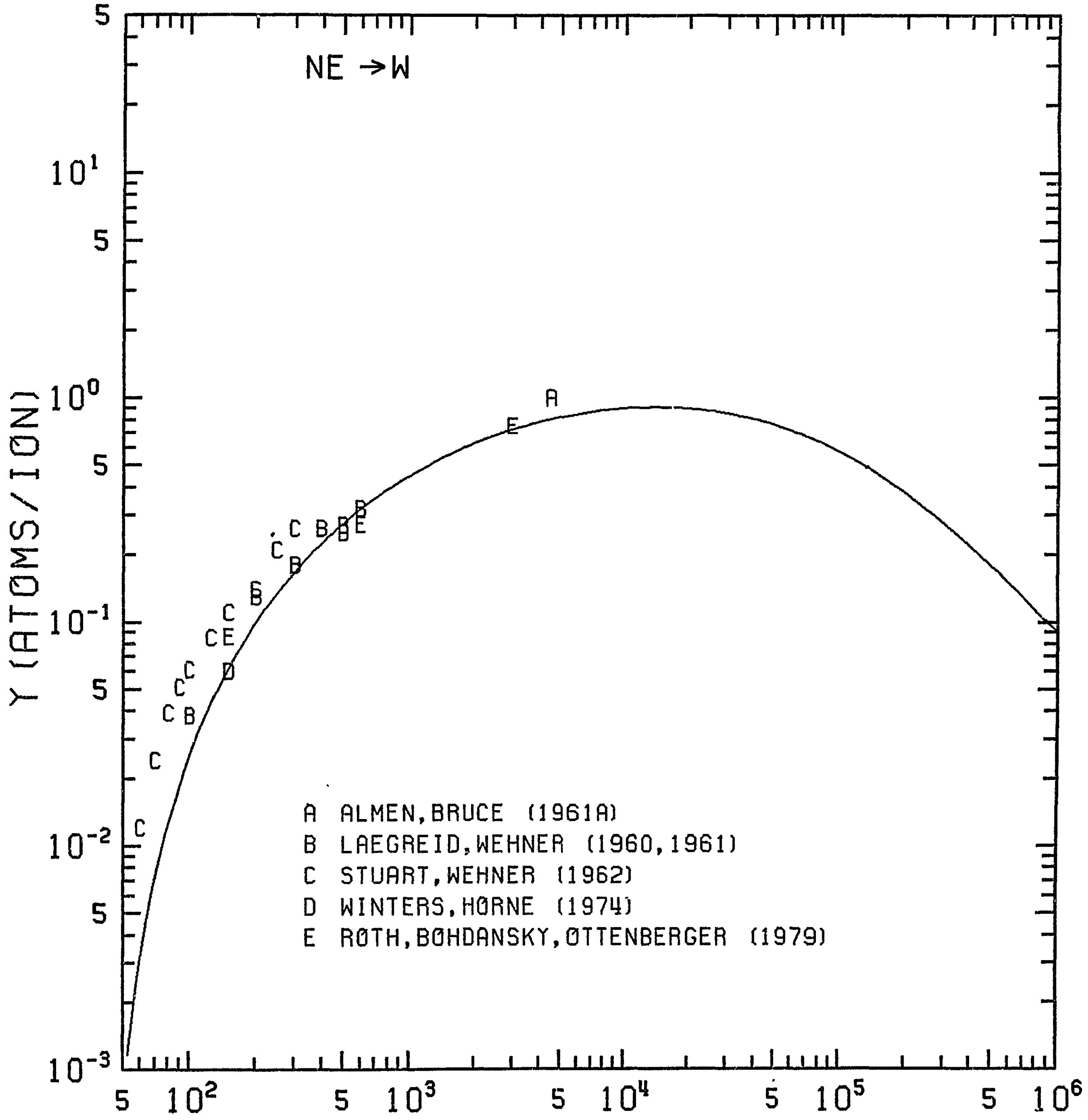
H →W
A SMITH, MEYER, LAYTON (1976)
B ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, MARTINELLI (1980)
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B

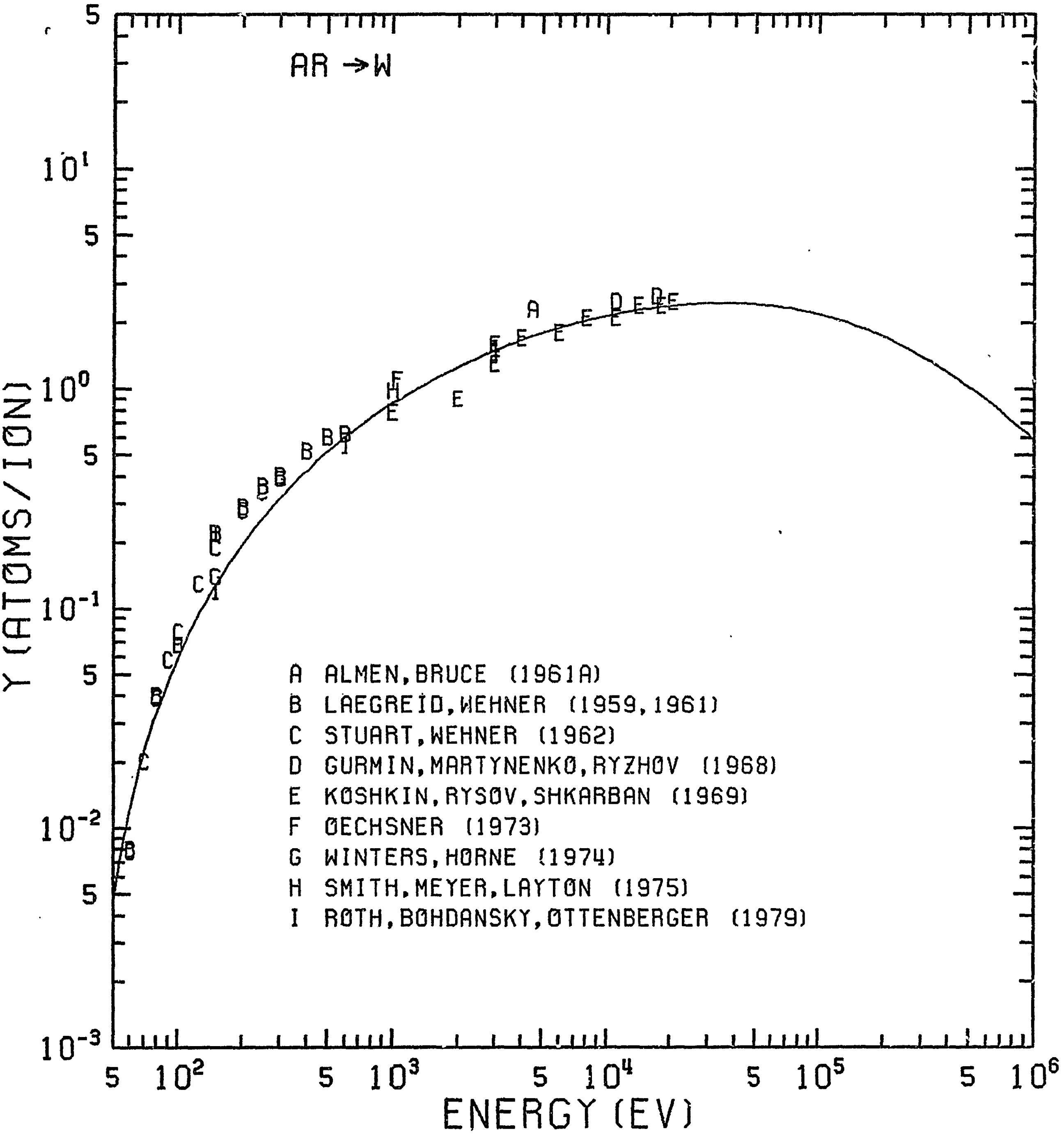

D →W
A ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, MARTINELLI (1980)
B BOHDANSKY, CHEN, ECKSTEIN (1982)
Y (ATOMS/ION)
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
5
ENERGY (EV)
10^{2}
10^{3}
10^{4}
10^{5}
10^{6}

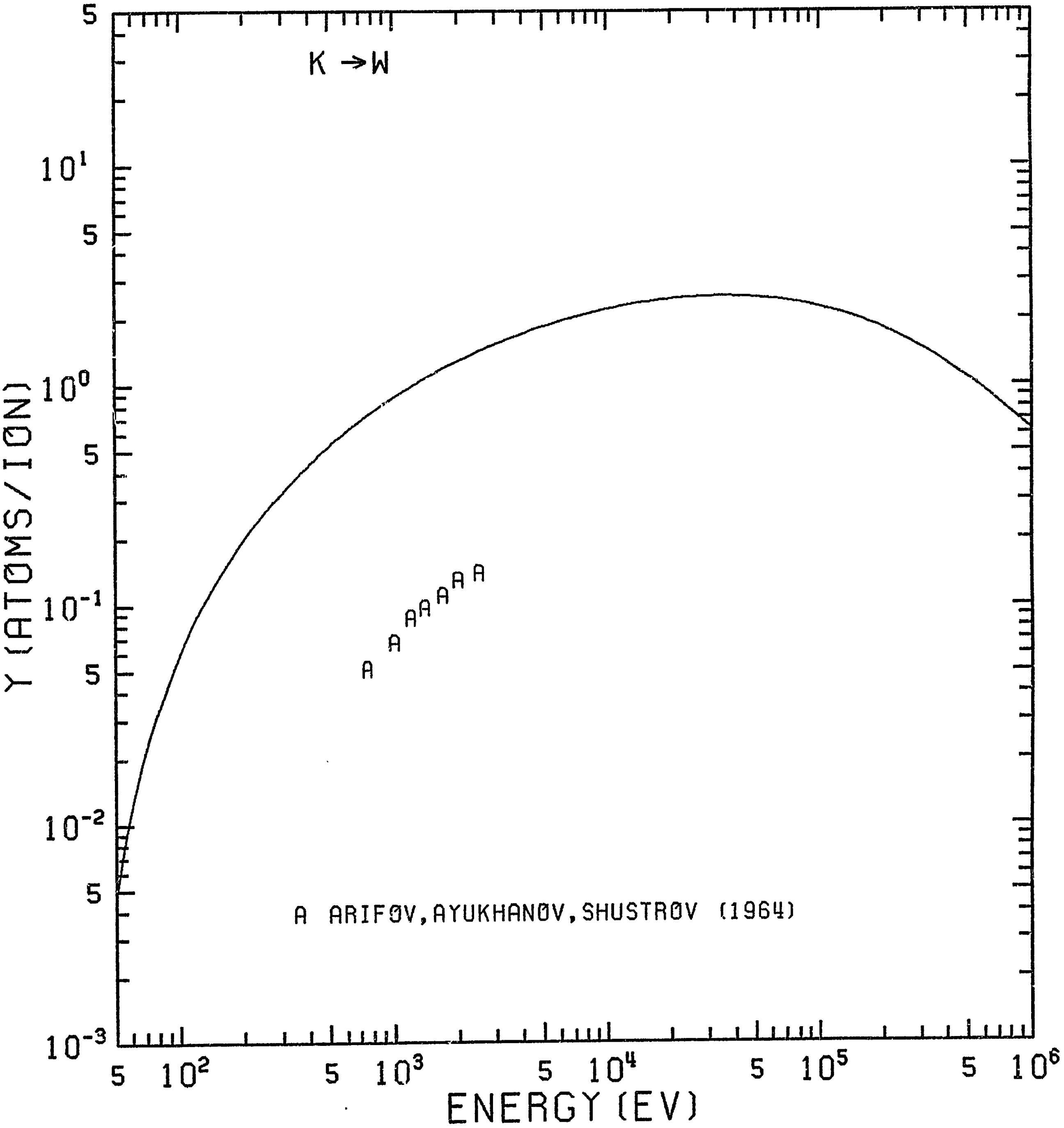

HE →W
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ROSENBERG, WEHNER (1962)
B ZIEGLER, CUOMO, ROTH (1977)
C ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, MARTINEELI (1980)

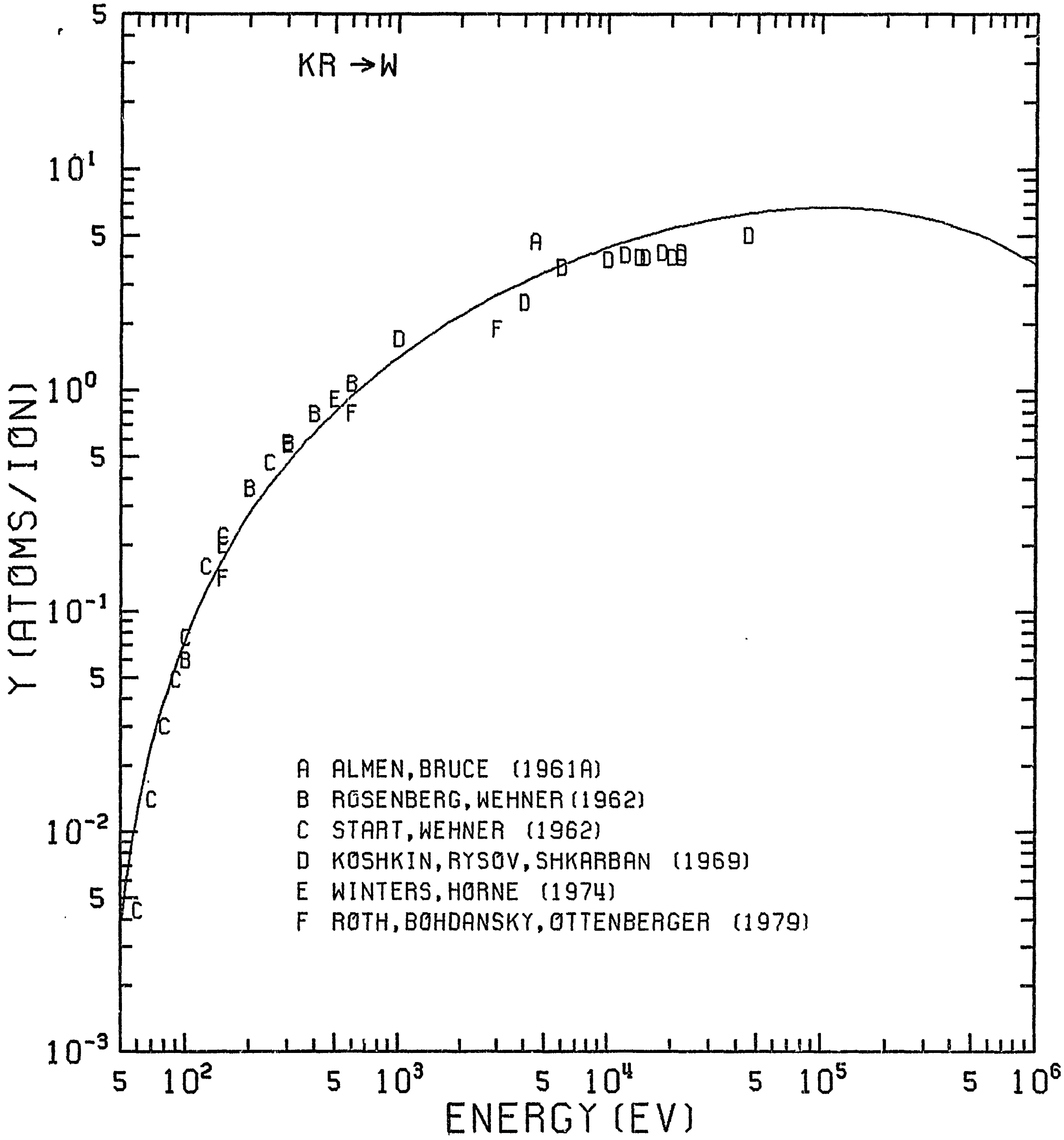

N →W
Y (ATOMS/ION)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A BADER, WITTEBONE, SNOUSE (1961)

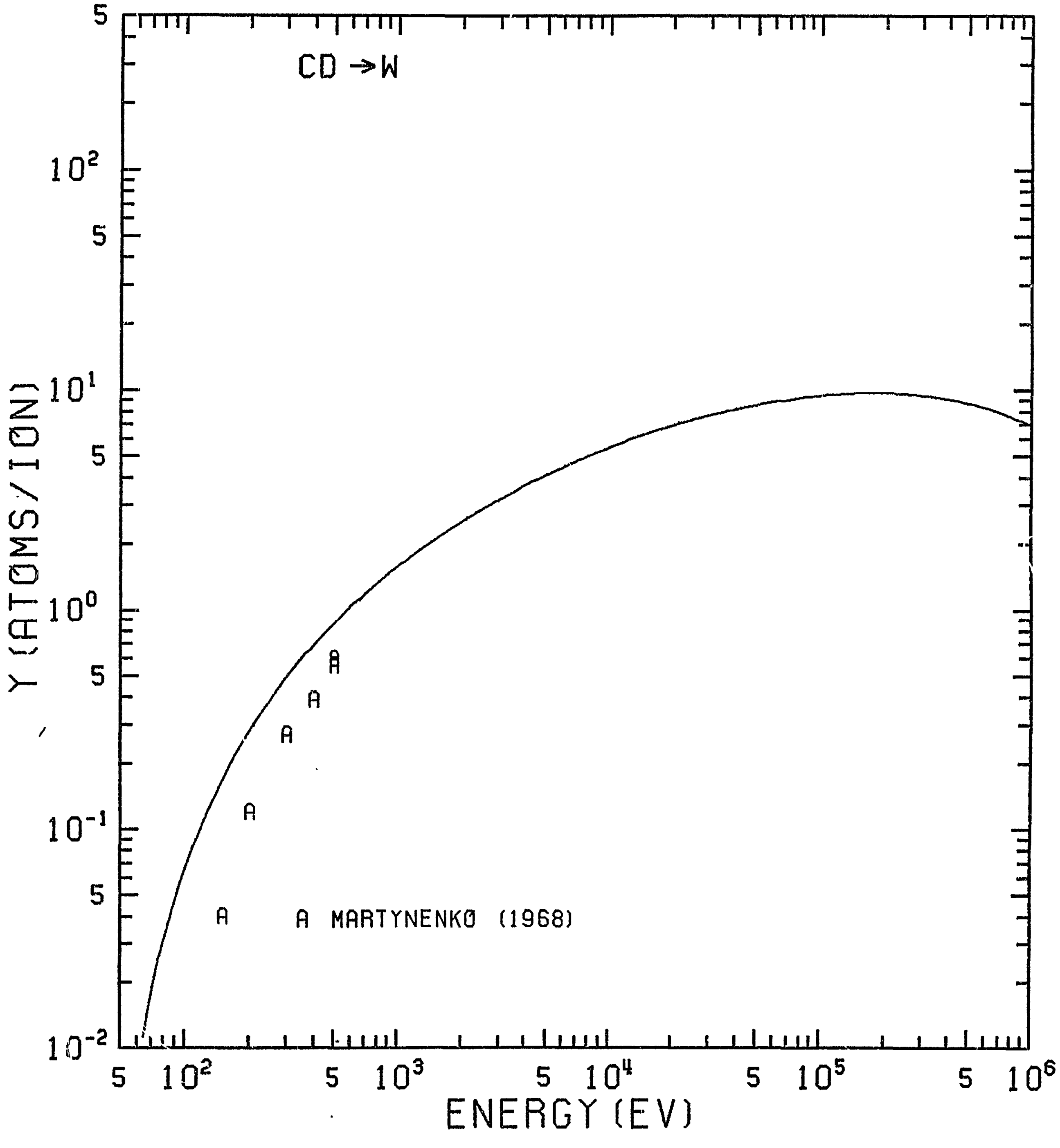

O →W
Y (ATOMS/ION)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A ROTH, BOHDANSKY, OTTENBERGER (1979)
B TSUNOYAMA, SUZUKI, OHASHI (1980)

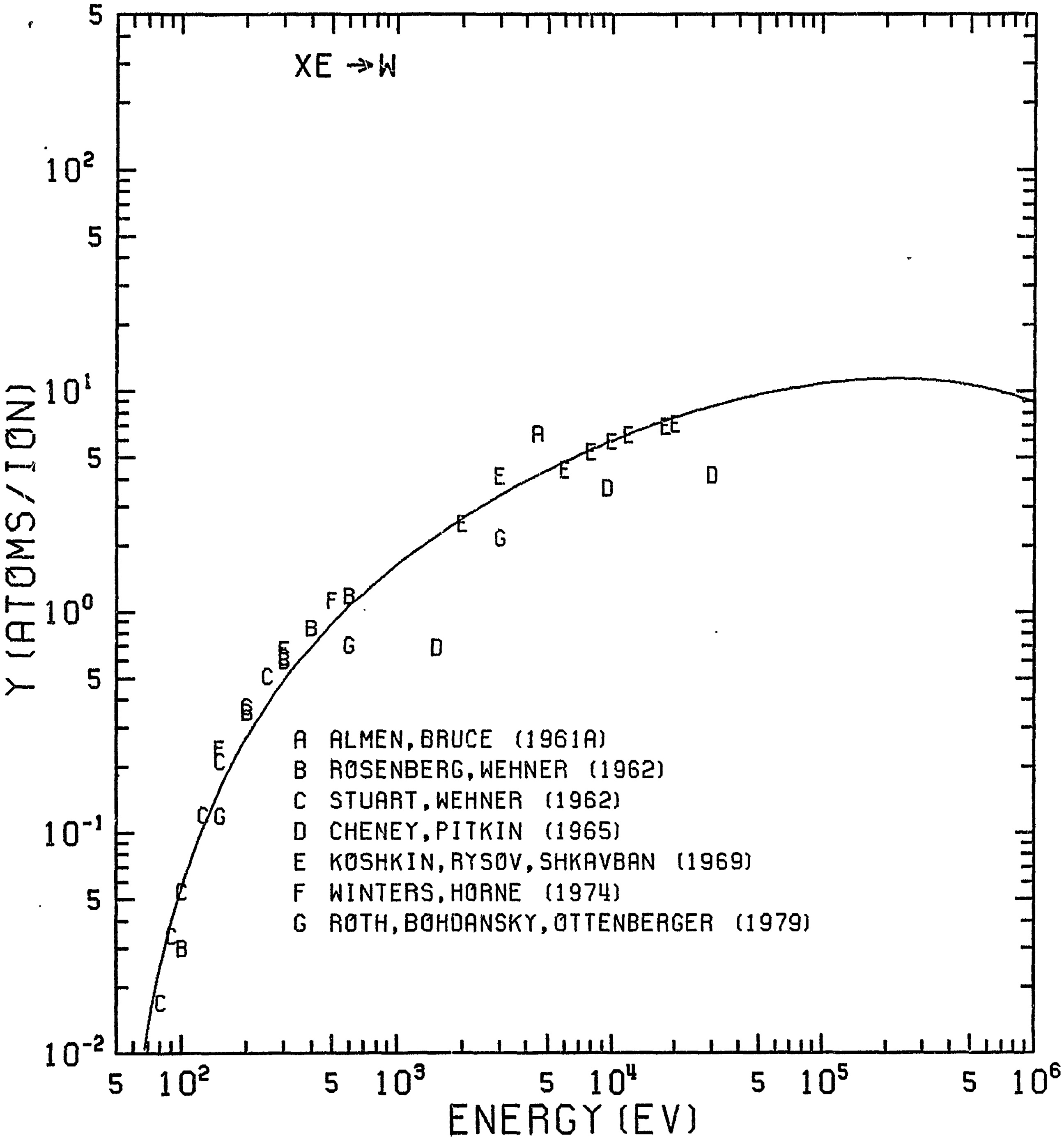

NE → W
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1960, 1961)
C STUART, WEHNER (1962)
D WINTERS, HORNE (1974)
E ROTH, BOHDANSKY, OTTENBERGER (1979)

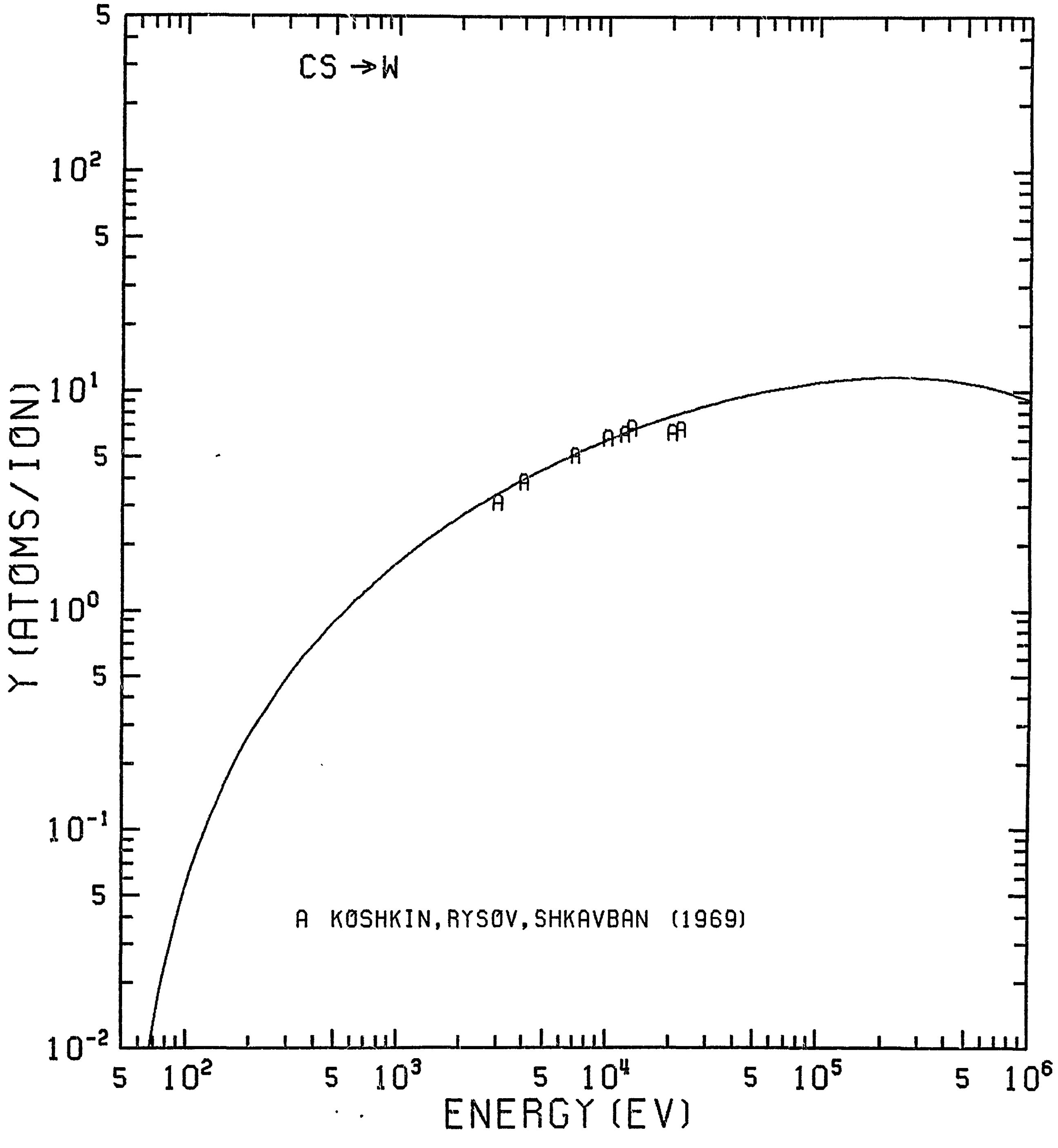

AR →W
Y (ATØMS/IØN)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1959, 1961)
C STUART, WEHNER (1962)
D GURMIN, MARTYNENKØ, RYZHØV (1968)
E KØSHKIN, RYSØV, SHKARBAN (1969)
F ØECHSNER (1973)
G WINTERS, HØRNE (1974)
H SMITH, MEYER, LAYTØN (1975)
I RØTH, BØHDANSKY, ØTTENBERGER (1979)

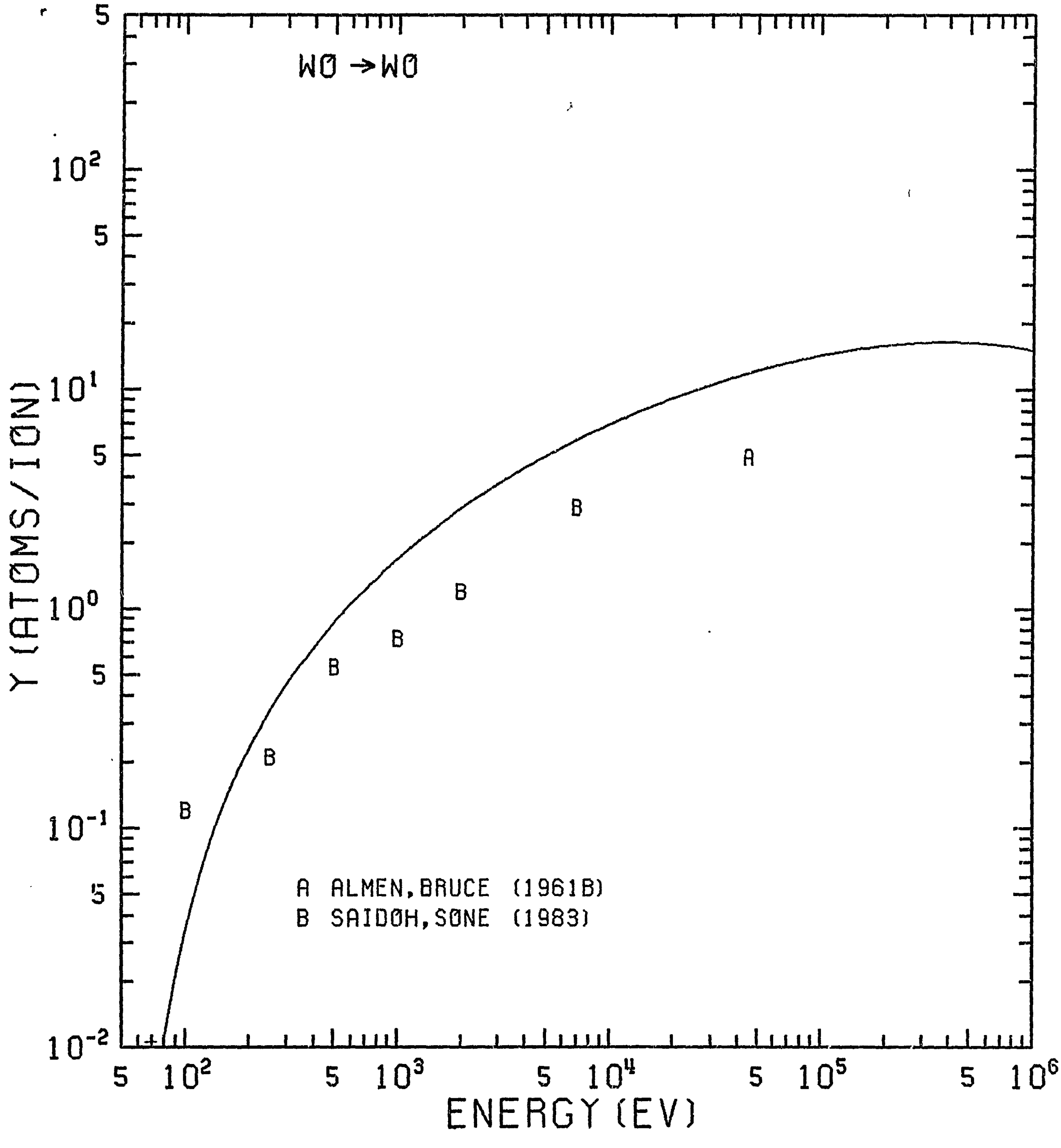

K →W
Y (ATOMS/ION)
ENERGY (EV)
A ARIFOV, AYUKHANOV, SHUSTROV (1964)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

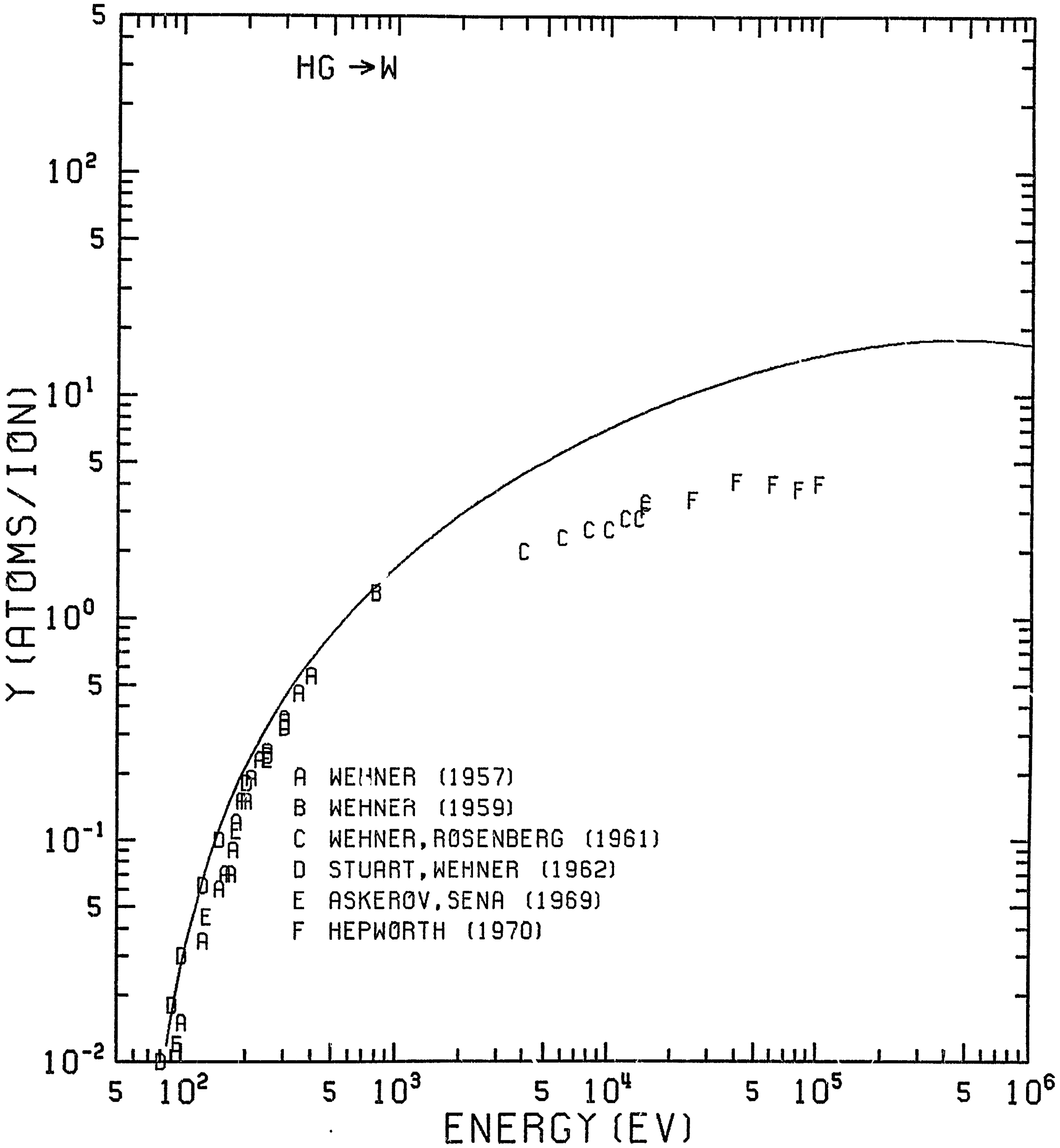

KR → W
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)
C START, WEHNER (1962)
D KOSHKIN, RYSOV, SHKARBAN (1969)
E WINTERS, HORNE (1974)
F ROTH, BOHDANSKY, OTTENBERGER (1979)

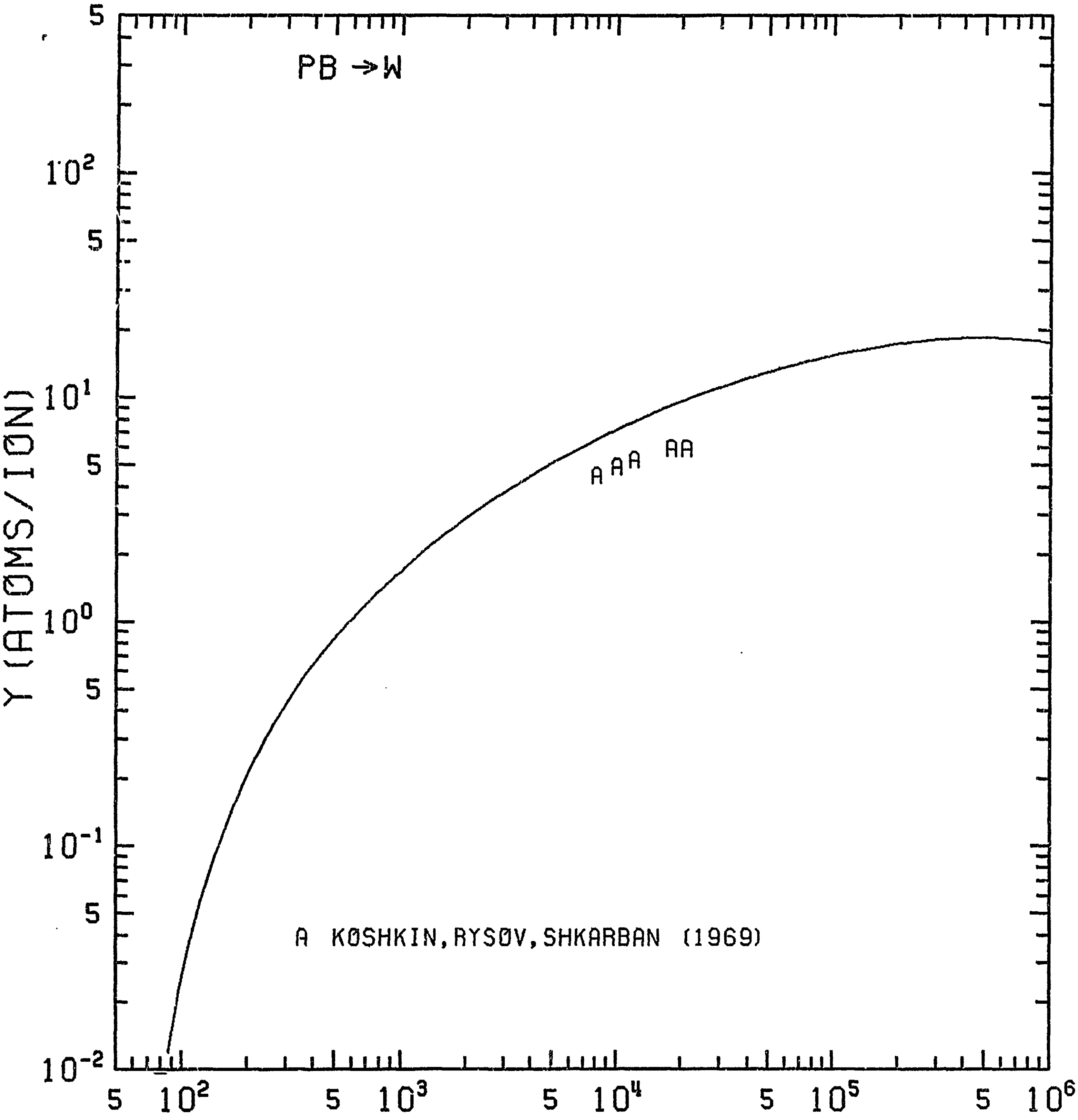

CD →W
Y (ATOMS/ION)
ENERGY (EV)
A MARTYNENKO (1968)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

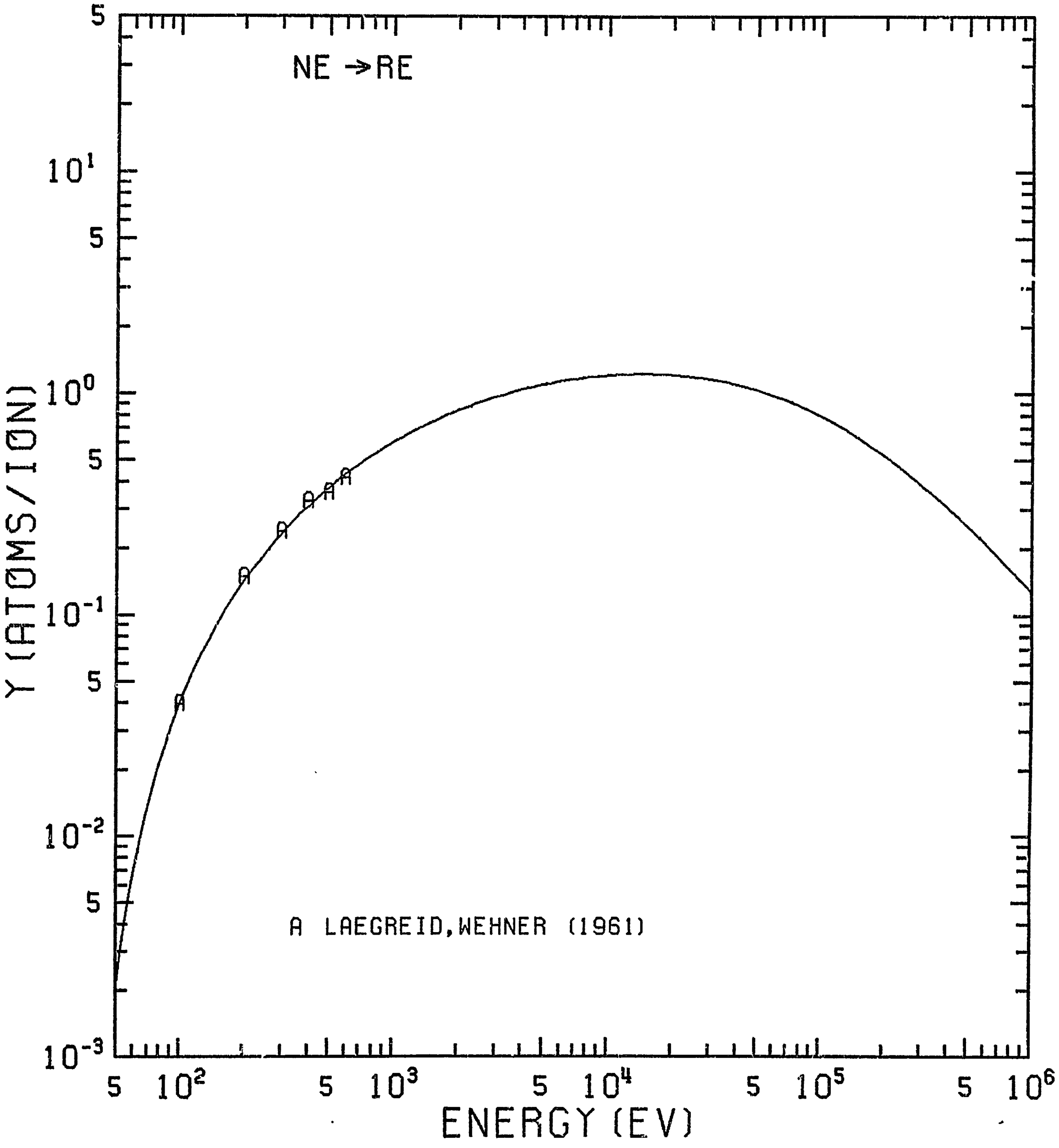

XE → W
Y (ATOMS/ION)
ENERGY (EV)
10^-2
10^-1
10^0
10^1
10^2
5
5 10^2 5 10^3 5 10^4 5 10^5 5 10^6
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)
C STUART, WEHNER (1962)
D CHENEY, PITKIN (1965)
E KOSHKIN, RYSOV, SHKAVBAN (1969)
F WINTERS, HORNE (1974)
G ROTH, BOHDANSKY, OTTENBERGER (1979)

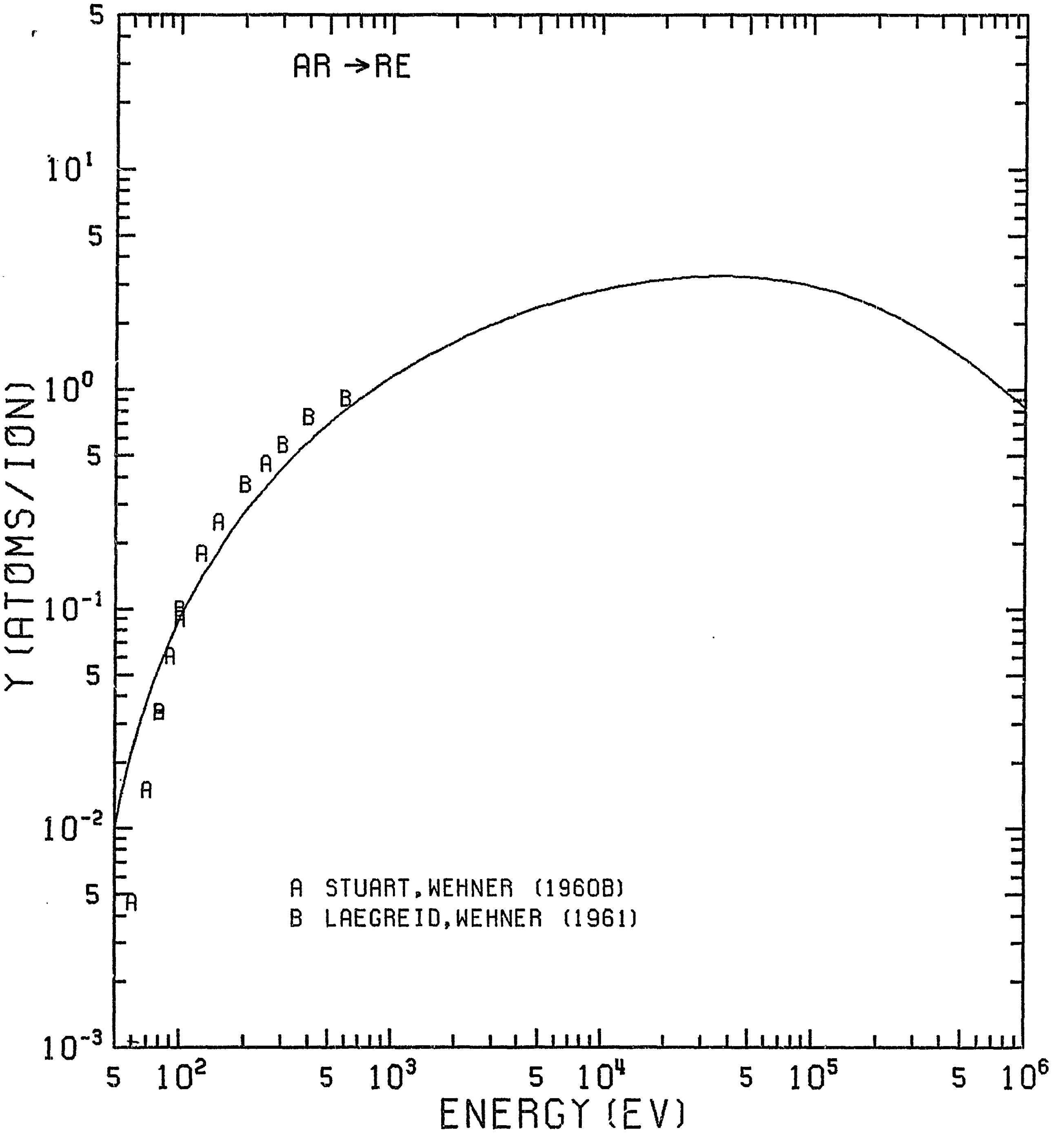

CS →W
Y (ATOMS/ION)
ENERGY (EV)
A KOSHKIN, RYSOV, SHKAVBAN (1969)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

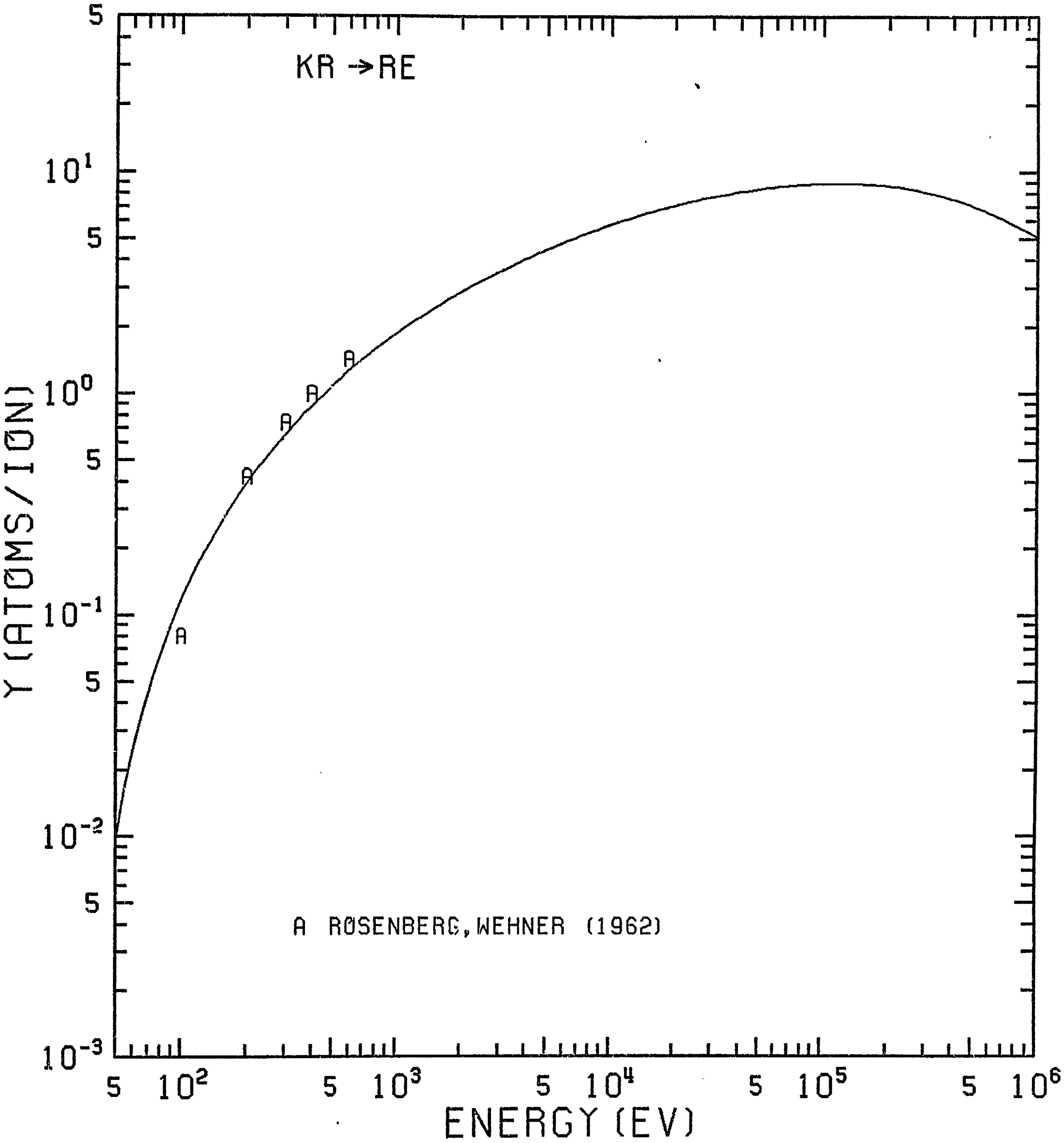

W0 →W0
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961B)
B SAIDOH, SONE (1983)
A
B


HG → W
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A WEHNER (1957)
B WEHNER (1959)
C WEHNER, ROSENBERG (1961)
D STUART, WEHNER (1962)
E ASKEROV, SENA (1969)
F HEPWORTH (1970)

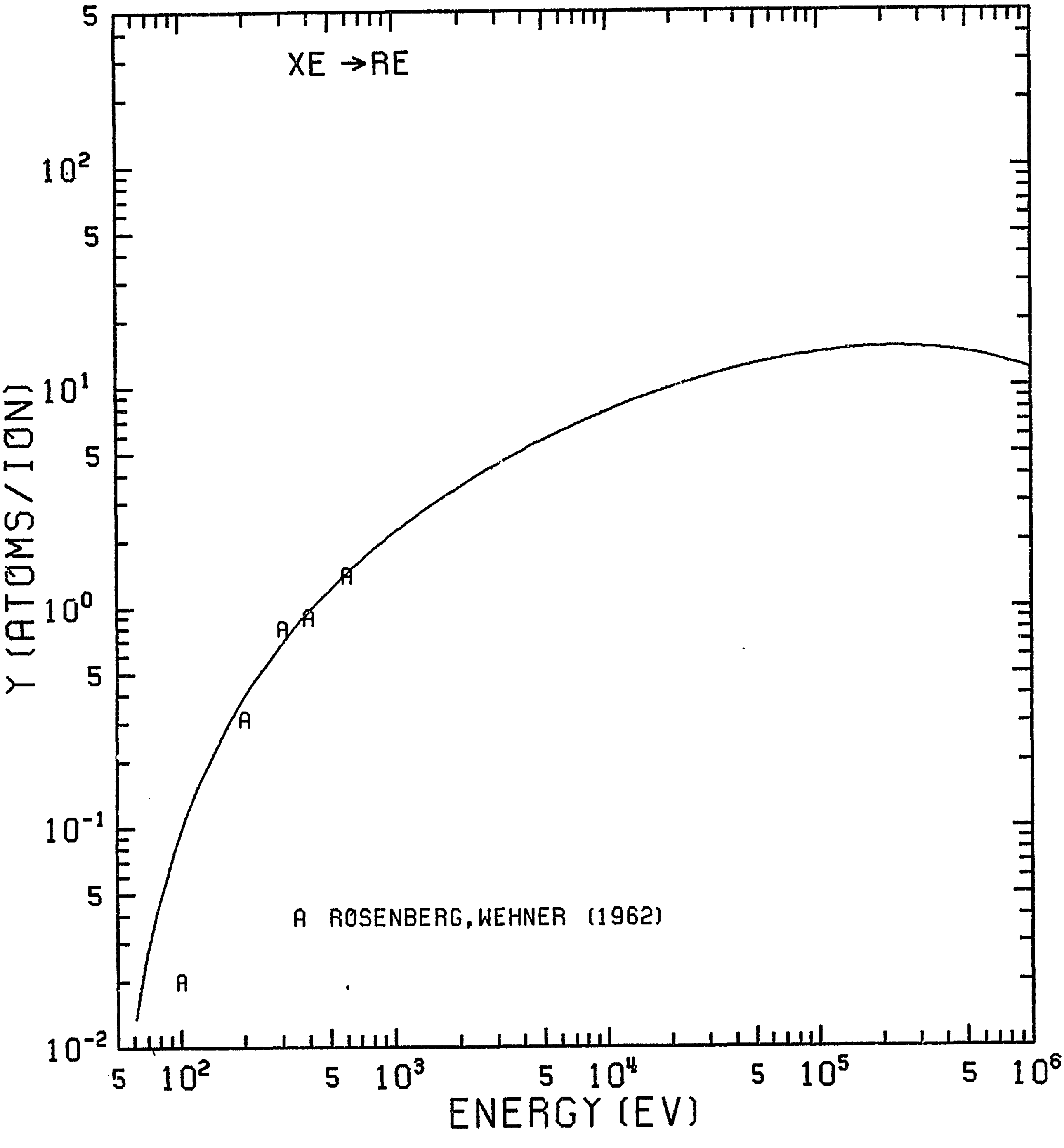

PB → W
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A A A A A
A KOSHKIN, RYSOV, SHKARBAN (1969)

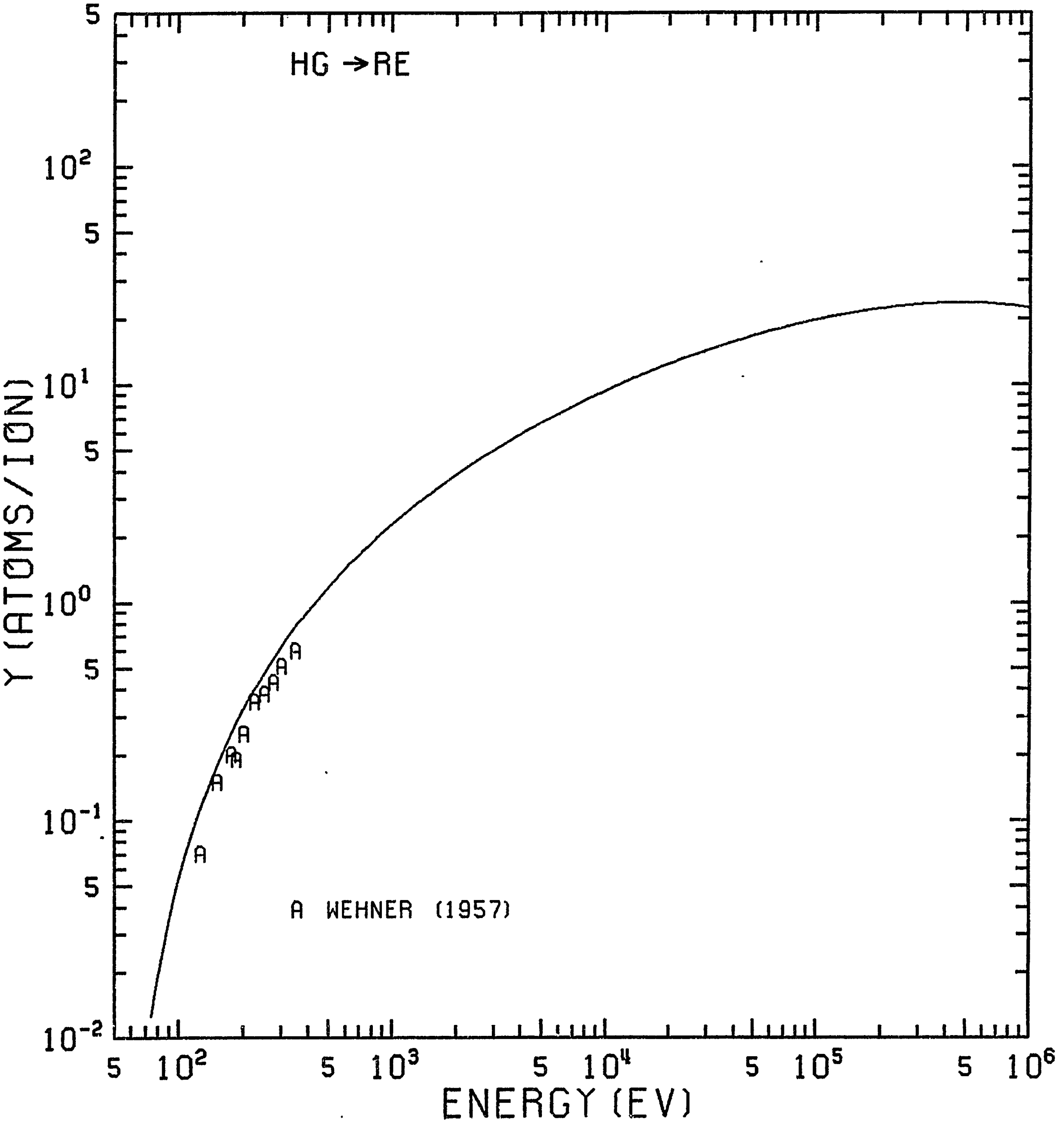

NE → RE
A LAEGREID, WEHNER (1961)
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

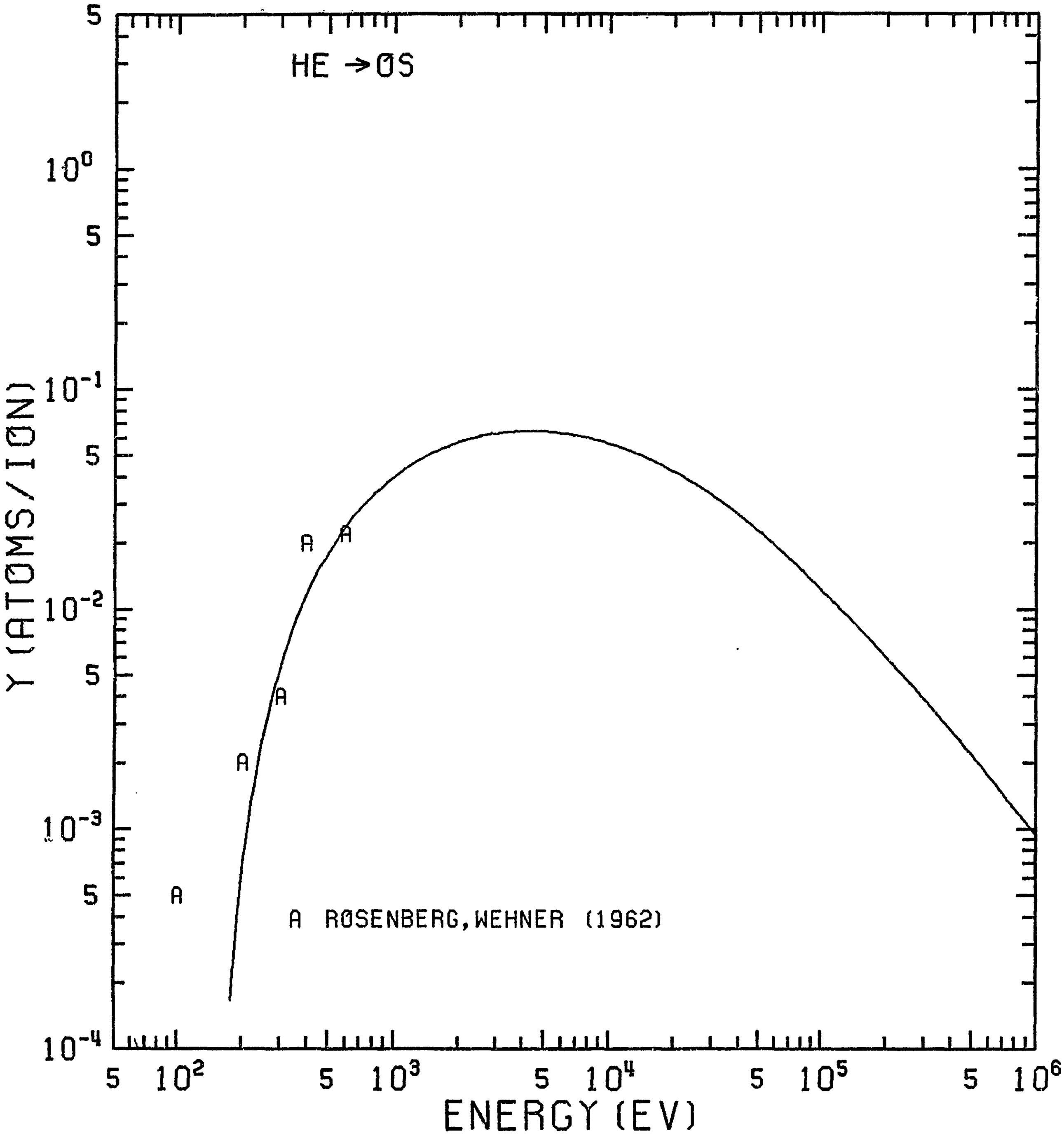

AR → RE
Y (ATOMS/ION)
ENERGY (EV)
10^-3
5
10^-2
5
10^-1
5
10^0
5
10^1
5
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A STUART, WEHNER (1960B)
B LAEGREID, WEHNER (1961)

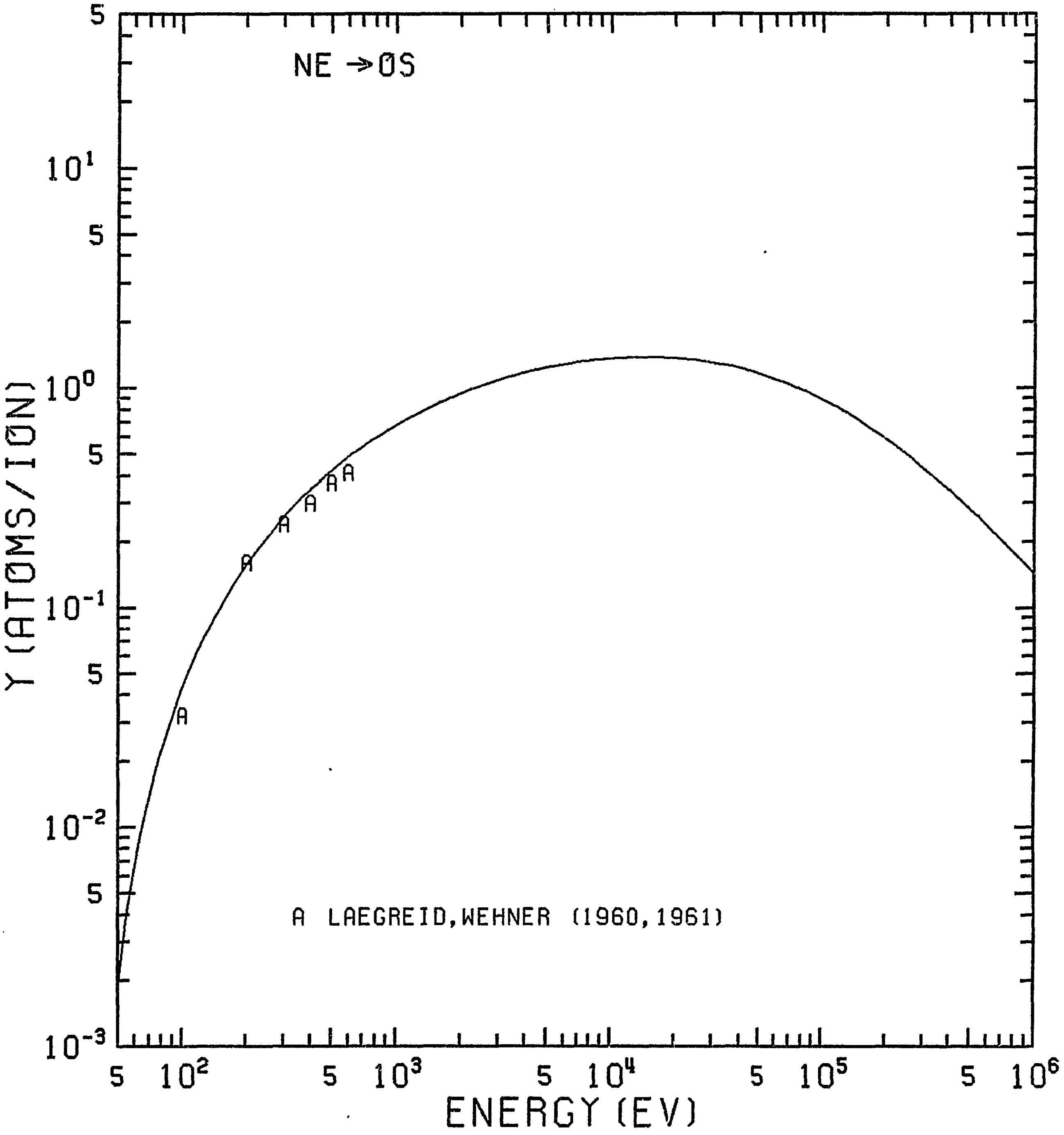


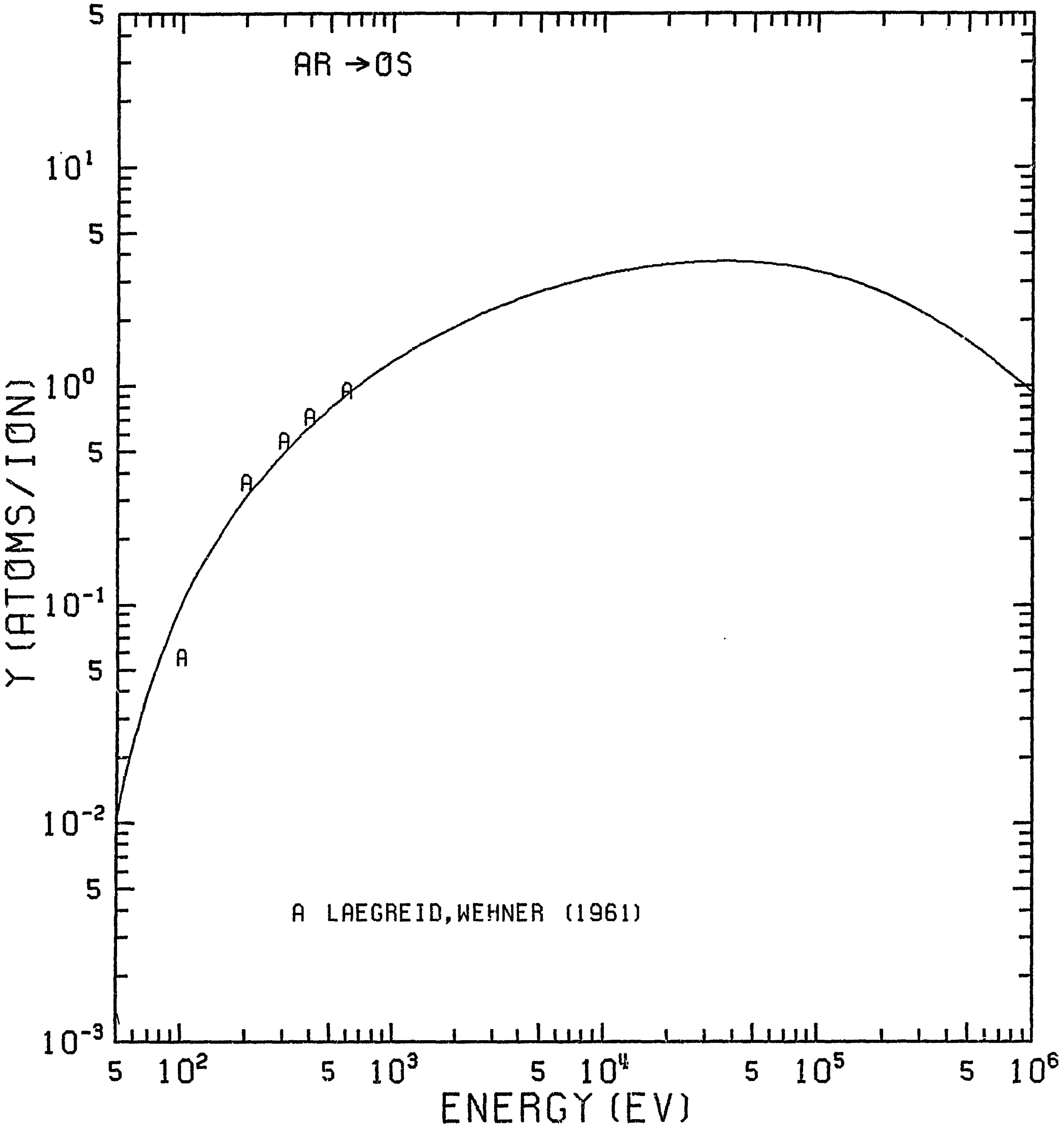
KR → RE
A ROSENBERG, WEHNER (1962)
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

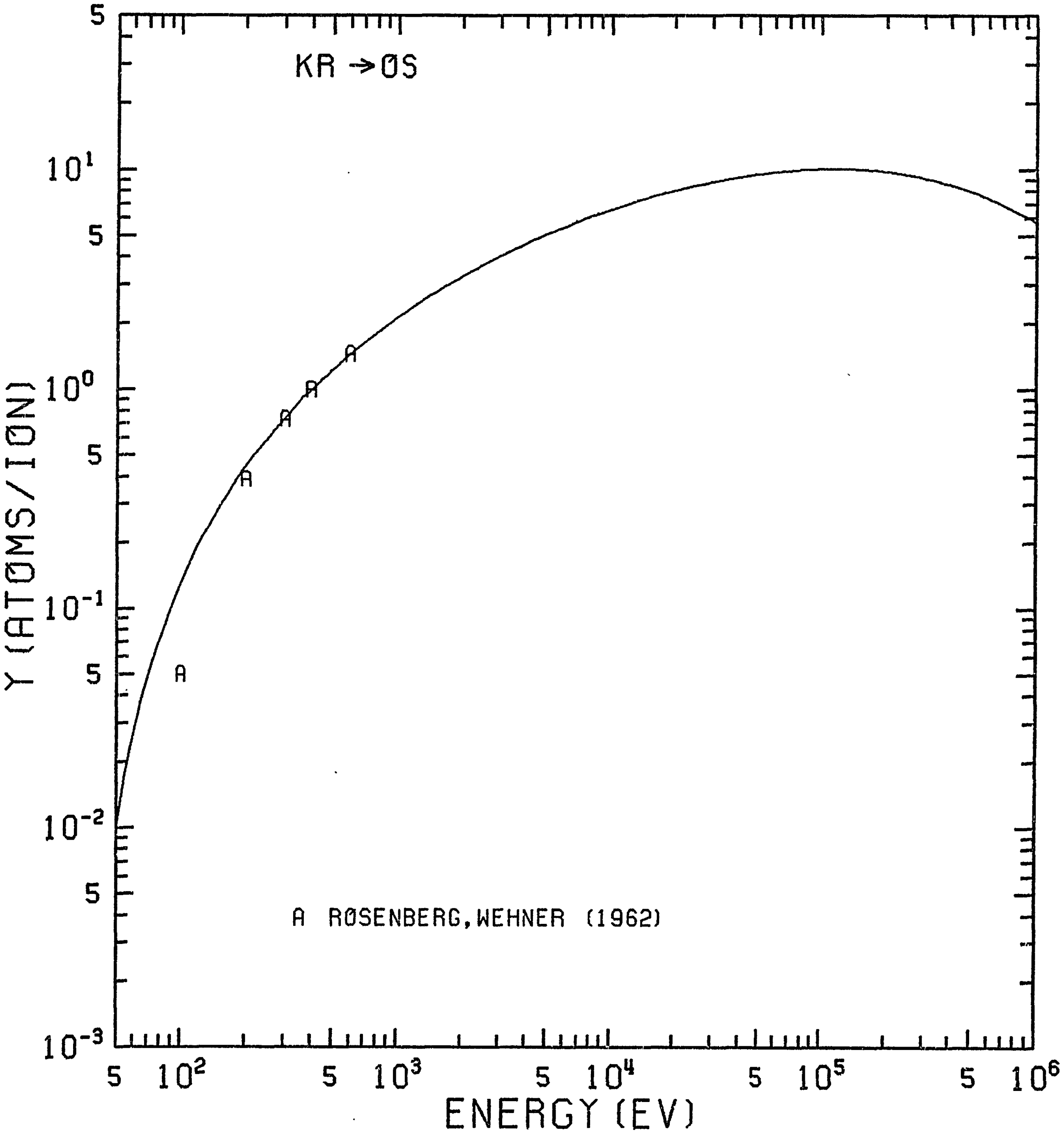

XE →RE
Y (ATOMS/ION)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
A ROSENBERG,WEHNER (1962)
5 10² 5 10³ 5 10⁴ 5 10⁵ 5 10⁶
ENERGY (EV)

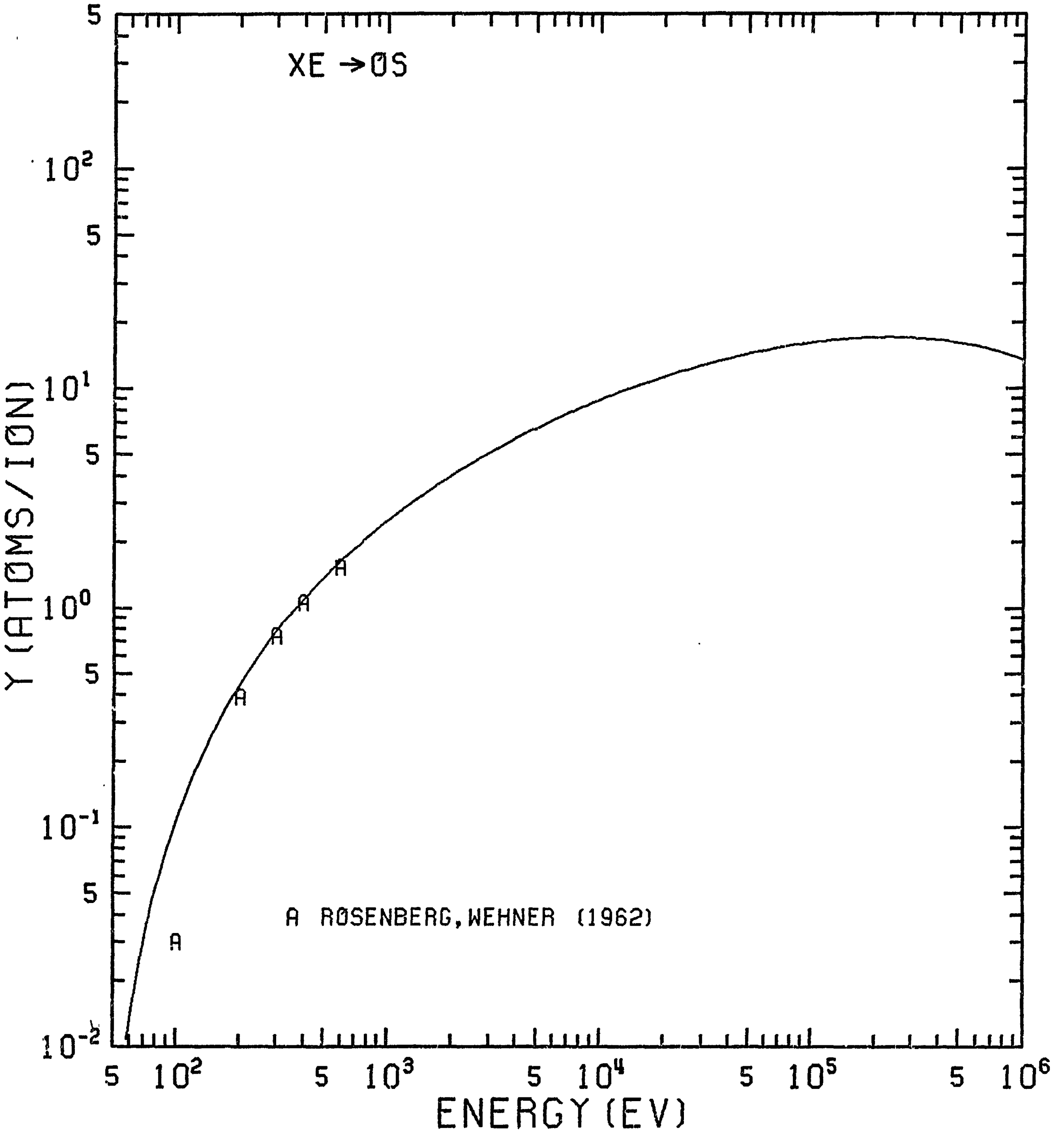

HG →RE
A WEHNER (1957)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6


HE →0S
A
A ROSENBERG,WEHNER (1962)
Y (ATOMS/ION)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)

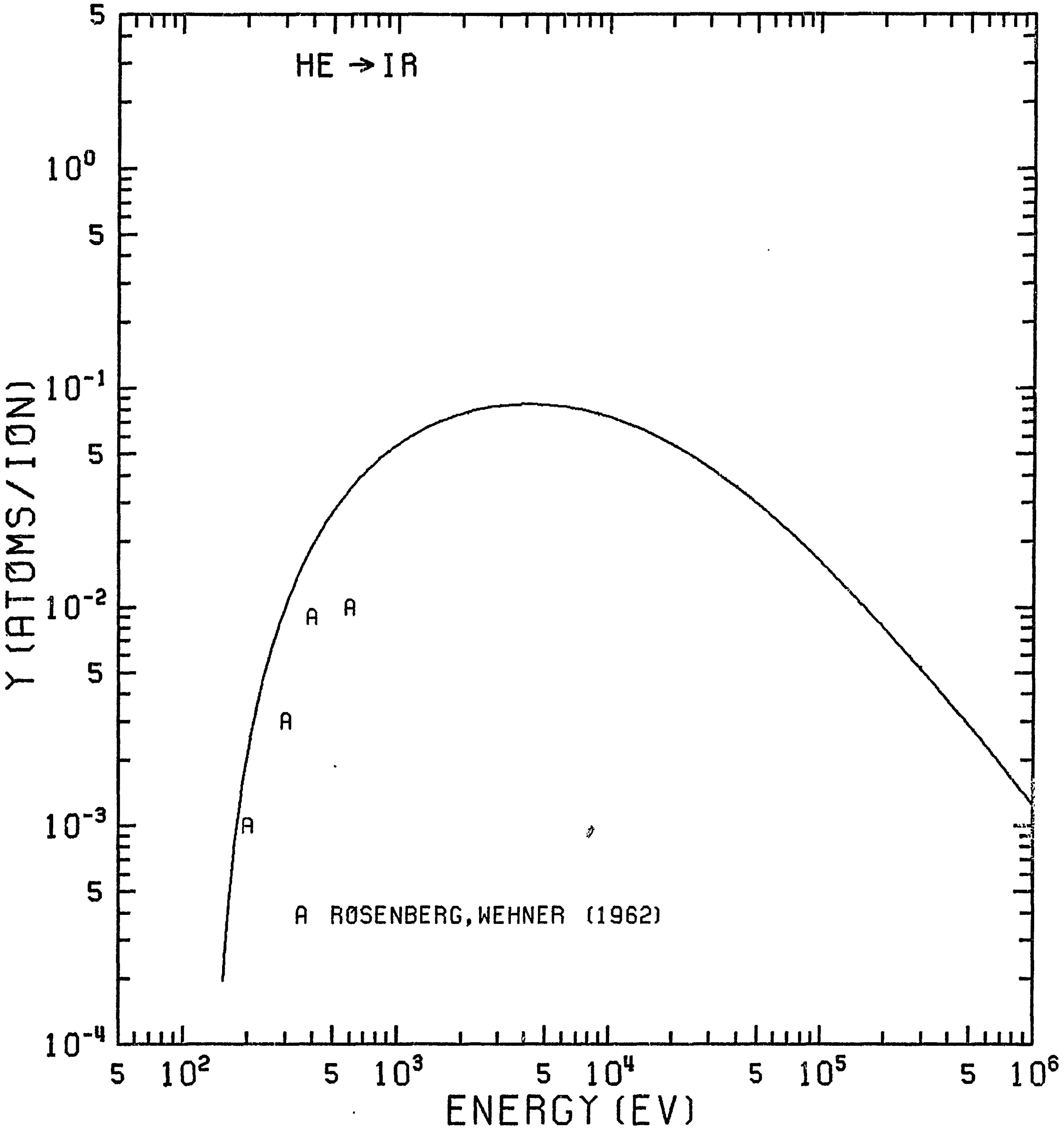

NE → 0S
A LAEGREID, WEHNER (1960, 1961)
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A

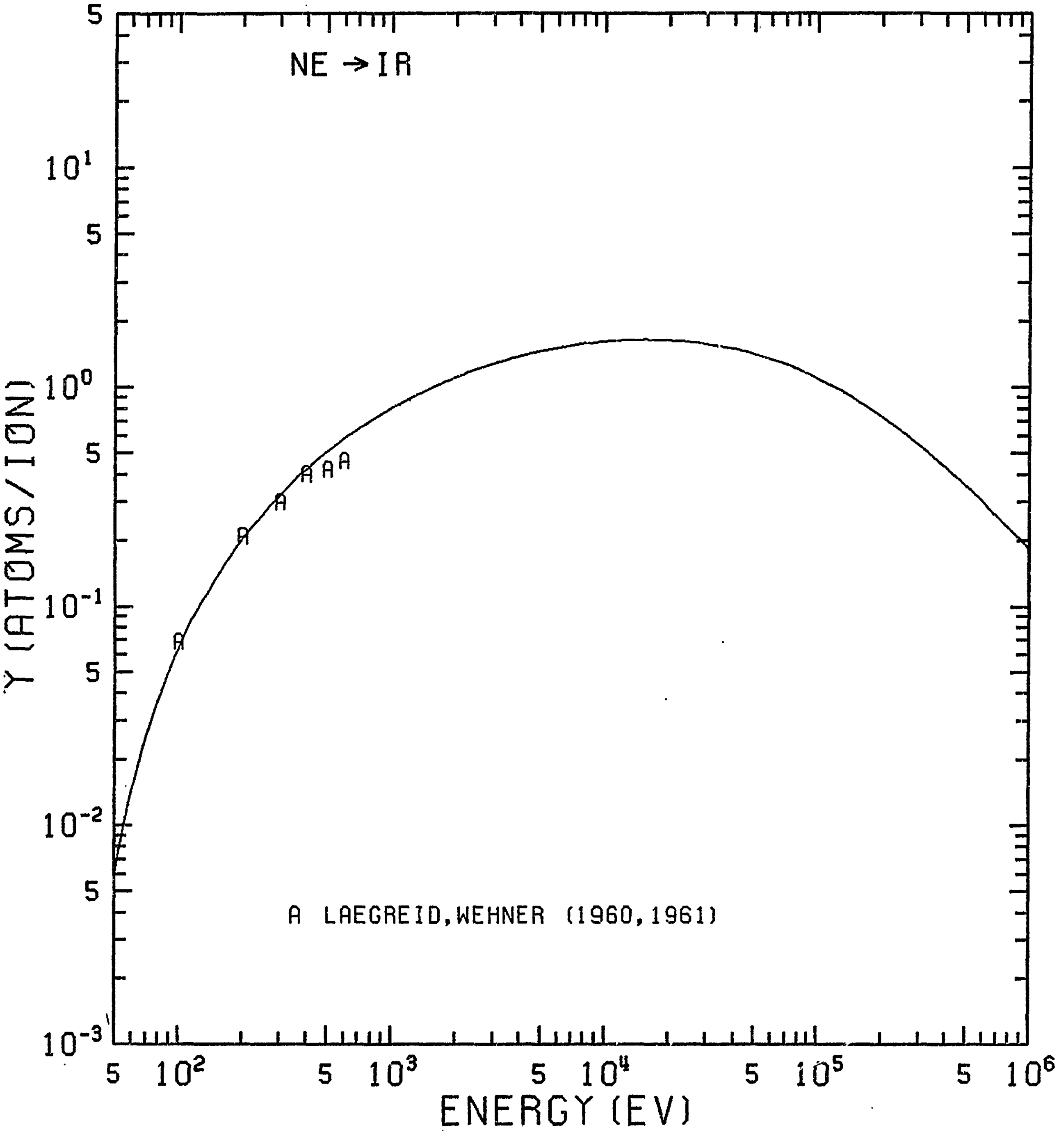

AR → OS
Y (ATOMS/ION)
ENERGY (EV)
A LAEGREID, WEHNER (1961)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A

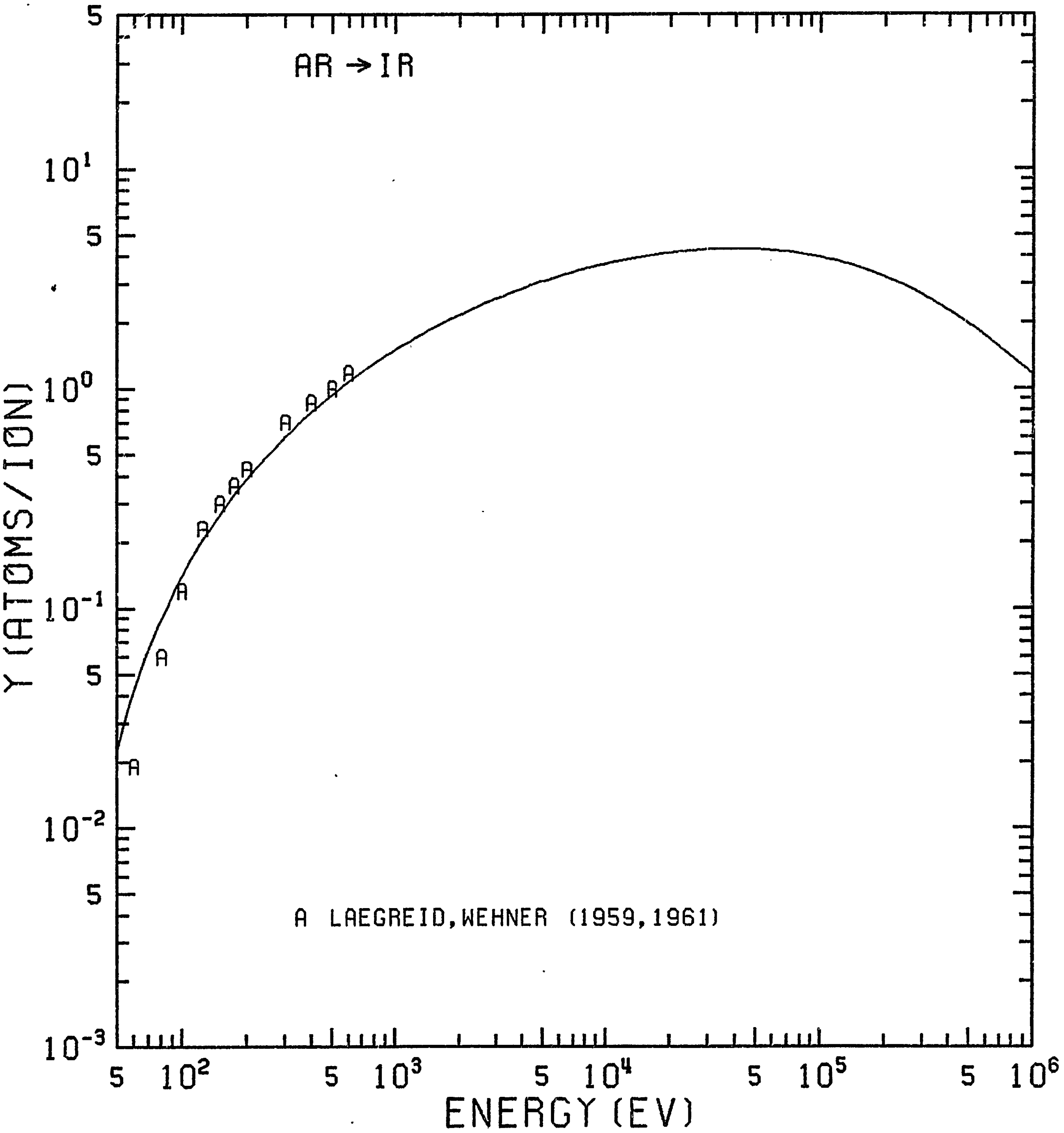

KR →0S
Y (ATOMS/ION)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A ROSENBERG, WEHNER (1962)



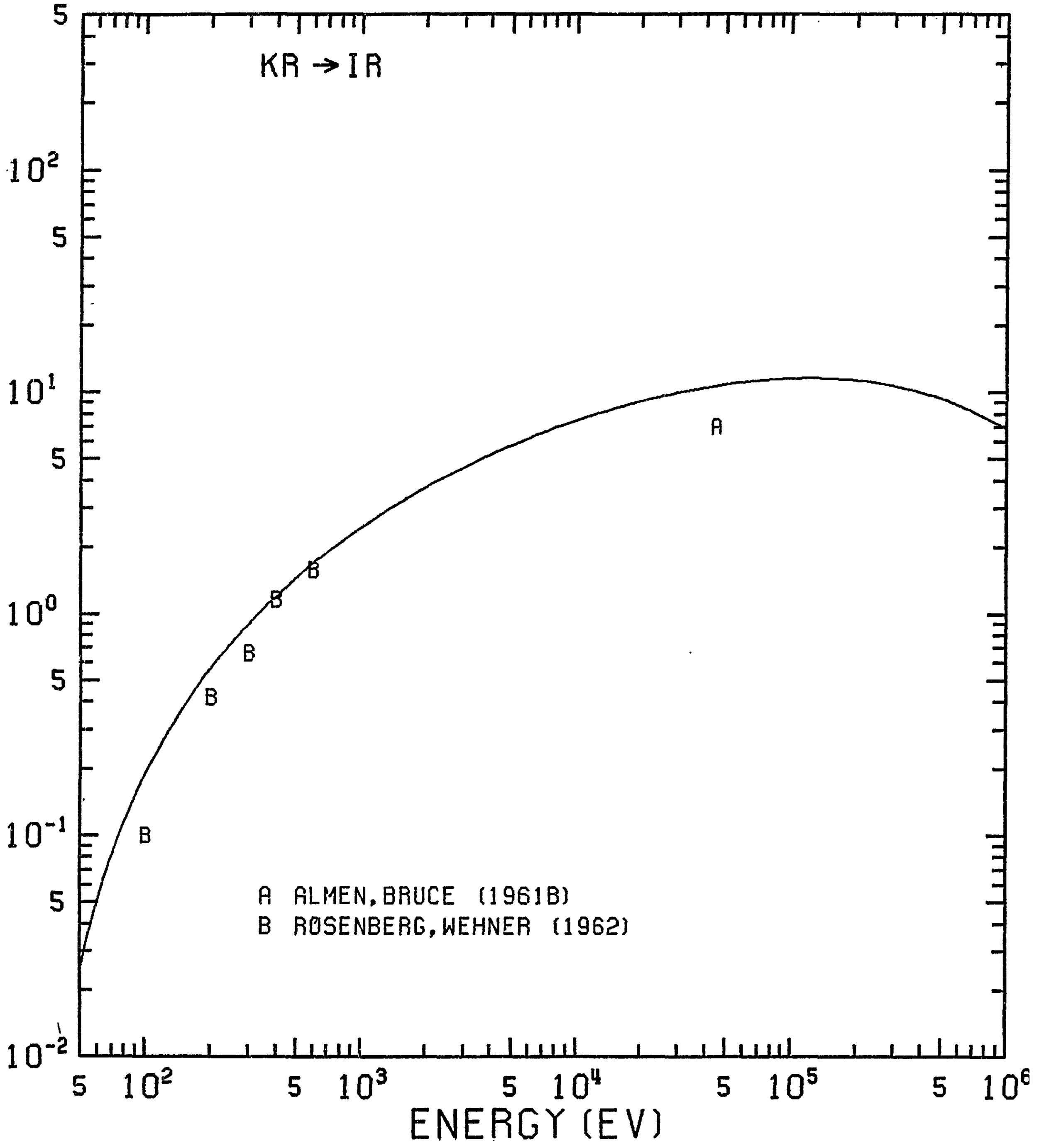
XE →OS
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ROSENBERG,WEHNER (1962)

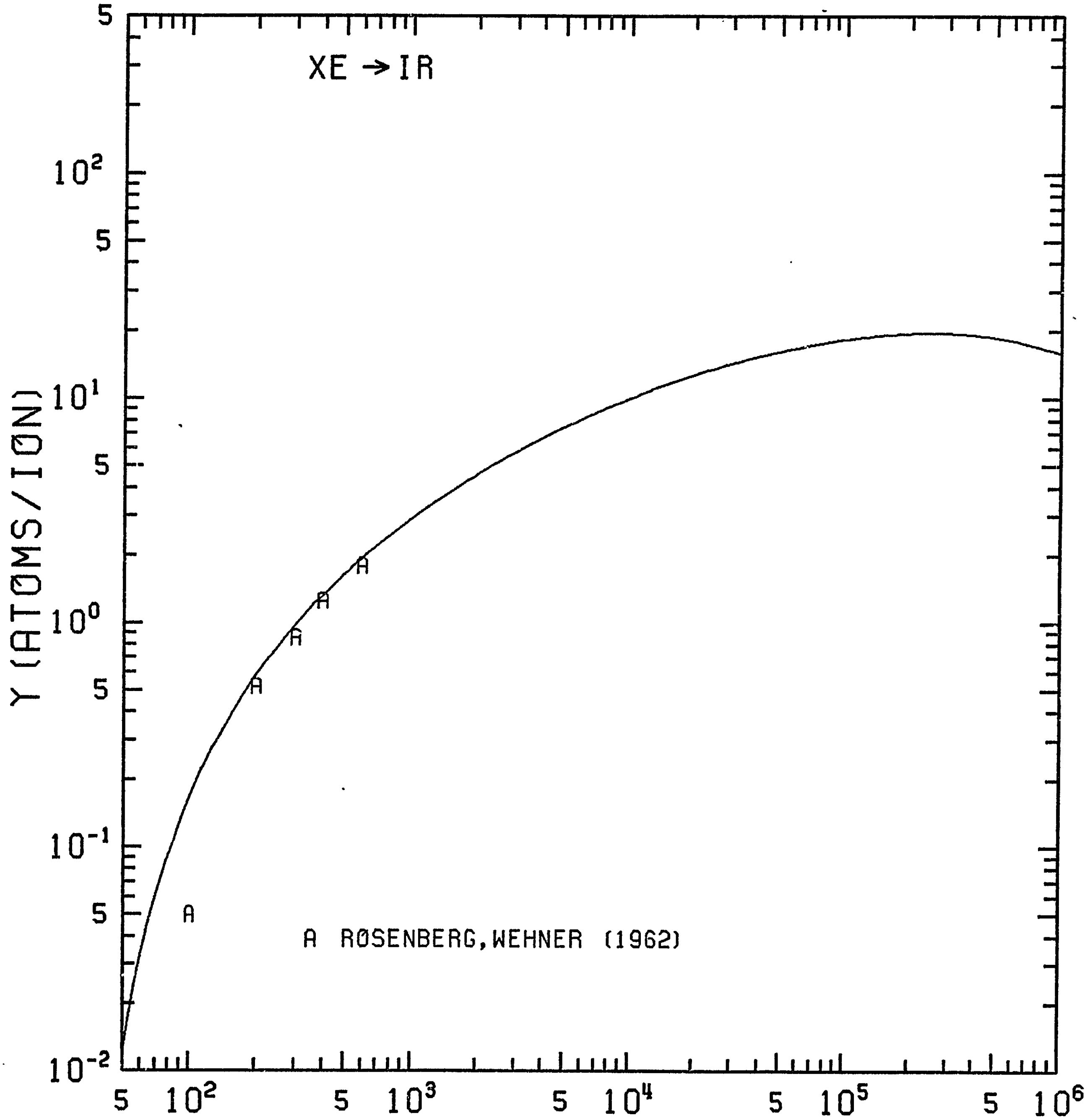

HE → IR
Y (ATØMS/IØN)
ENERGY (EV)
A RØSENBERG, WEHNER (1962)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A

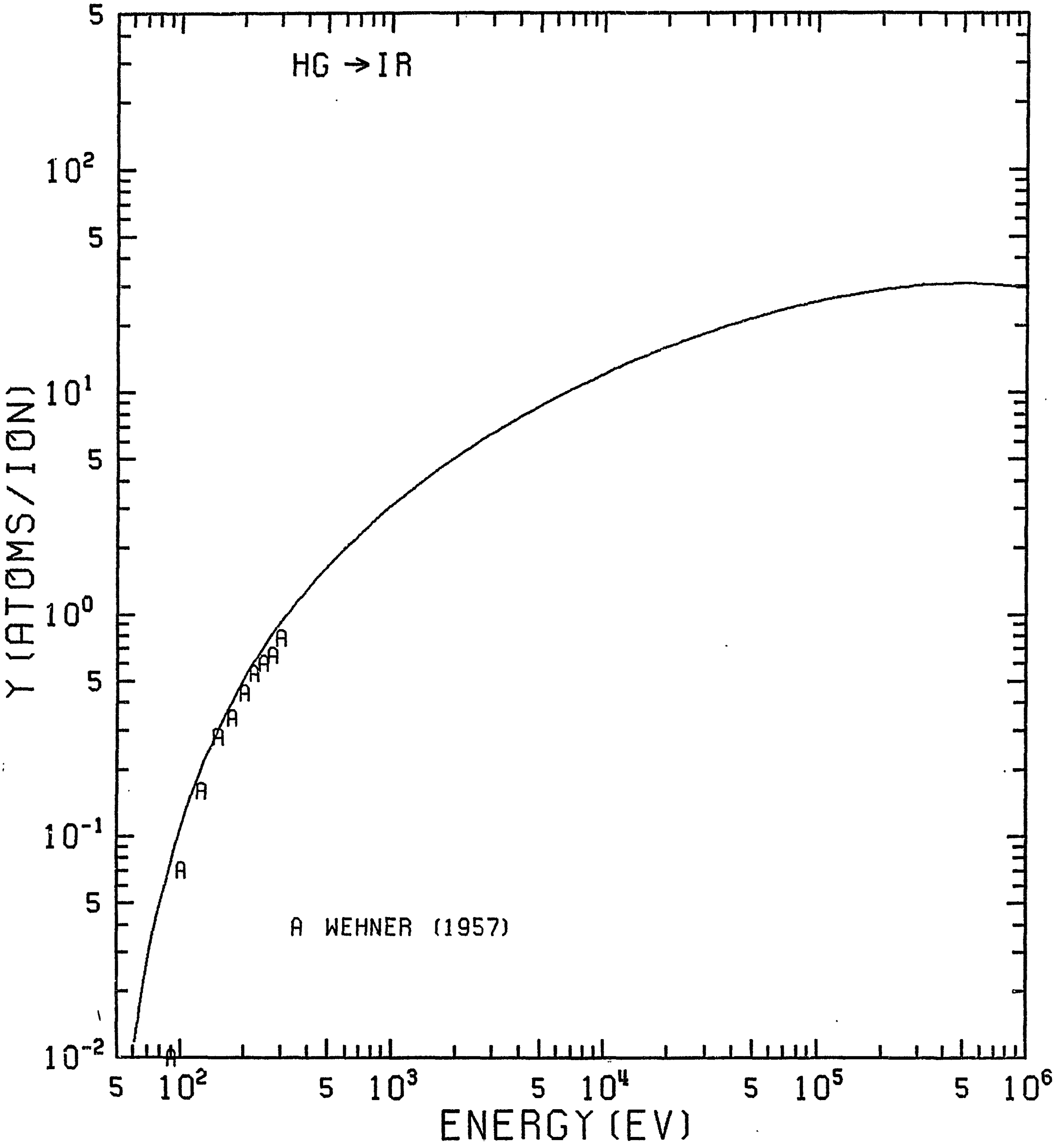

NE → IR
Y (ATOMS/ION)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A LAEGREID, WEHNER (1960, 1961)

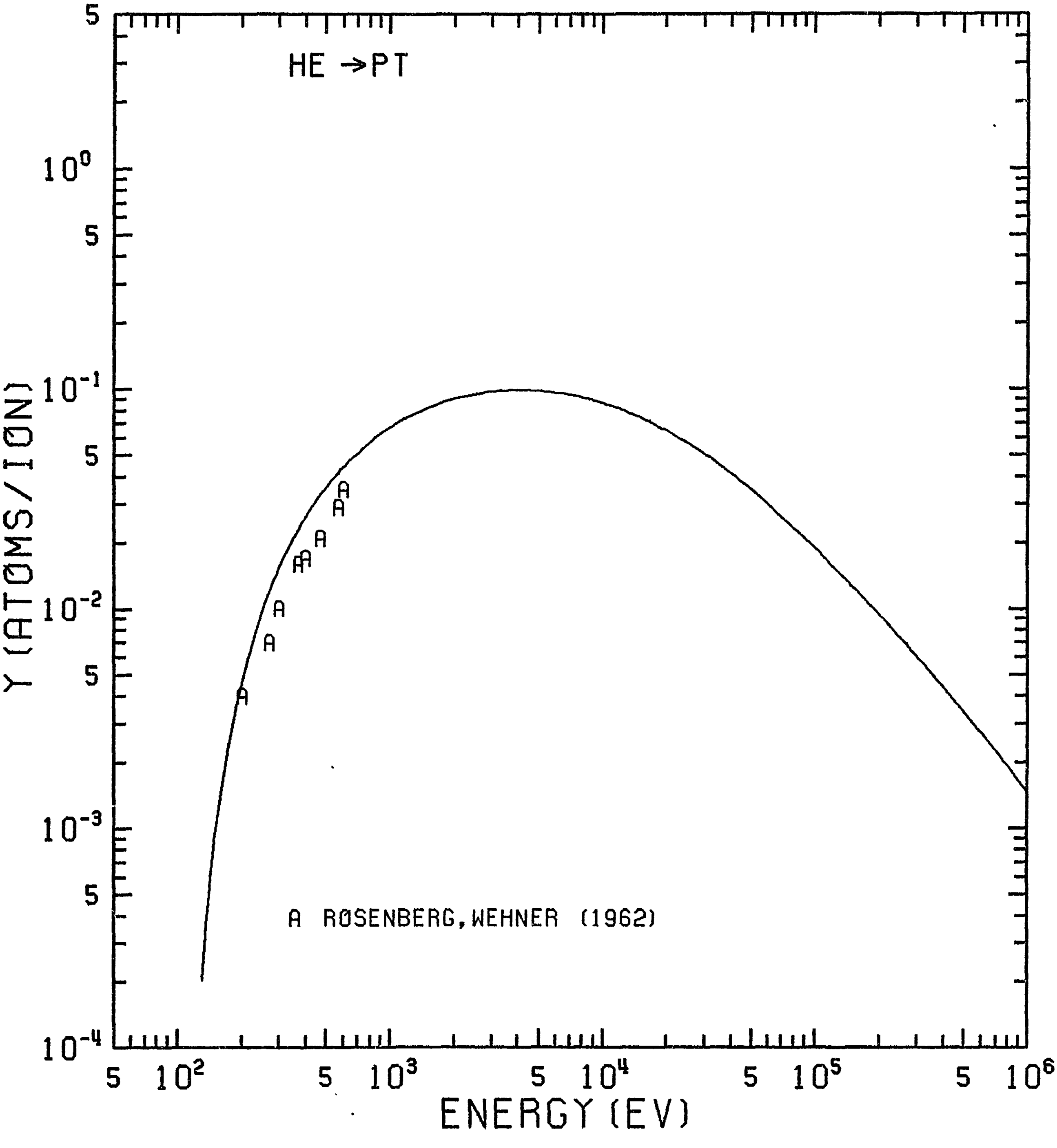


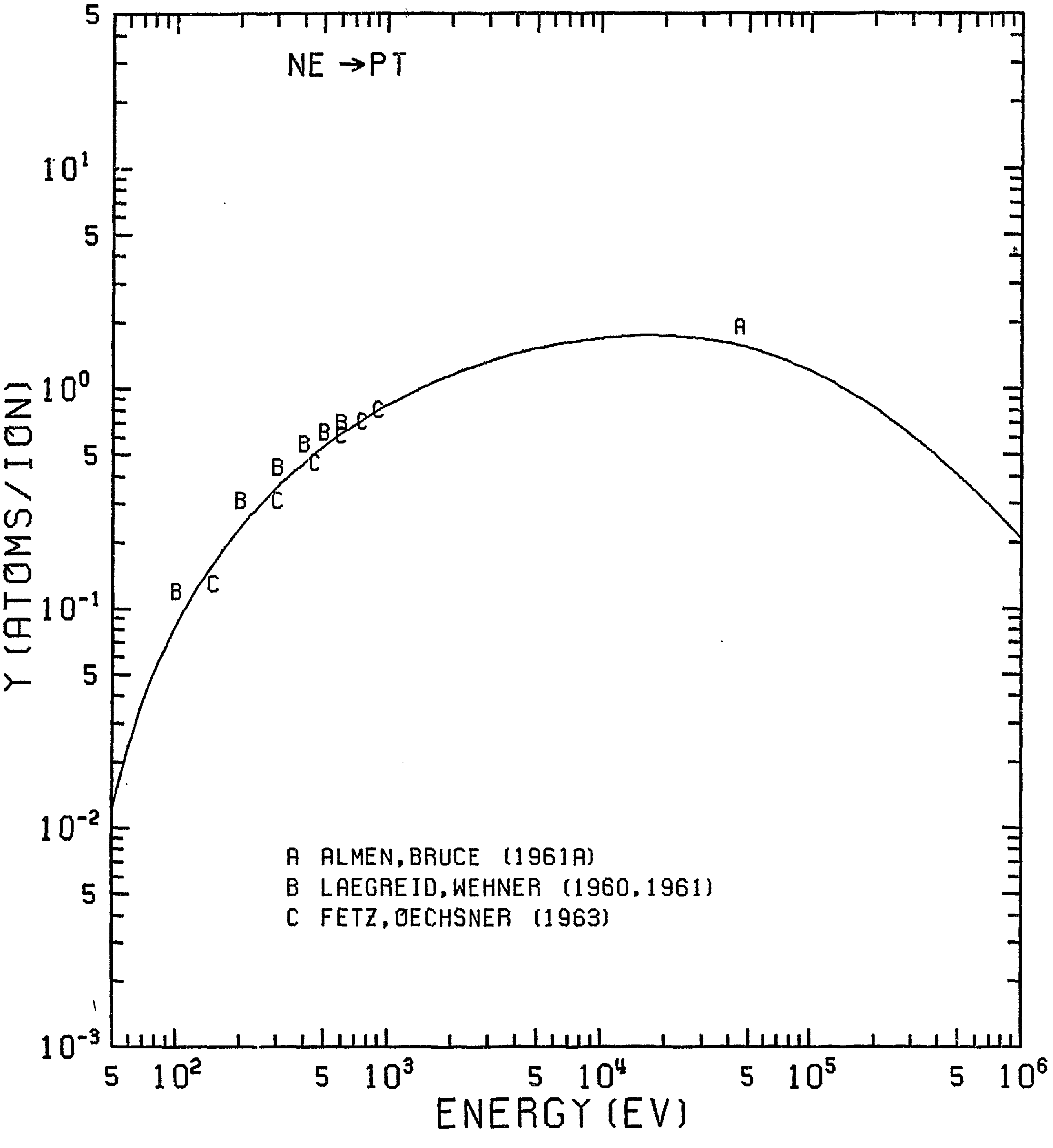
AR → IR
A LAEGREID, WEHNER (1959, 1961)
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶

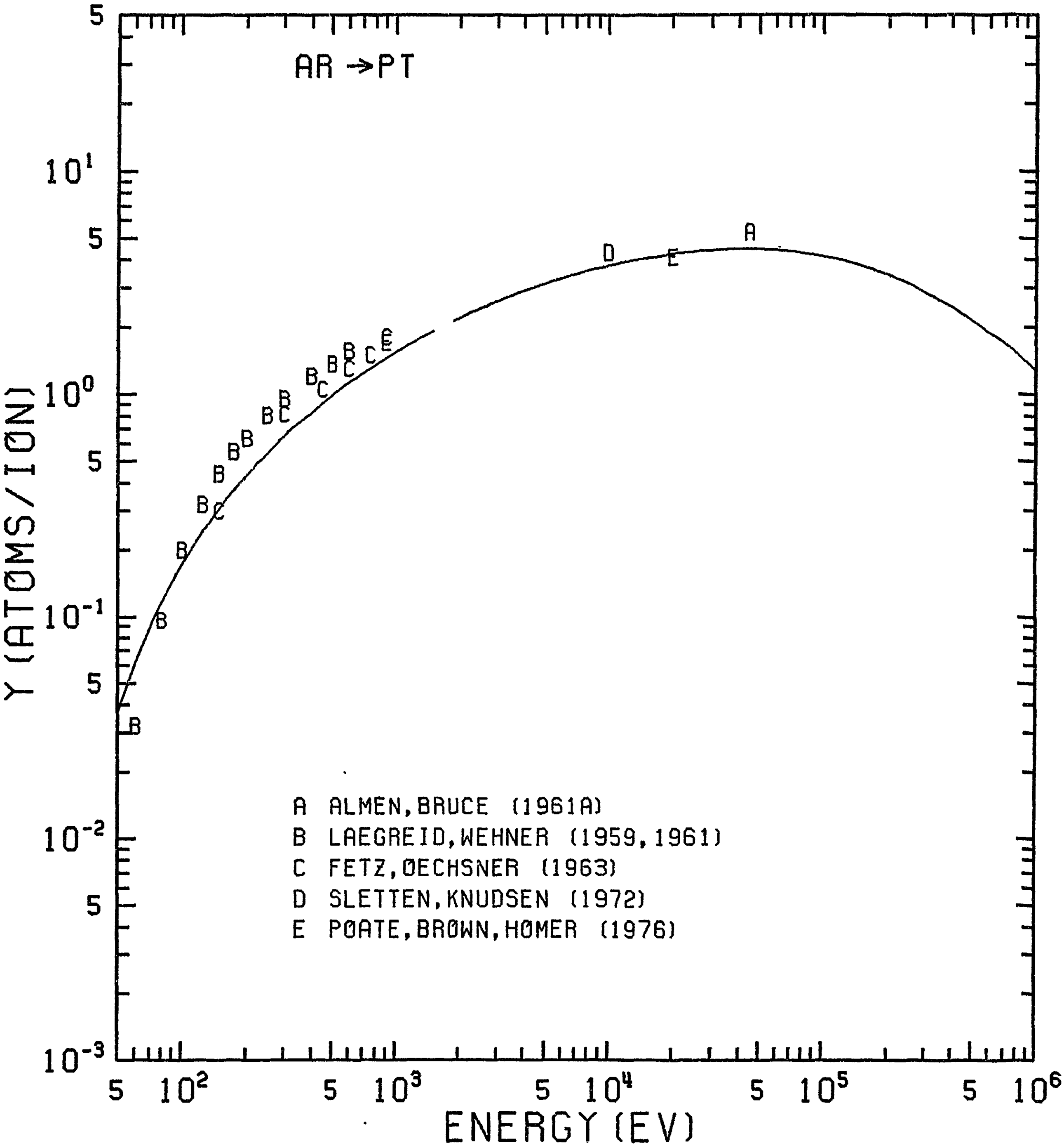

KR → IR
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B
A ALMEN, BRUCE (1961B)
B ROSENBERG, WEHNER (1962)

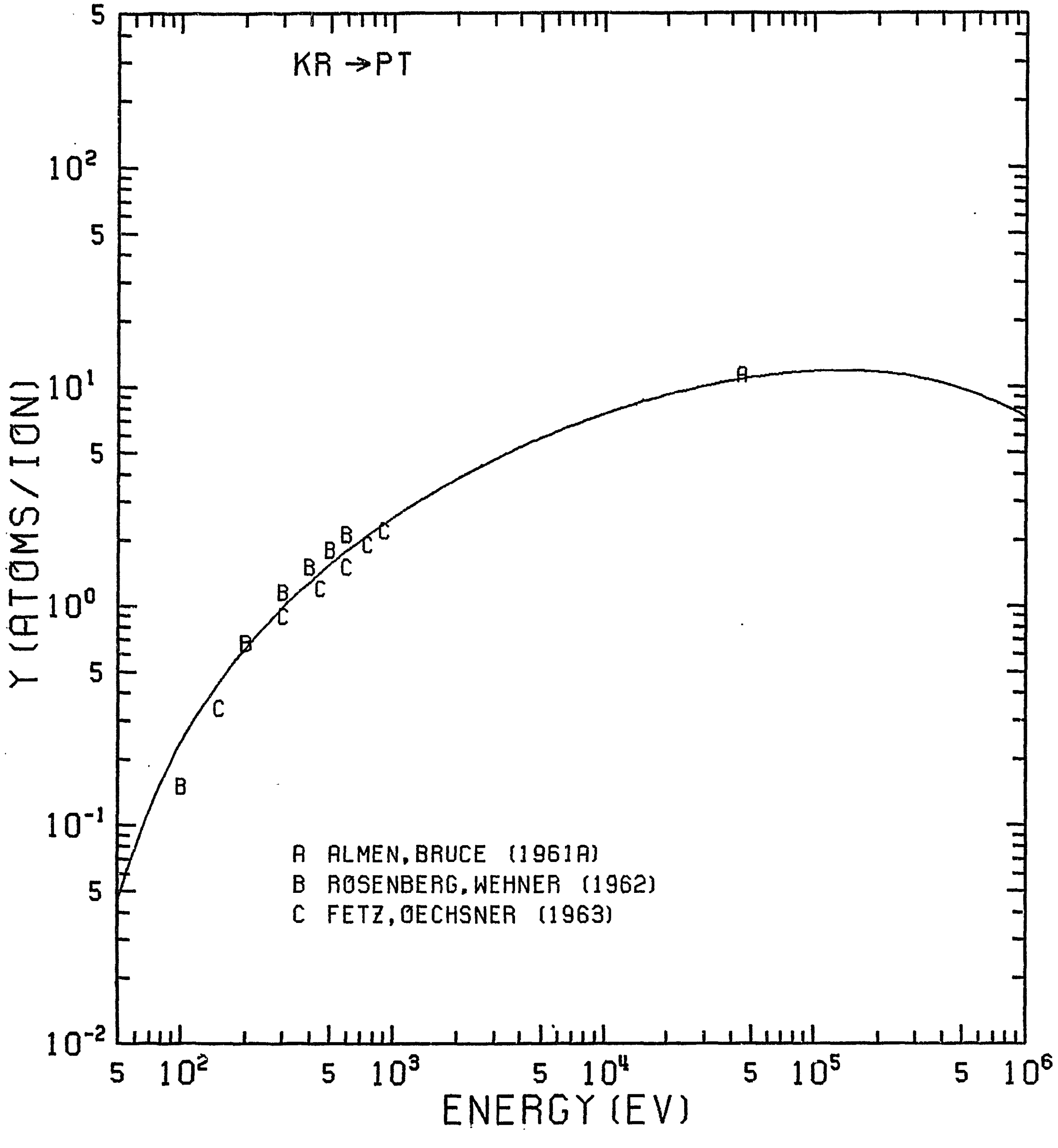

XE → IR
A ROSENBERG,WEHNER (1962)
Y (ATOMS/ION)
ENERGY (EV)
10^{-2}
5
10^{-1}
5
10^{0}
5
10^{1}
5
10^{2}
5
5
10^{2}
5
10^{3}
5
10^{4}
5
10^{5}
5
10^{6}
A
A
A
A
A
A

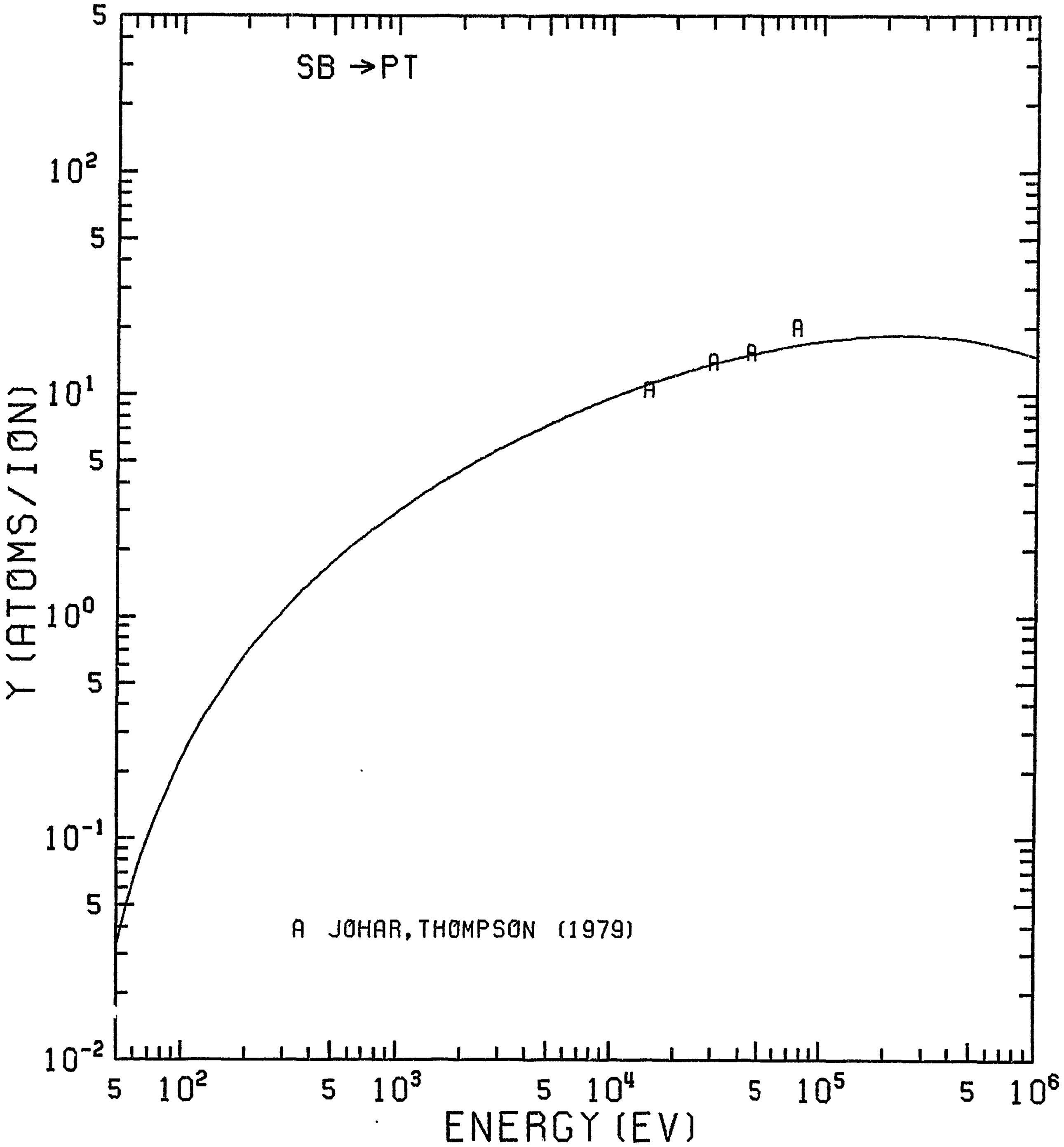

HG → IR
Y (ATOMS/ION)
ENERGY (EV)
A WEHNER (1957)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶


HE →PT
A ROSENBERG,WEHNER (1962)
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6


NE →PT
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1960, 1961)
C FETZ, OECHSNER (1963)


AR →PT
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5 10^2 5 10^3 5 10^4 5 10^5 5 10^6
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1959, 1961)
C FETZ, OECHSNER (1963)
D SLETTEN, KNUDSEN (1972)
E POATE, BROWN, HOMER (1976)


KR →PT
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)
C FETZ, OECHSNER (1963)


SB →PT
A JØHAR,THØMPSØN (1979)
Y (ATØMS/IØN)
ENERGY (EV)
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10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
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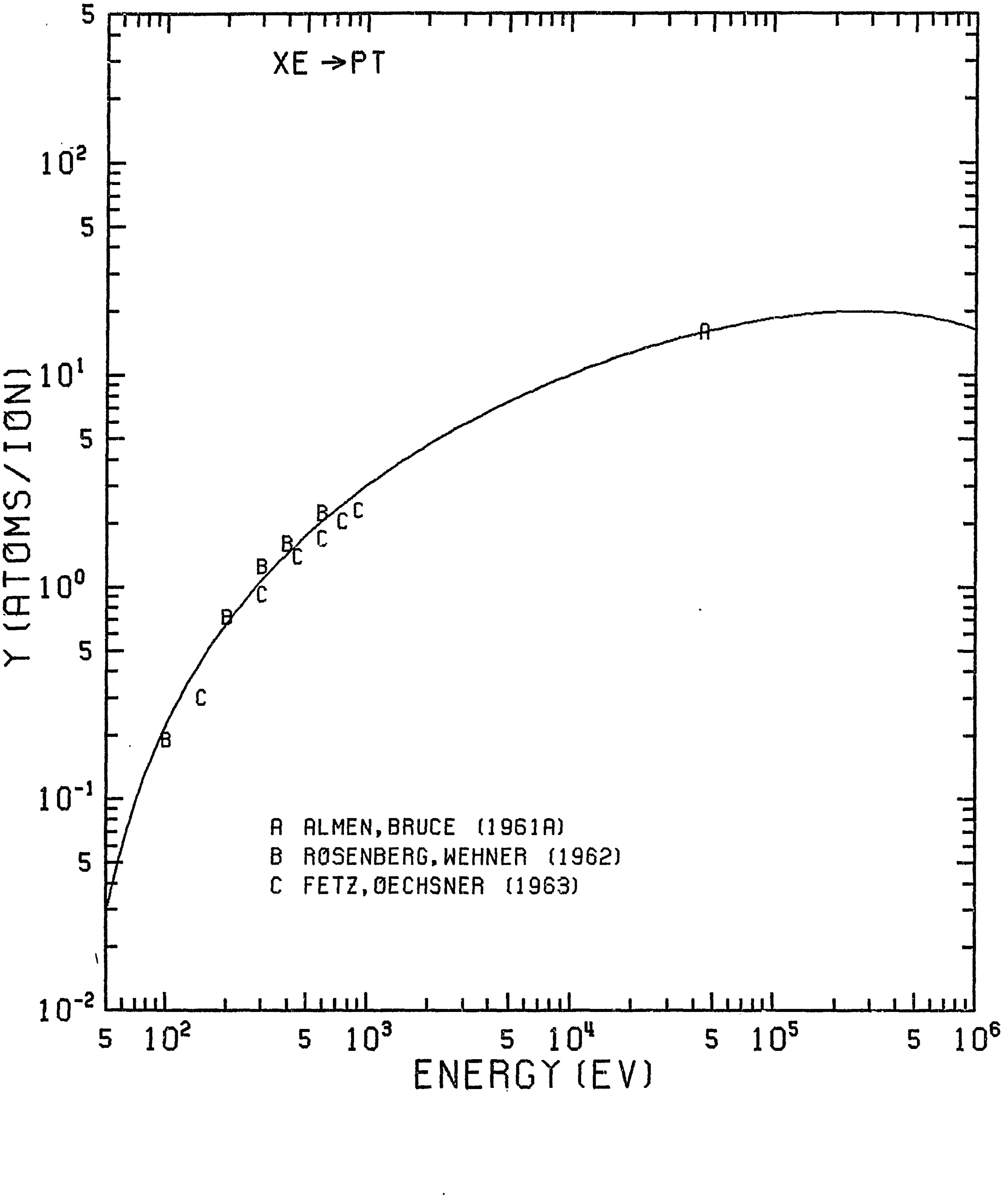
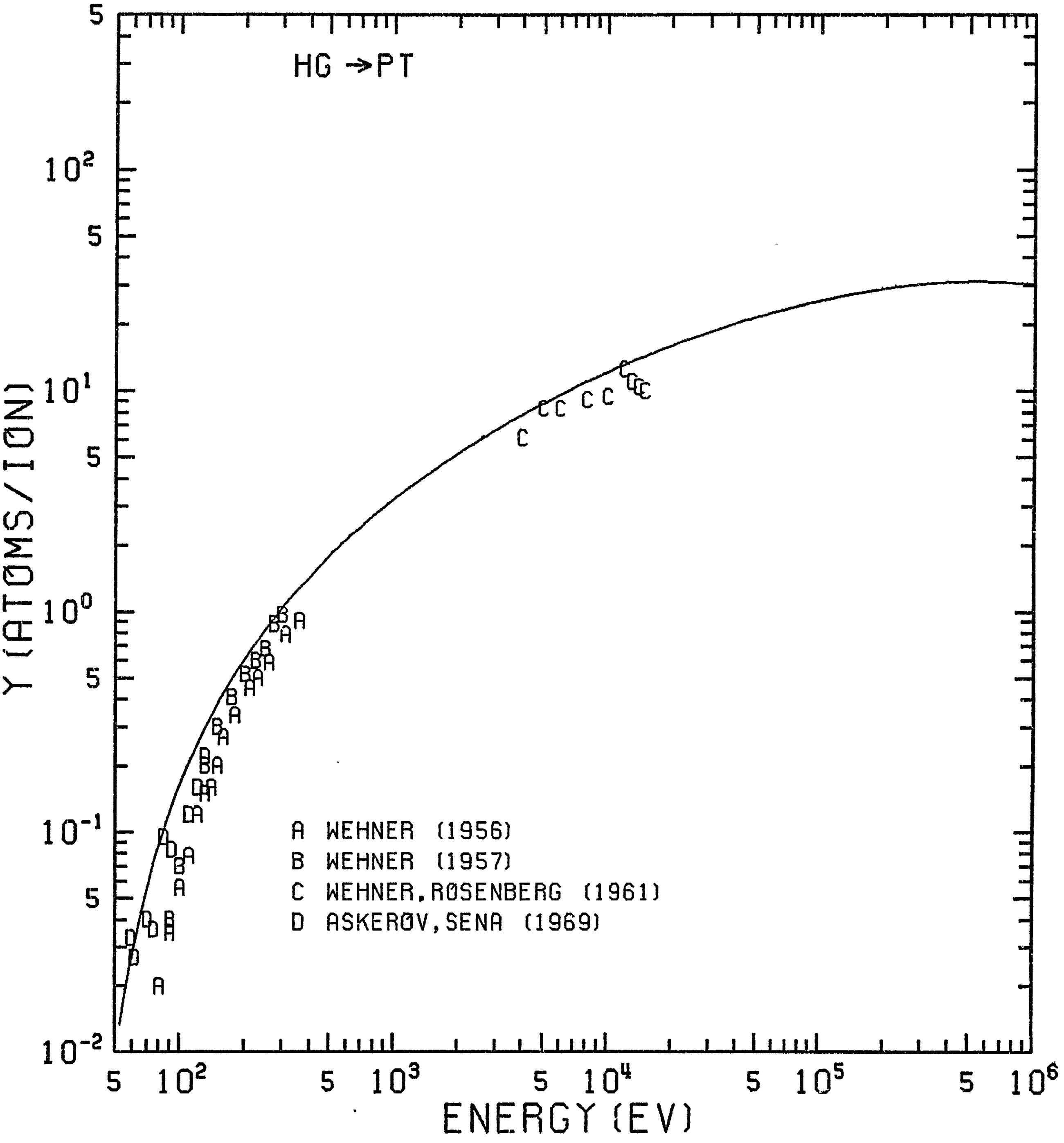
10²
5
10³
5
10⁴
5
10⁵
5
10⁶


XE →PT
Y (ATØMS/IØN)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961A)
B RØSENBERG, WEHNER (1962)
C FETZ, ØECHSNER (1963)


HG →PT
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
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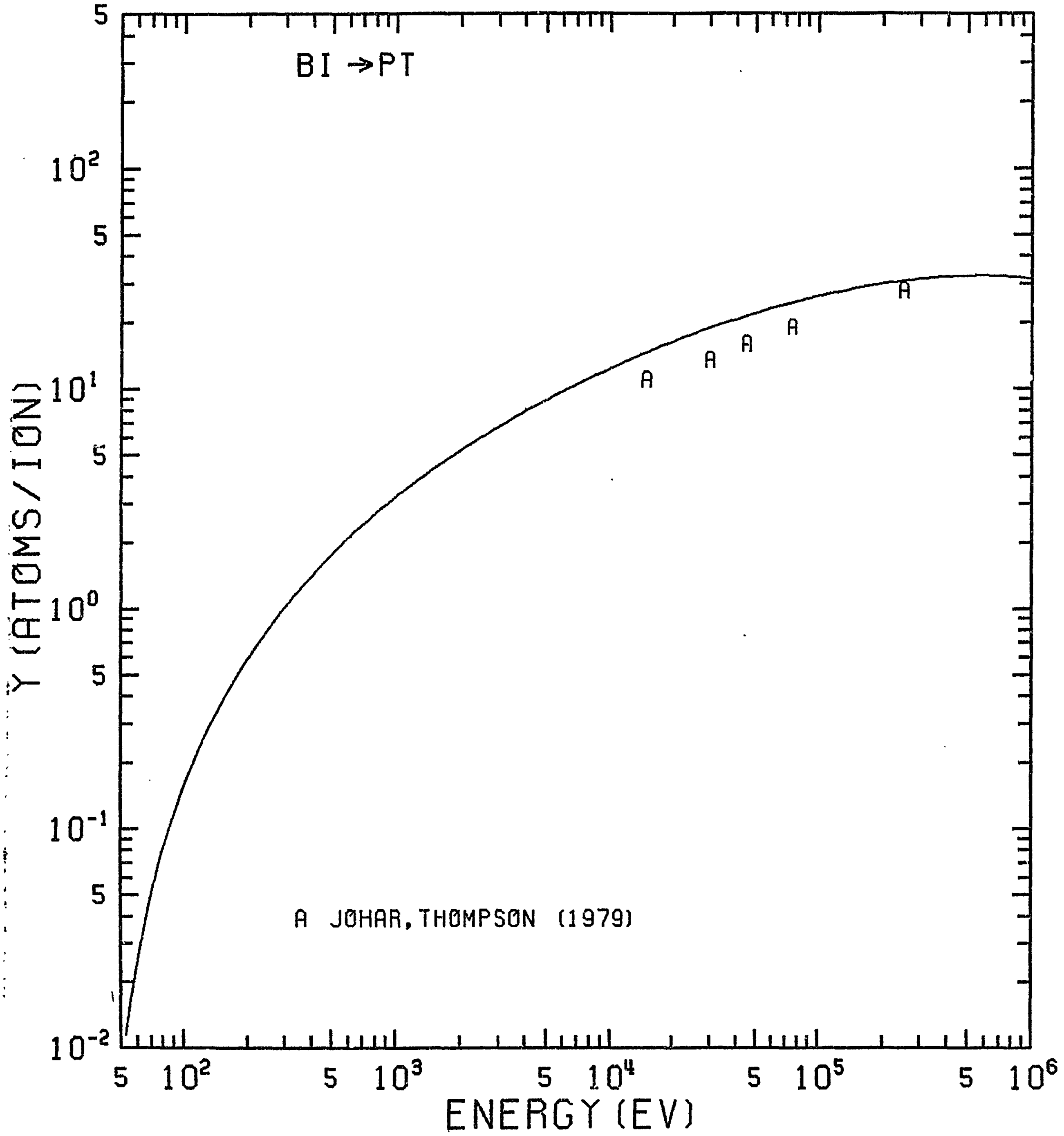
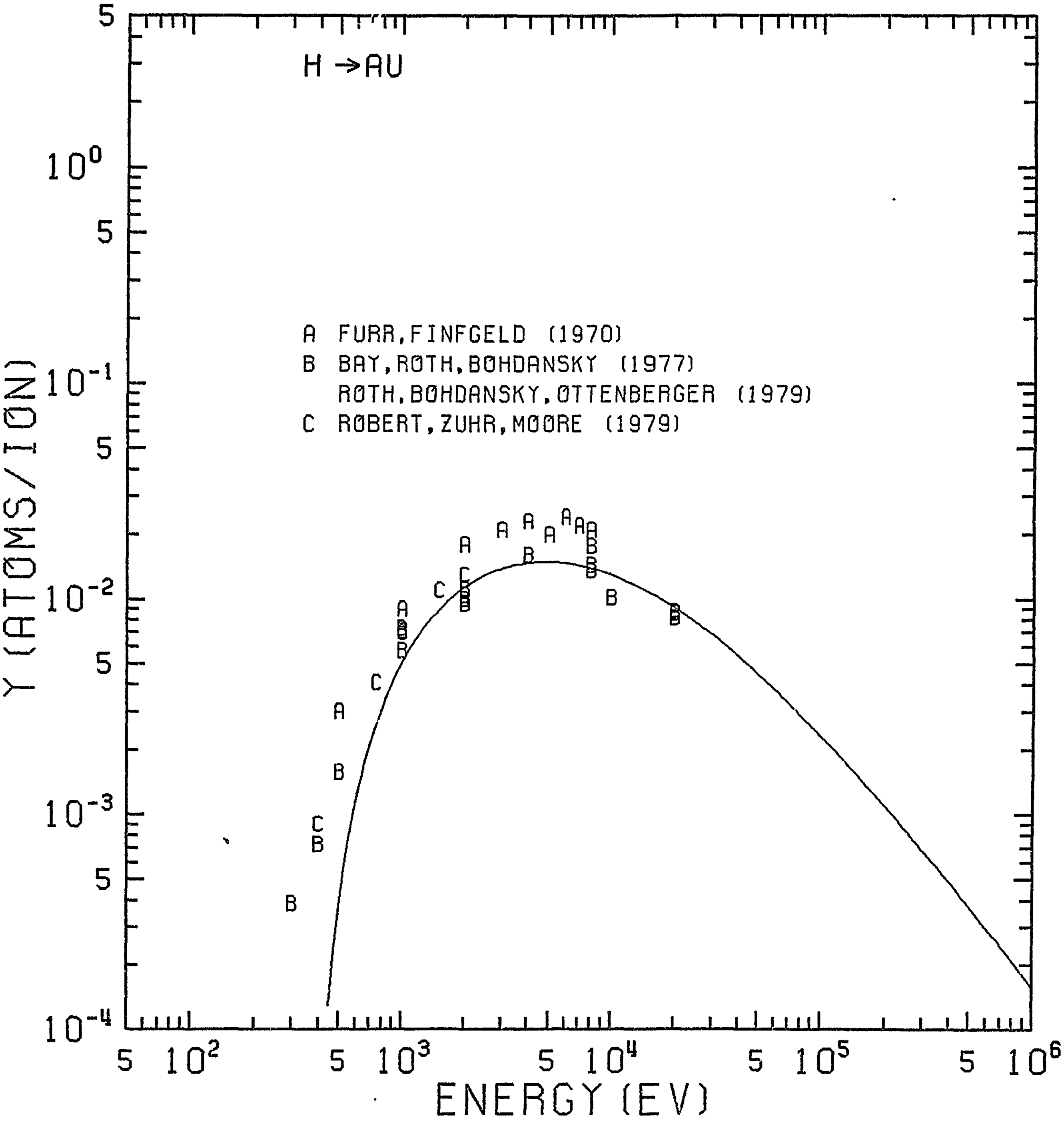
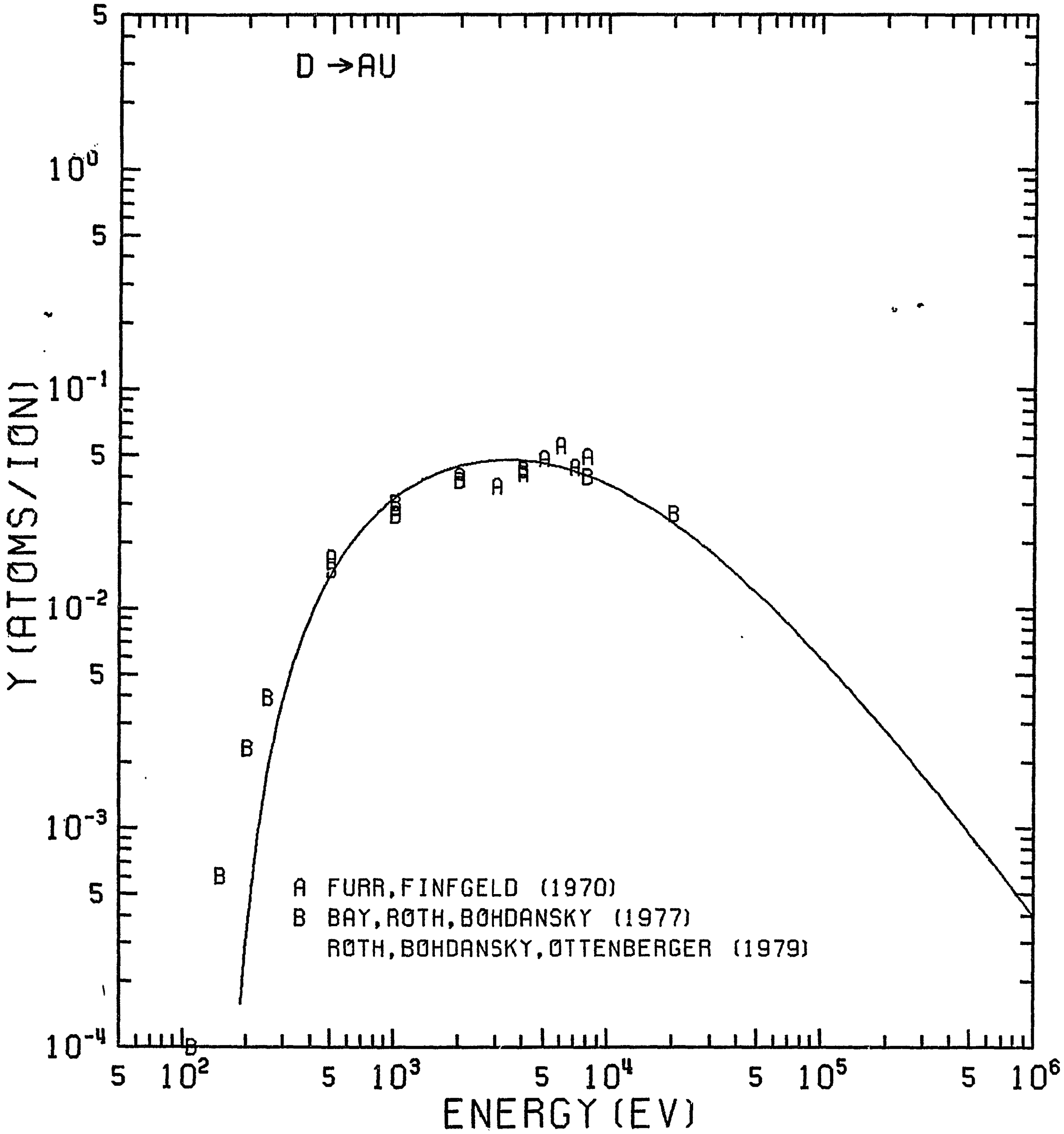
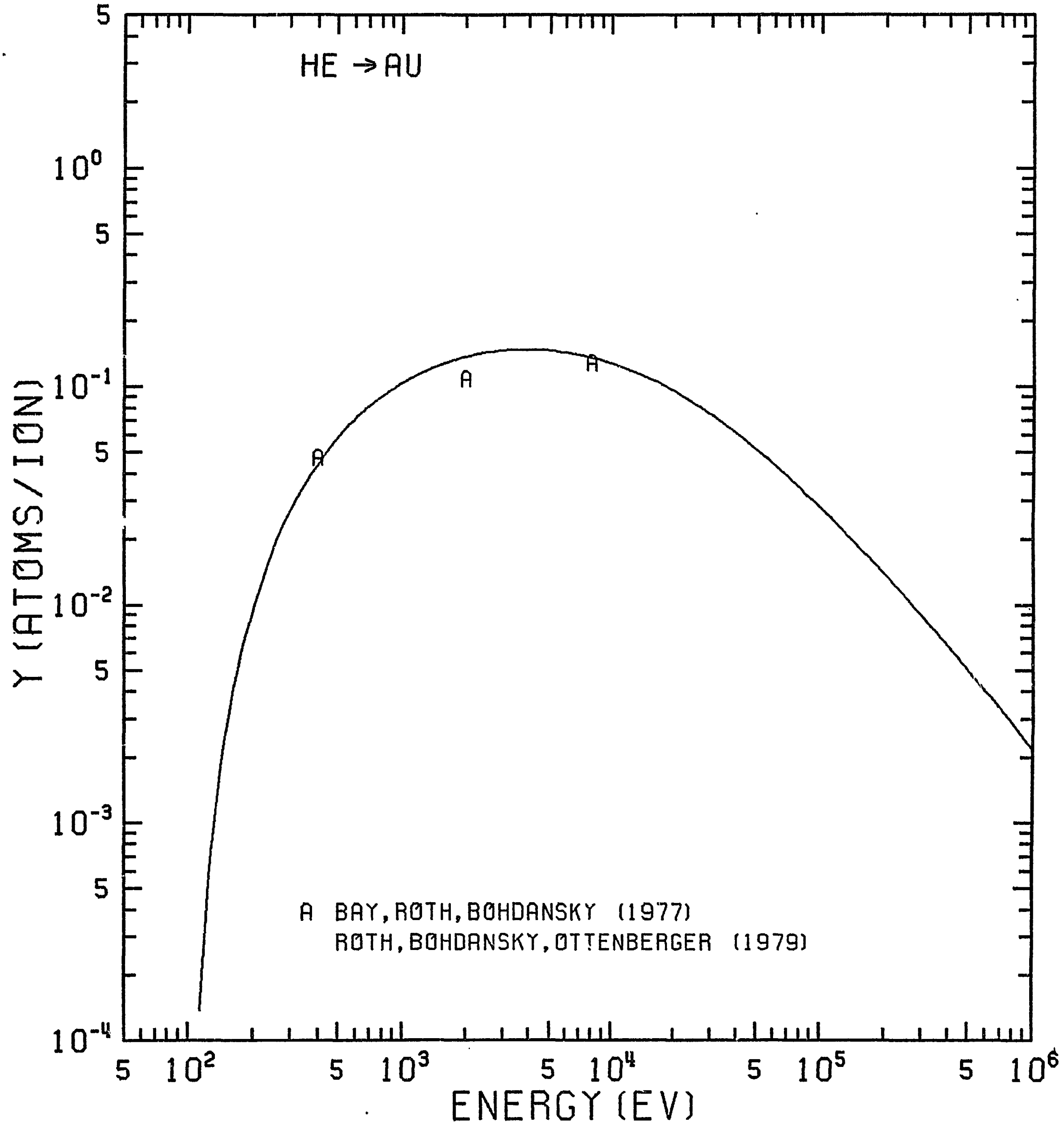
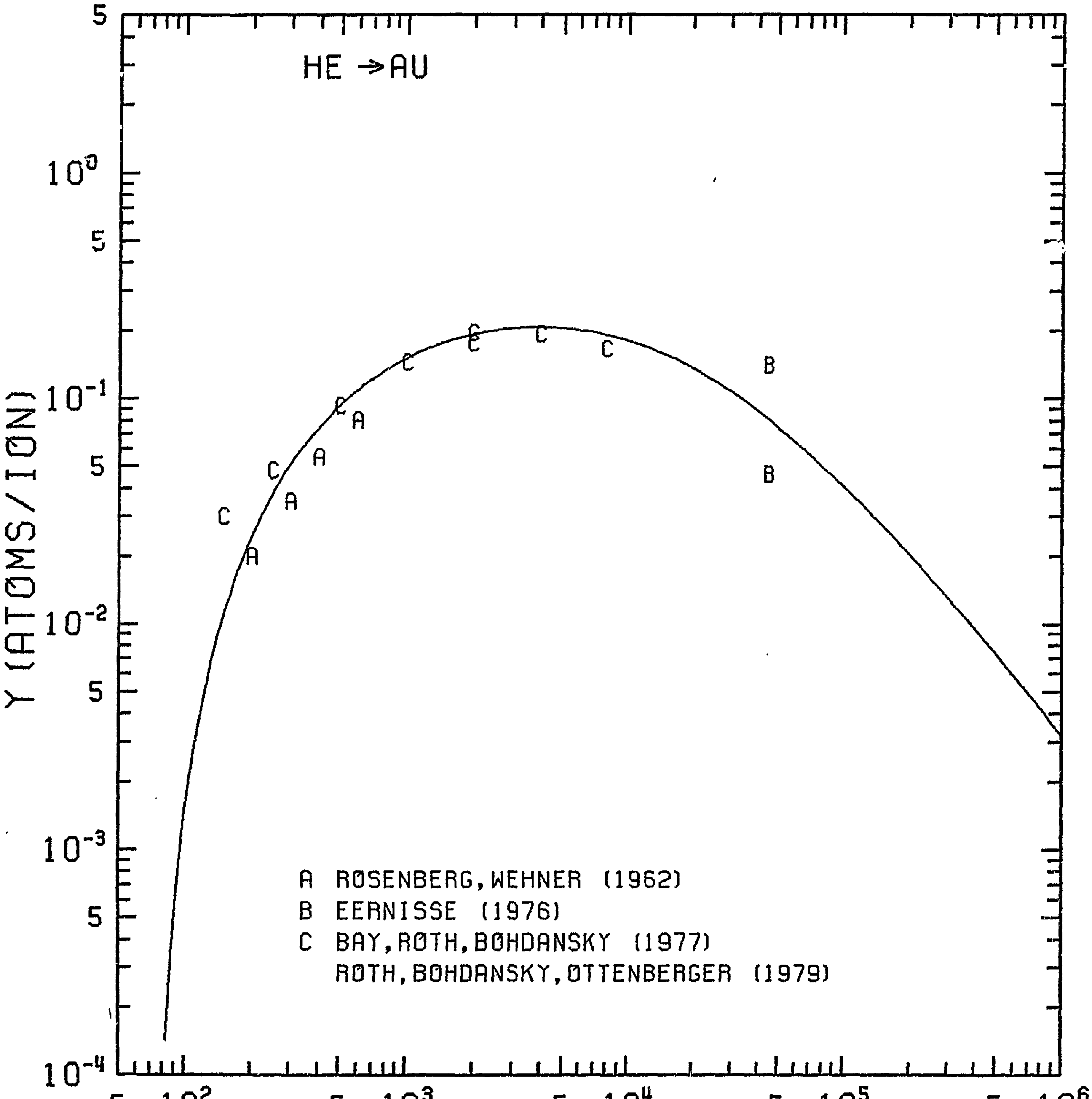
10^6
A WEHNER (1956)
B WEHNER (1957)
C WEHNER, ROSENBERG (1961)
D ASKEROV, SENA (1969)

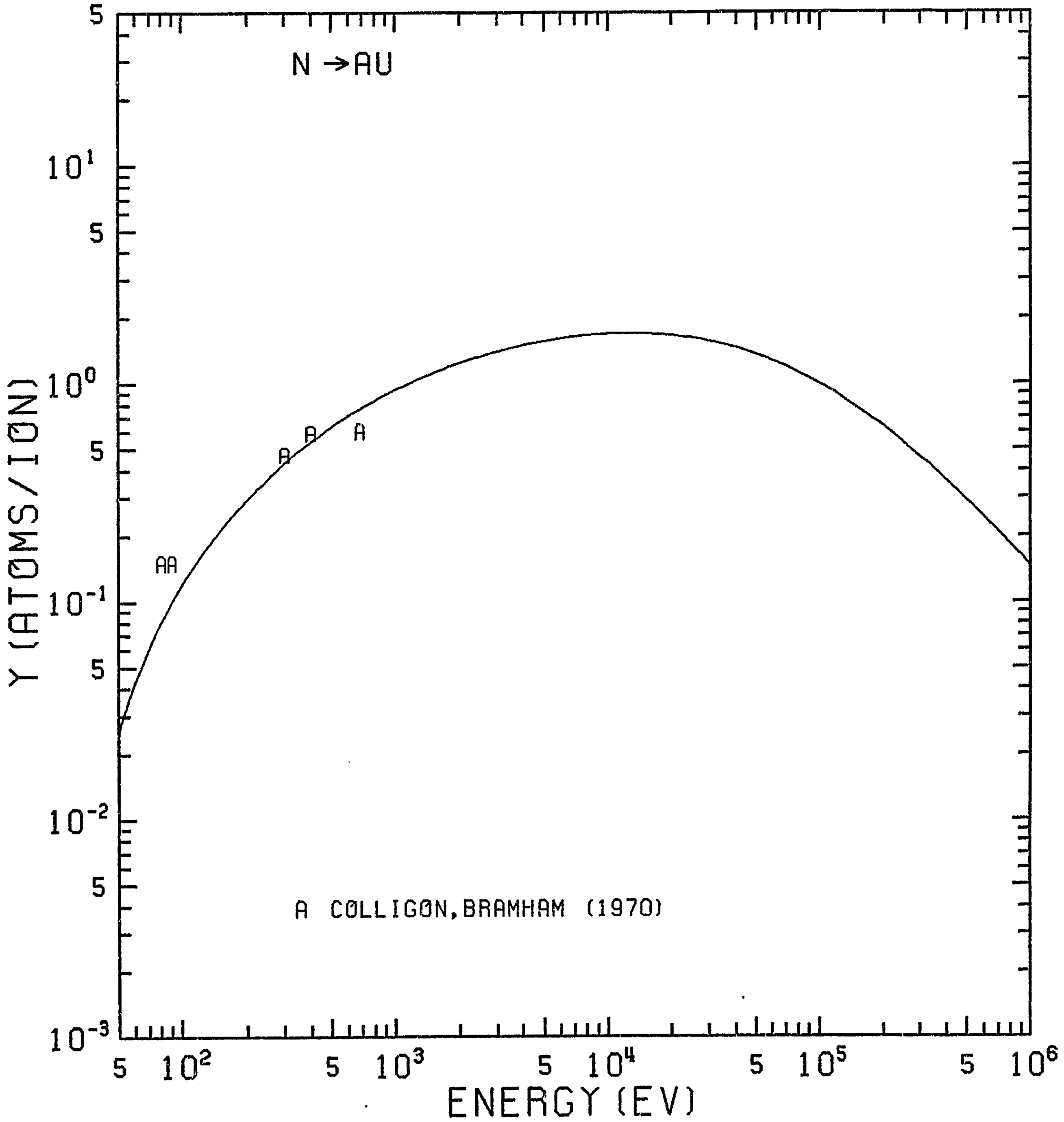

BI →PT
A JOHAR, THOMPSON (1979)
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
A
A
A
A

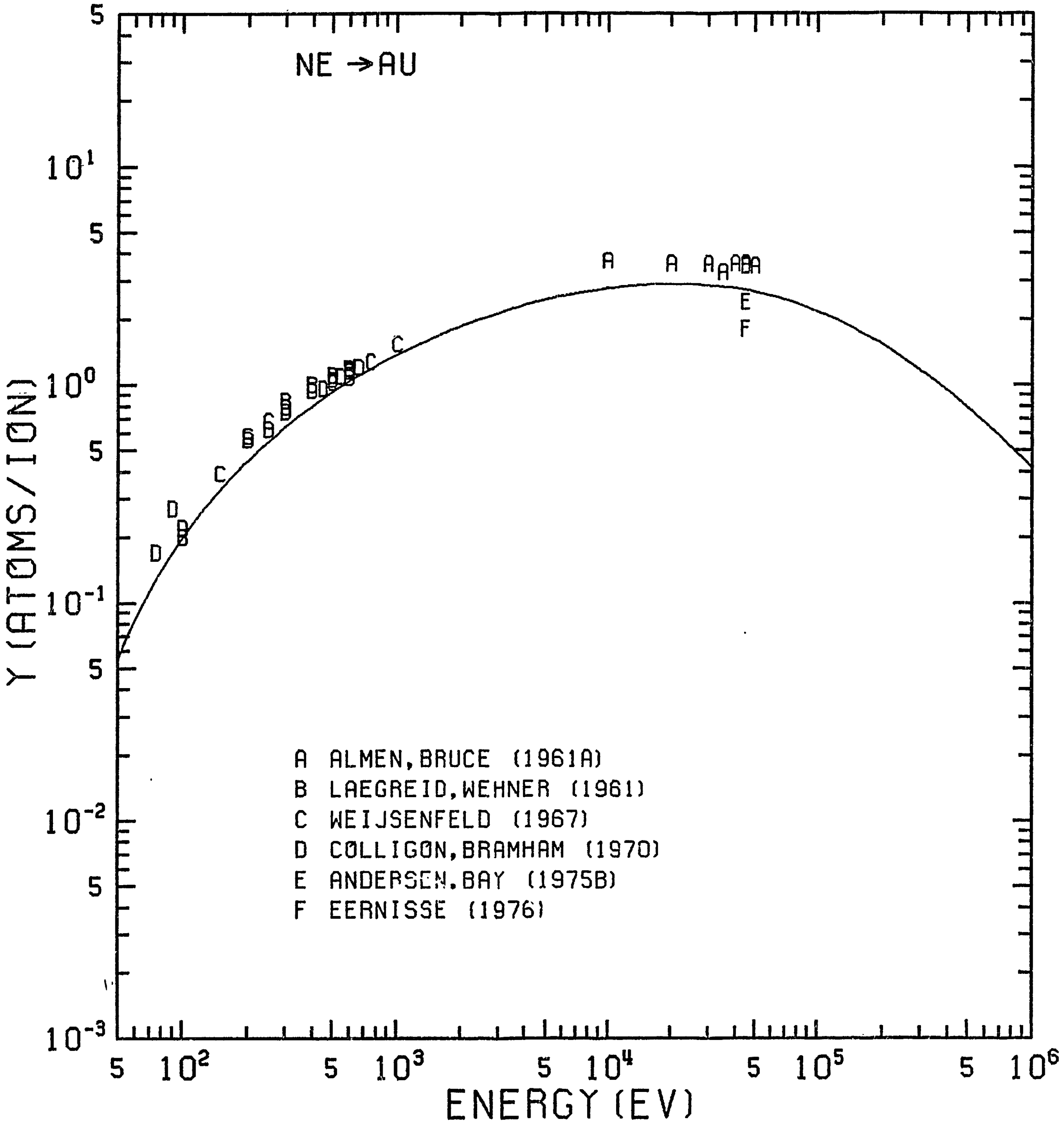

H →AU
A FURR, FINFGELD (1970)
B BAY, ROTH, BOHDANSKY (1977)
ROTH, BOHDANSKY, OTTENBERGER (1979)
C ROBERT, ZUHR, MOORE (1979)
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6

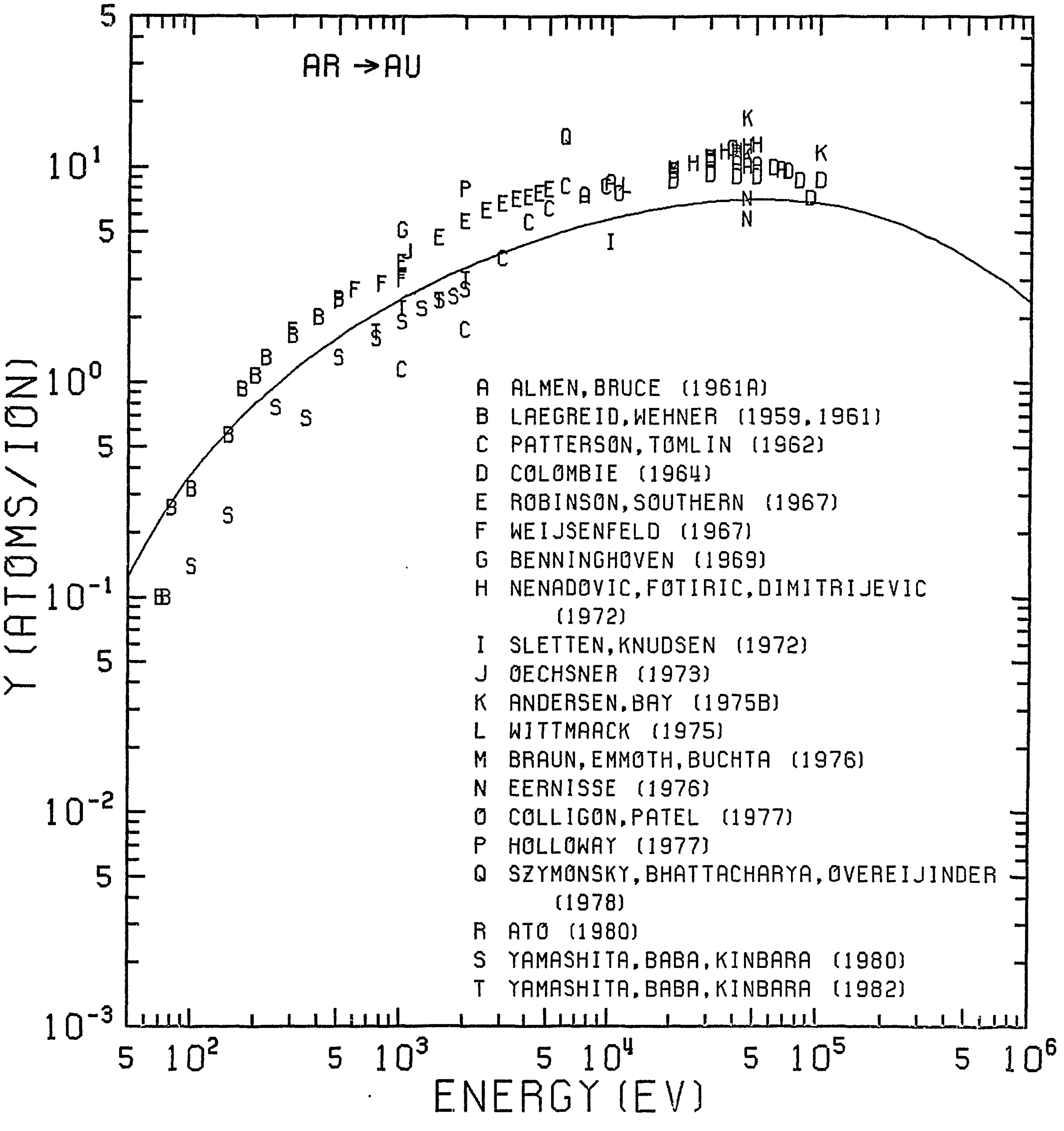

D → AU
Y (ATOMS/ION)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A FURR, FINFGELD (1970)
B BAY, ROTH, BOHDANSKY (1977)
ROTH, BOHDANSKY, OTTENBERGER (1979)

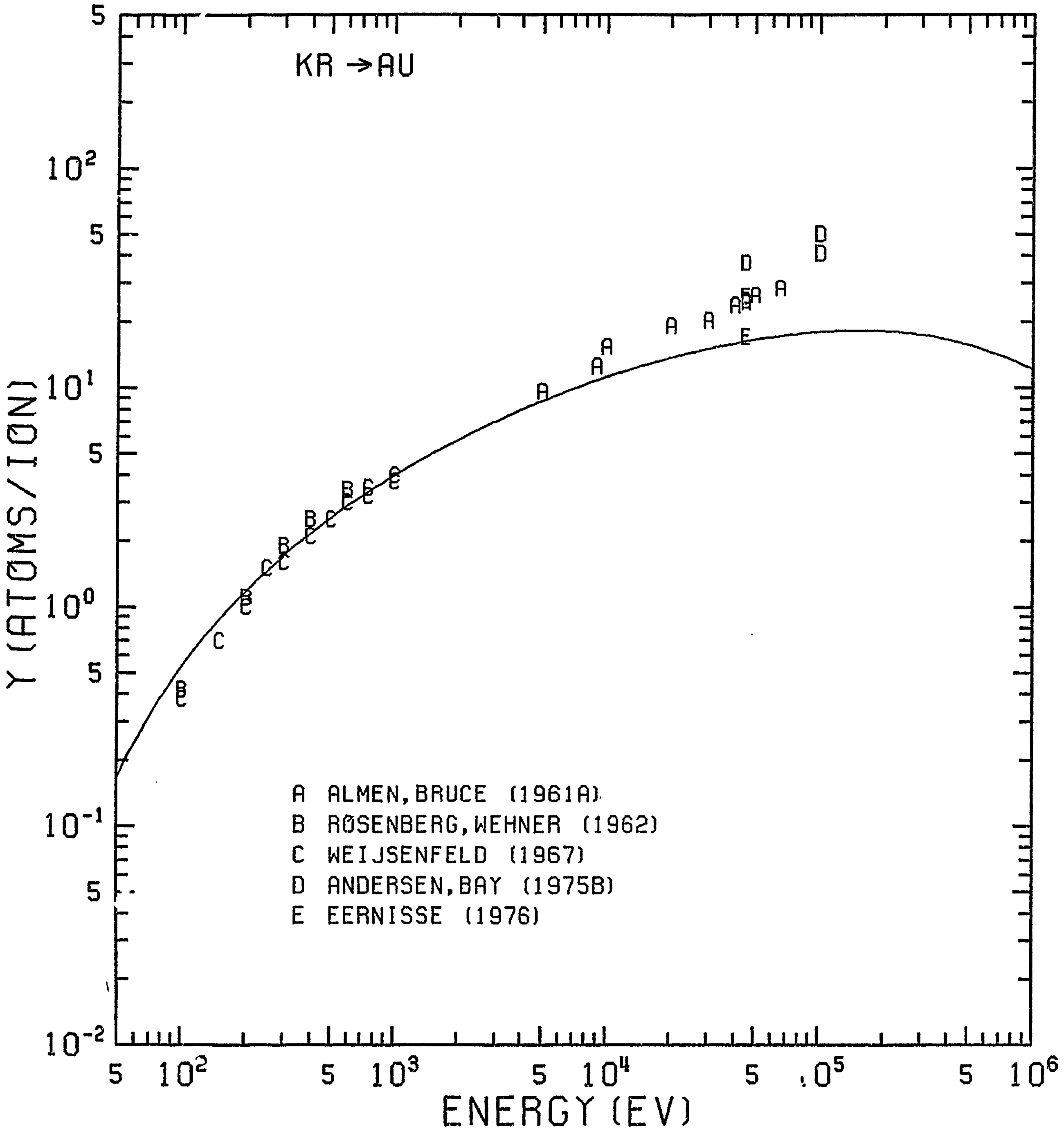

HE → AU
Y (ATOMS/ION)
ENERGY (EV)
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10⁻⁴
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
A BAY, ROTH, BOHDANSKY (1977)
ROTH, BOHDANSKY, OTTENBERGER (1979)

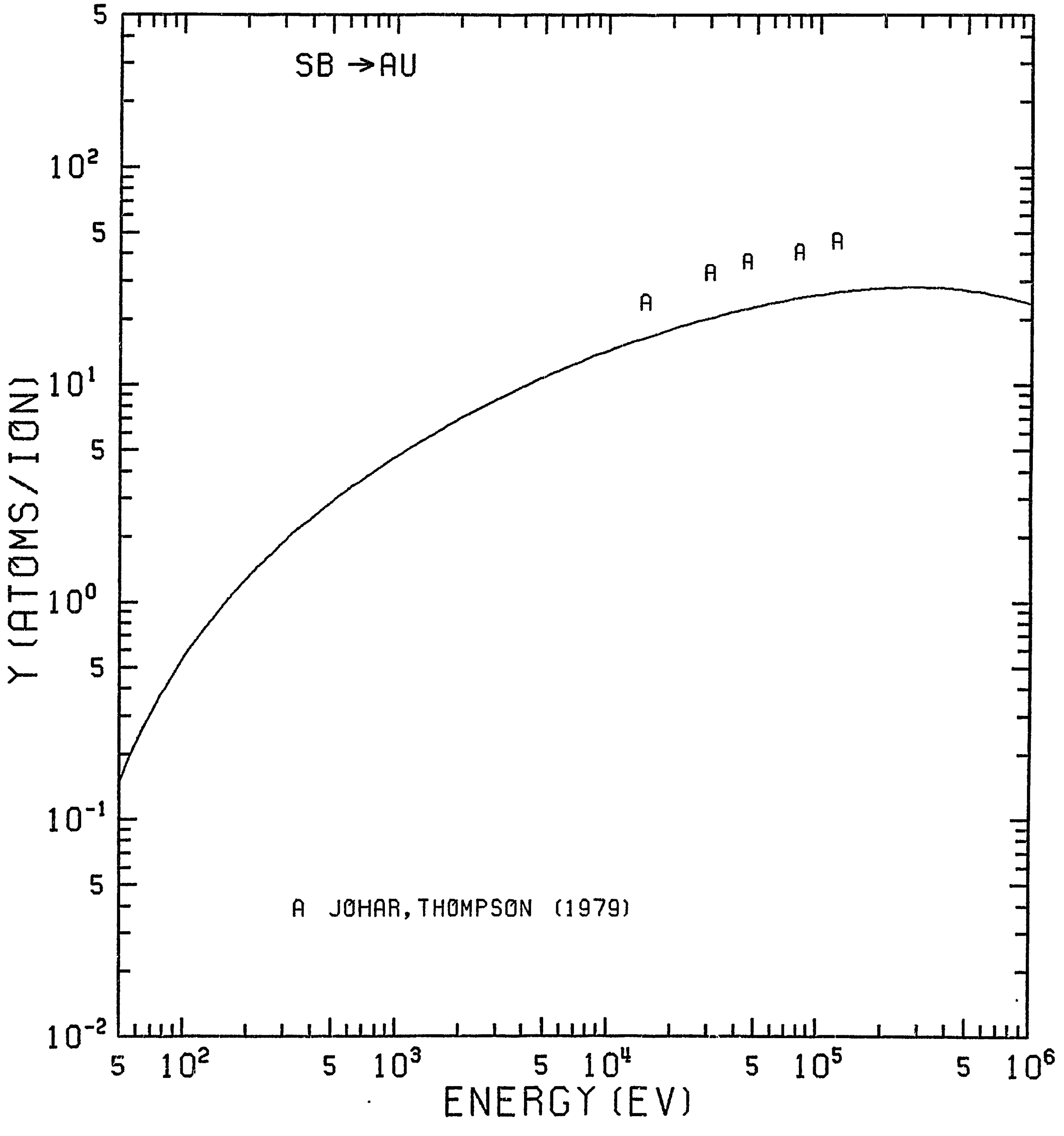

HE → AU
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B
C
A ROSENBERG, WEHNER (1962)
B EERNISSE (1976)
C BAY, ROTH, BOHDANSKY (1977)
ROTH, BOHDANSKY, OTTENBERGER (1979)

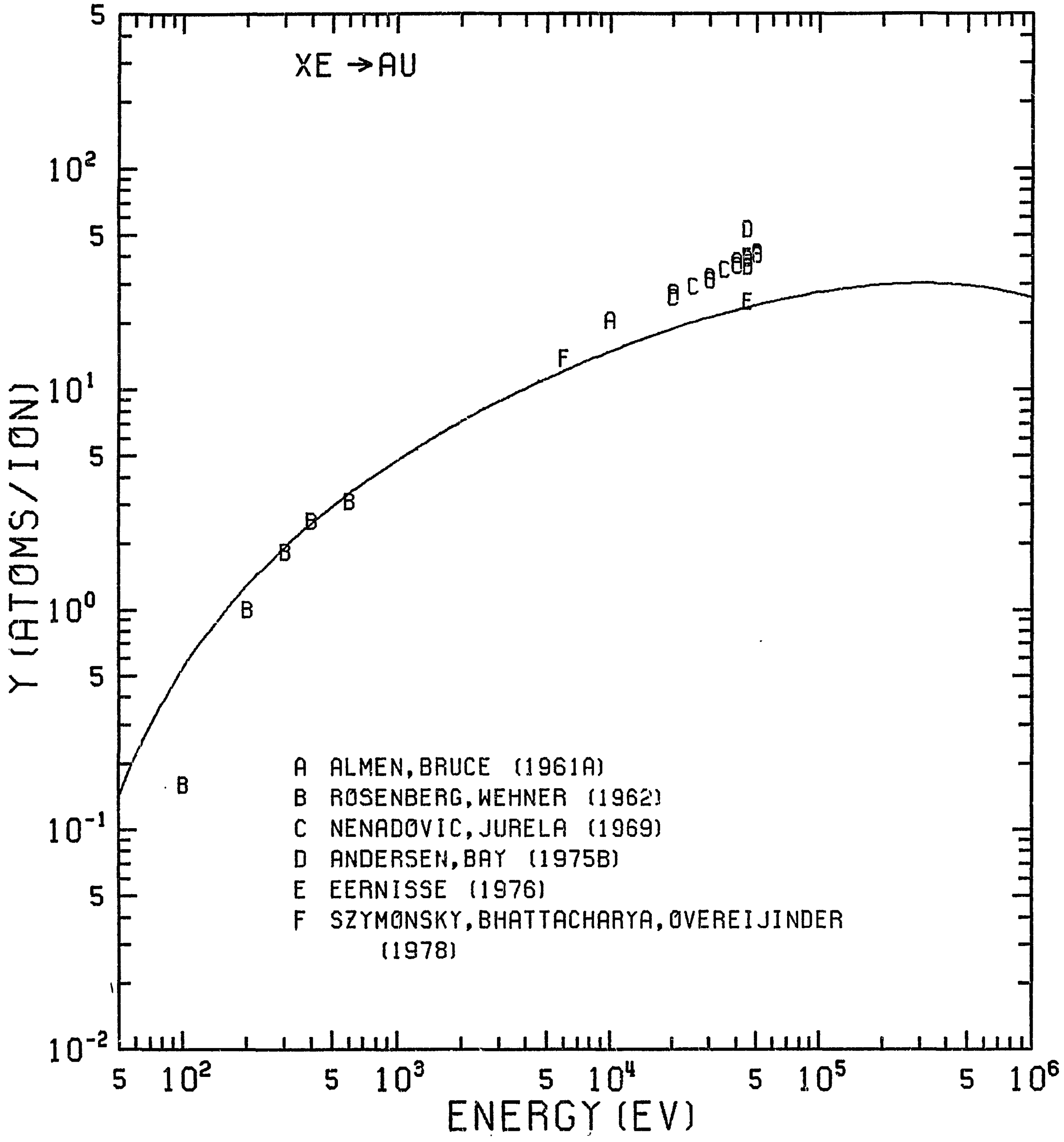

N →AU
Y (ATOMS/ION)
ENERGY (EV)
A COLLIGON, BRAMHAM (1970)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
AA
A
A
A

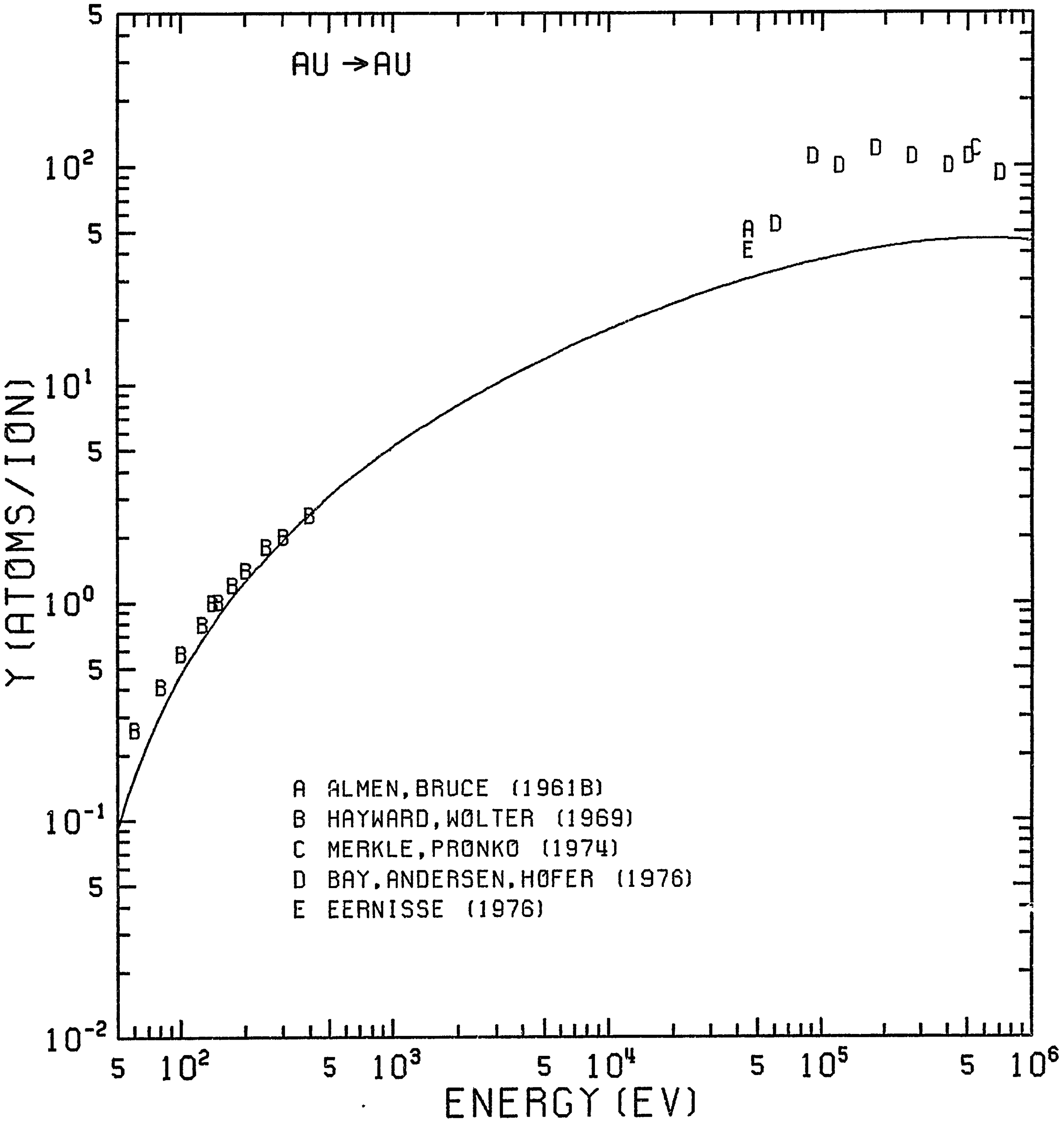

NE →AU
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1961)
C WEIJSENFELD (1967)
D COLLIGON, BRAMHAM (1970)
E ANDERSEN, BAY (1975B)
F EERNISSE (1976)

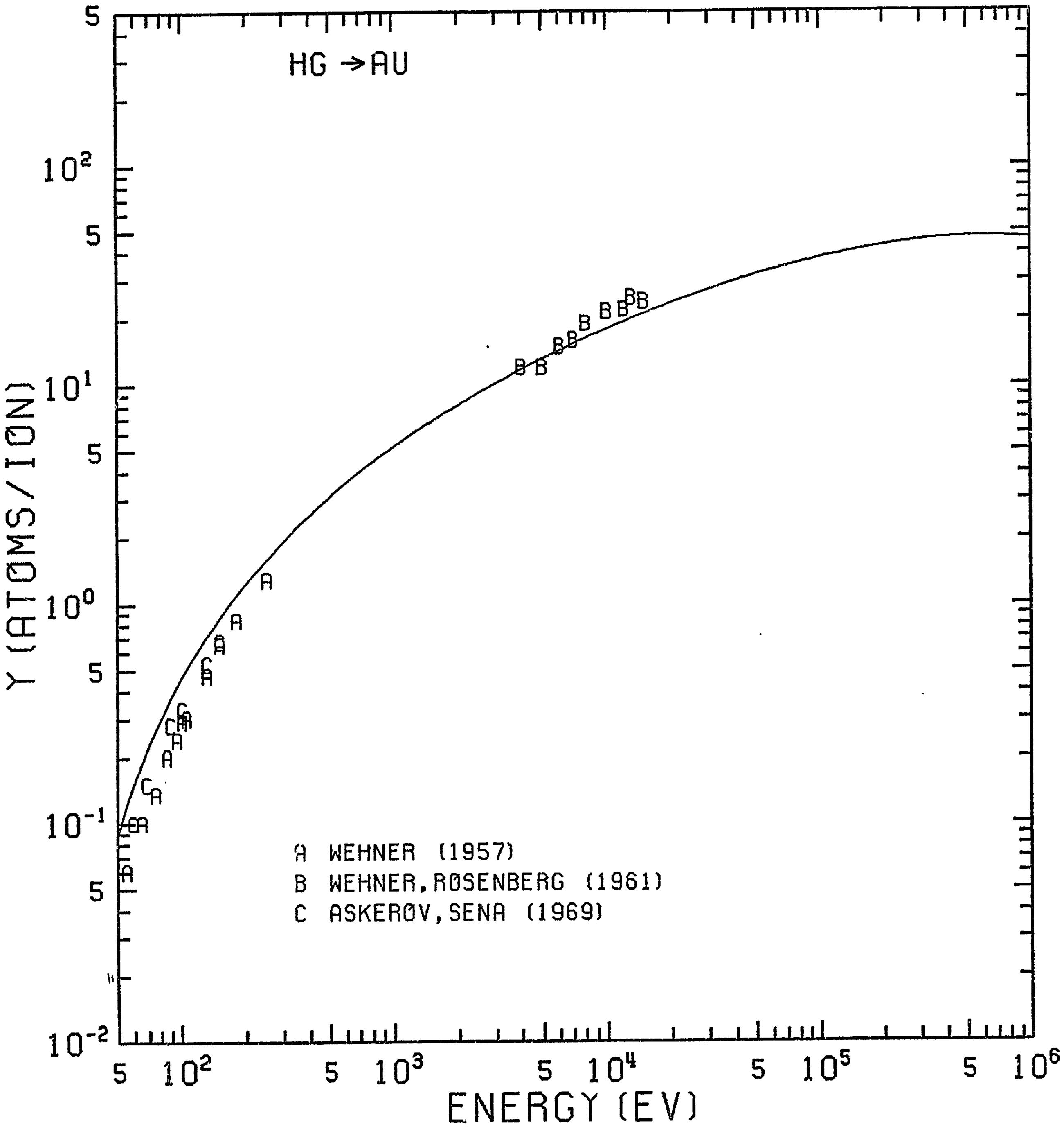

AR →AU
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5 10^2 5 10^3 5 10^4 5 10^5 5 10^6
A ALMEN, BRUCE (1961A)
B LAEGREID, WEHNER (1959, 1961)
C PATTERSON, TOMLIN (1962)
D COLOMBIE (1964)
E ROBINSON, SOUTHERN (1967)
F WEIJSENFELD (1967)
G BENNINGHOVEN (1969)
H NENADOVIC, FOTIRIC, DIMITRIJEVIC (1972)
I SLETTEN, KNUDSEN (1972)
J OECHSNER (1973)
K ANDERSEN, BAY (1975B)
L WITTMAACK (1975)
M BRAUN, EMMOTH, BUCHTA (1976)
N EERNISSE (1976)
O COLLIGON, PATEL (1977)
P HOLLOWAY (1977)
Q SZYMONSKY, BHATTACHARYA, OVEREIJNDER (1978)
R ATO (1980)
S YAMASHITA, BABA, KINBARA (1980)
T YAMASHITA, BABA, KINBARA (1982)

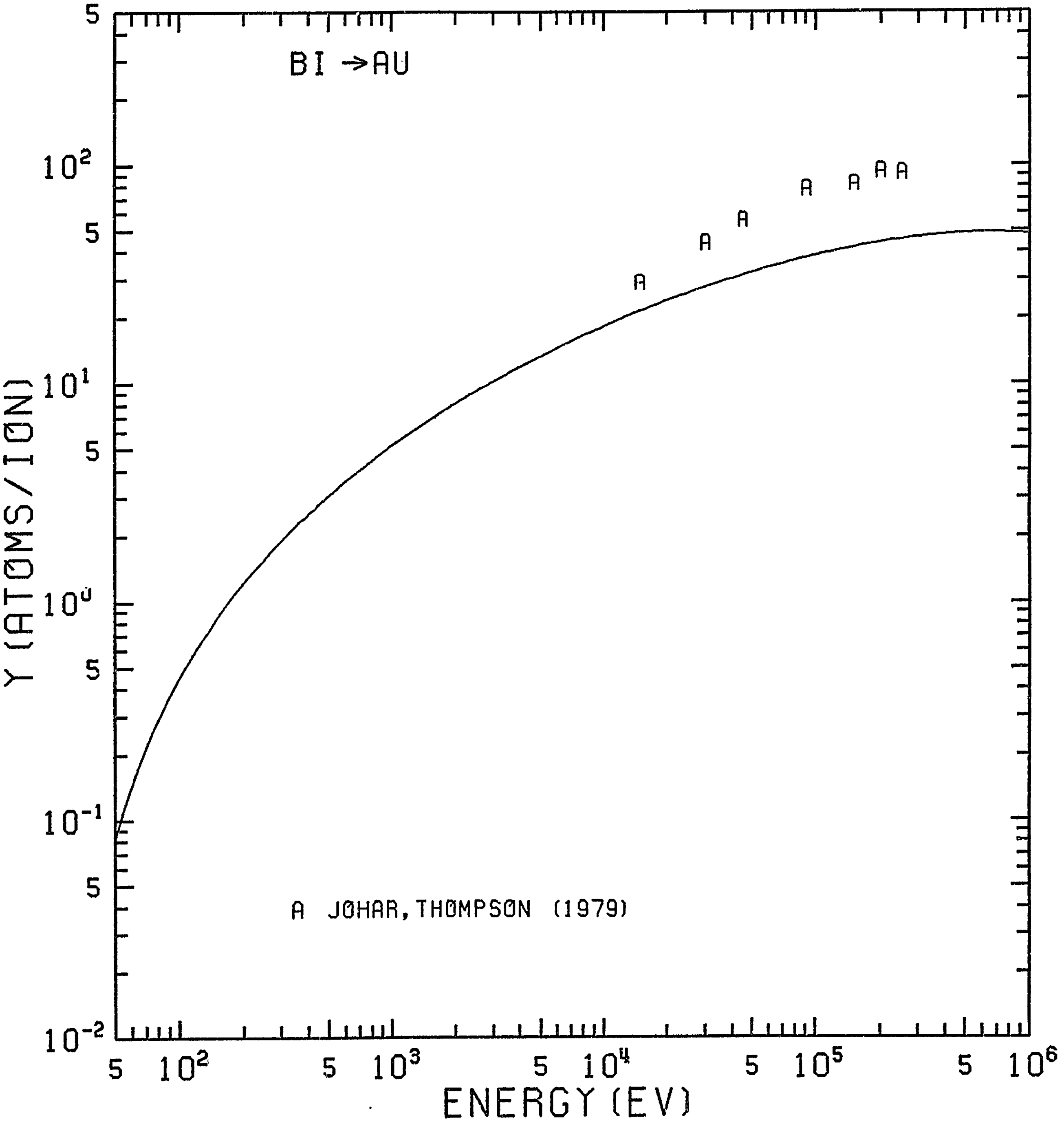

KR →AU
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)
C WEIJSENFELD (1967)
D ANDERSEN, BAY (1975B)
E EERNISSE (1976)

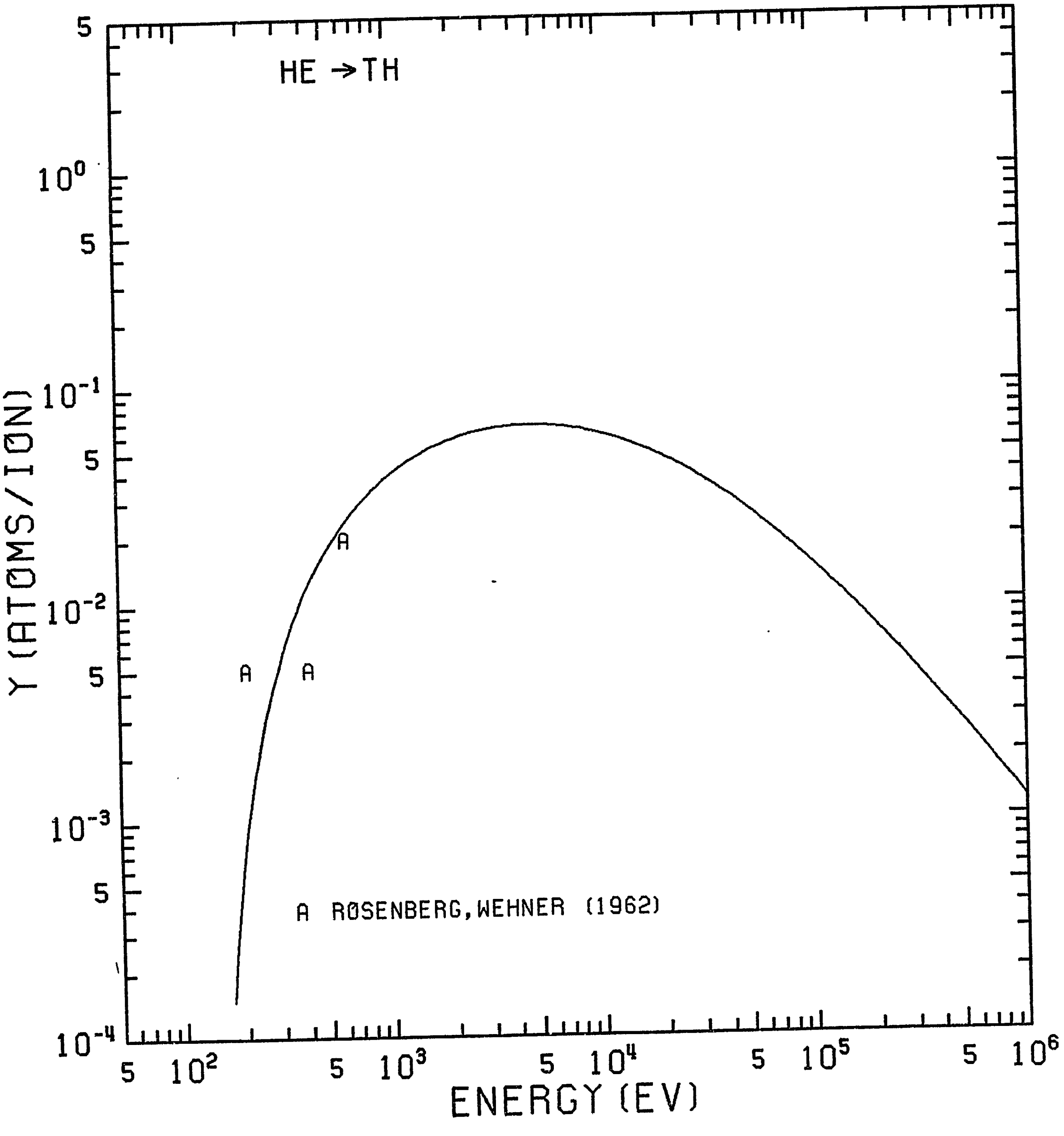

SB →AU
Y (ATOMS/ION)
ENERGY (EV)
A JOHAR, THOMPSON (1979)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶

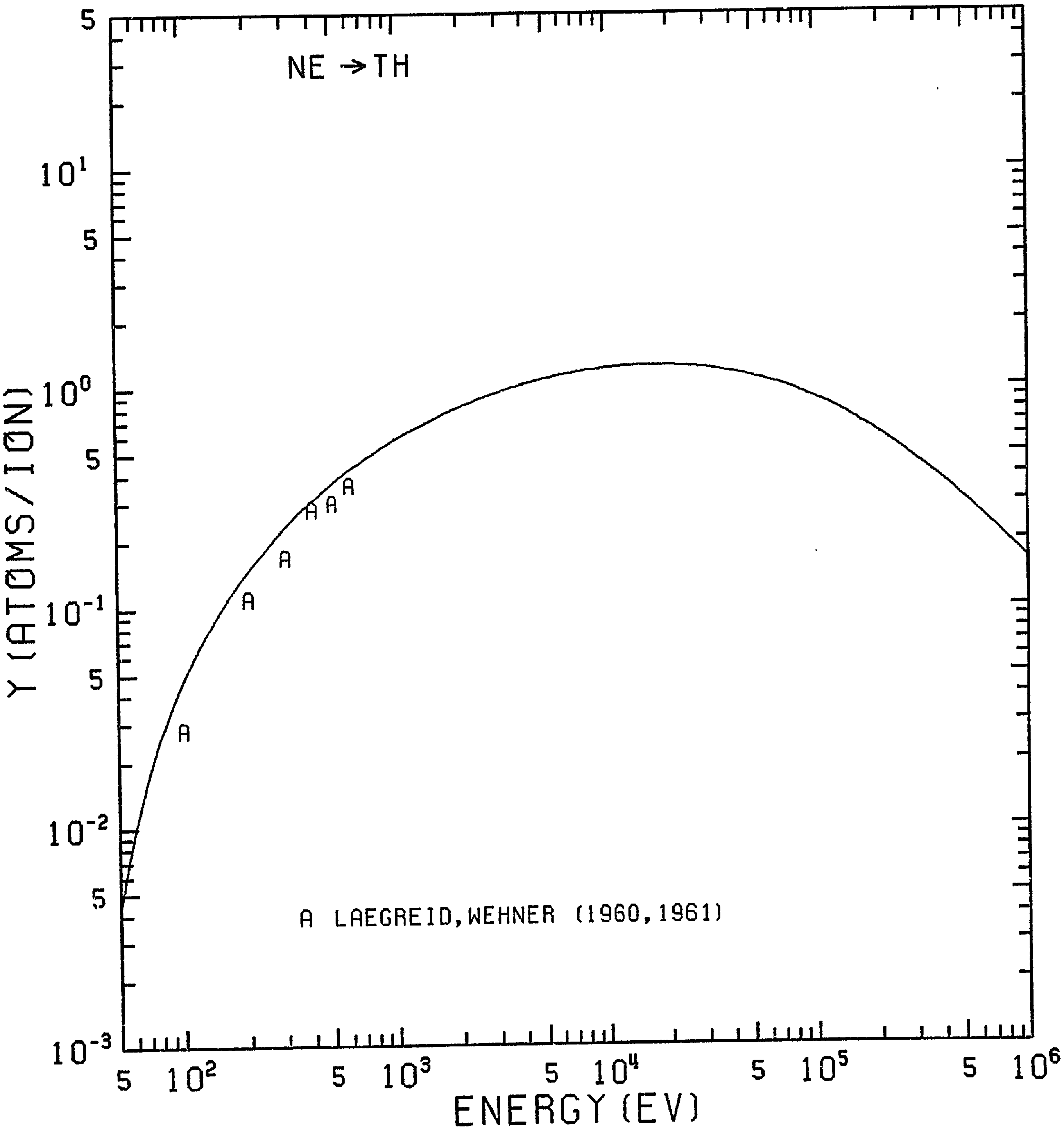

XE → AU
Y (ATOMS/ION)
ENERGY (EV)
10^-2
5
10^-1
5
10^0
5
10^1
5
10^2
5
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ALMEN, BRUCE (1961A)
B ROSENBERG, WEHNER (1962)
C NENADOVIC, JURELA (1969)
D ANDERSEN, BAY (1975B)
E EERNISSE (1976)
F SZYMONSKY, BHATTACHARYA, OVEREIJINDER (1978)

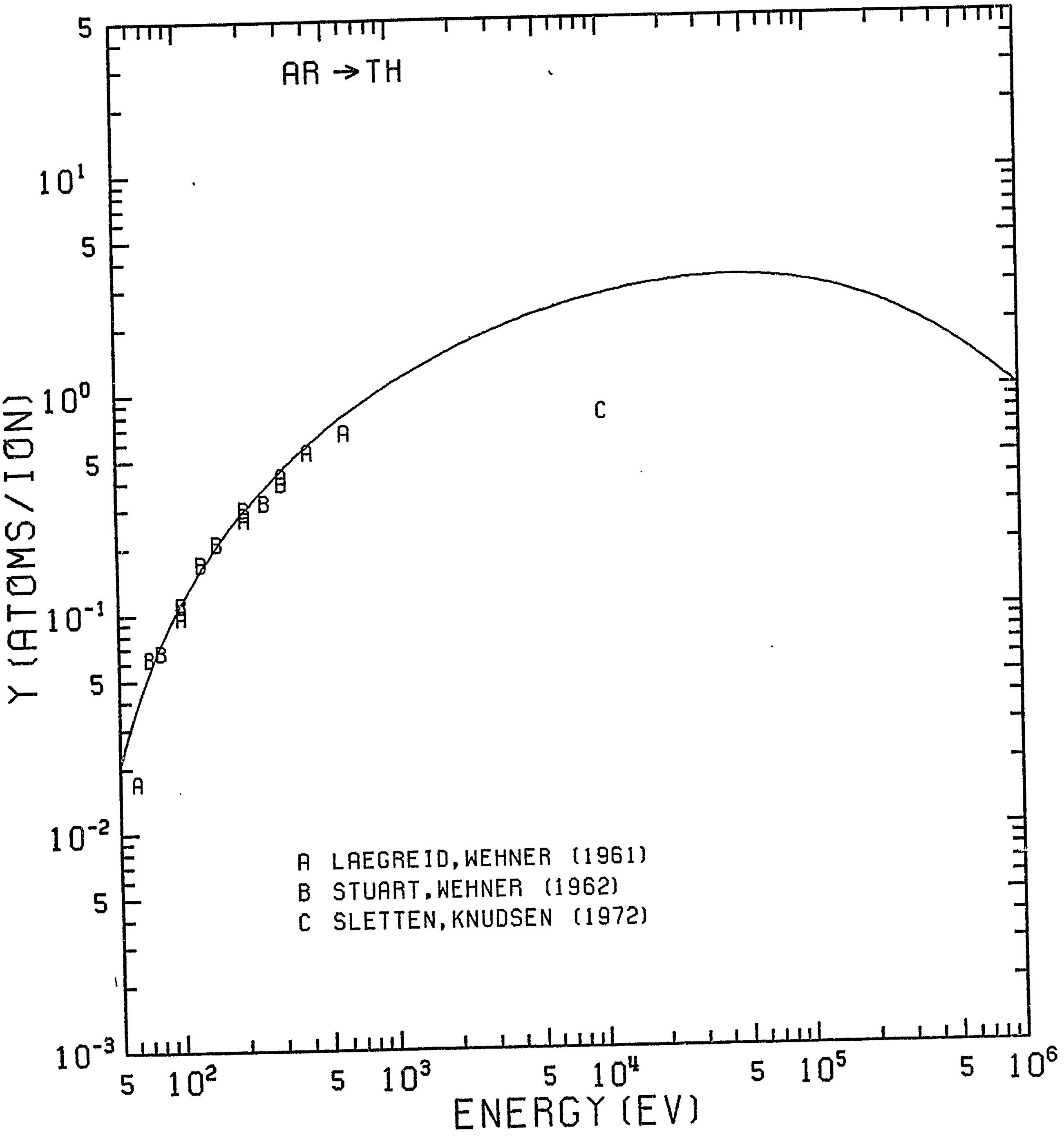

AU →AU
A ALMEN, BRUCE (1961B)
B HAYWARD, WOLTER (1969)
C MERKLE, PRONKO (1974)
D BAY, ANDERSEN, HOFER (1976)
E EERNISSE (1976)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6


HG → AU
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A WEHNER (1957)
B WEHNER, ROSENBERG (1961)
C ASKEROV, SENA (1969)


BI → AU
A JØHAR, THØMPSØN (1979)
Y (ATØMS/IØN)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶


HE →TH
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
A A
A
A ROSENBERG, WEHNER (1962)


NE → TH
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A LAEGREID, WEHNER (1960, 1961)



AR → TH
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^2
5
10^3
5
10^4
5
10^5
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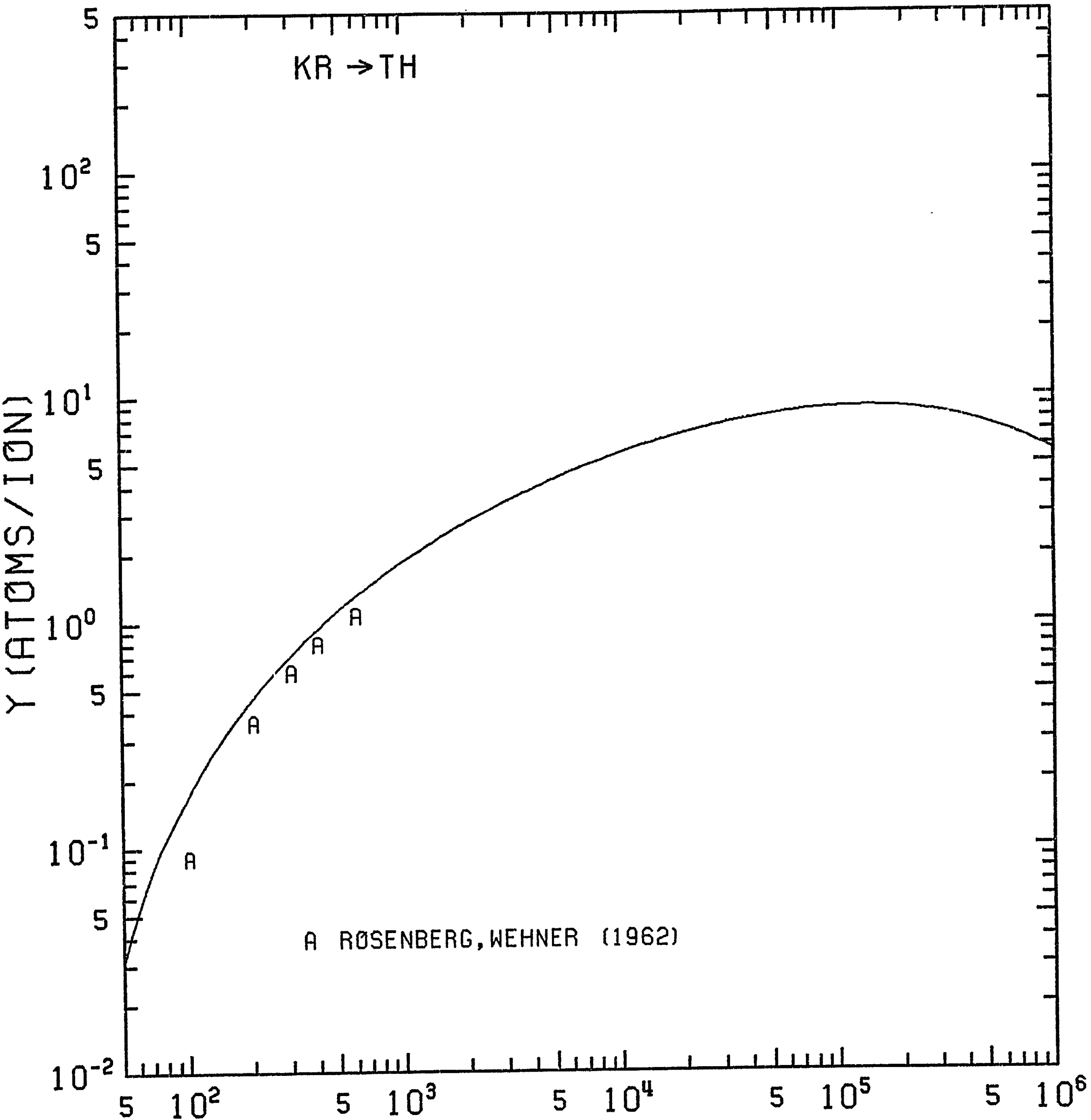
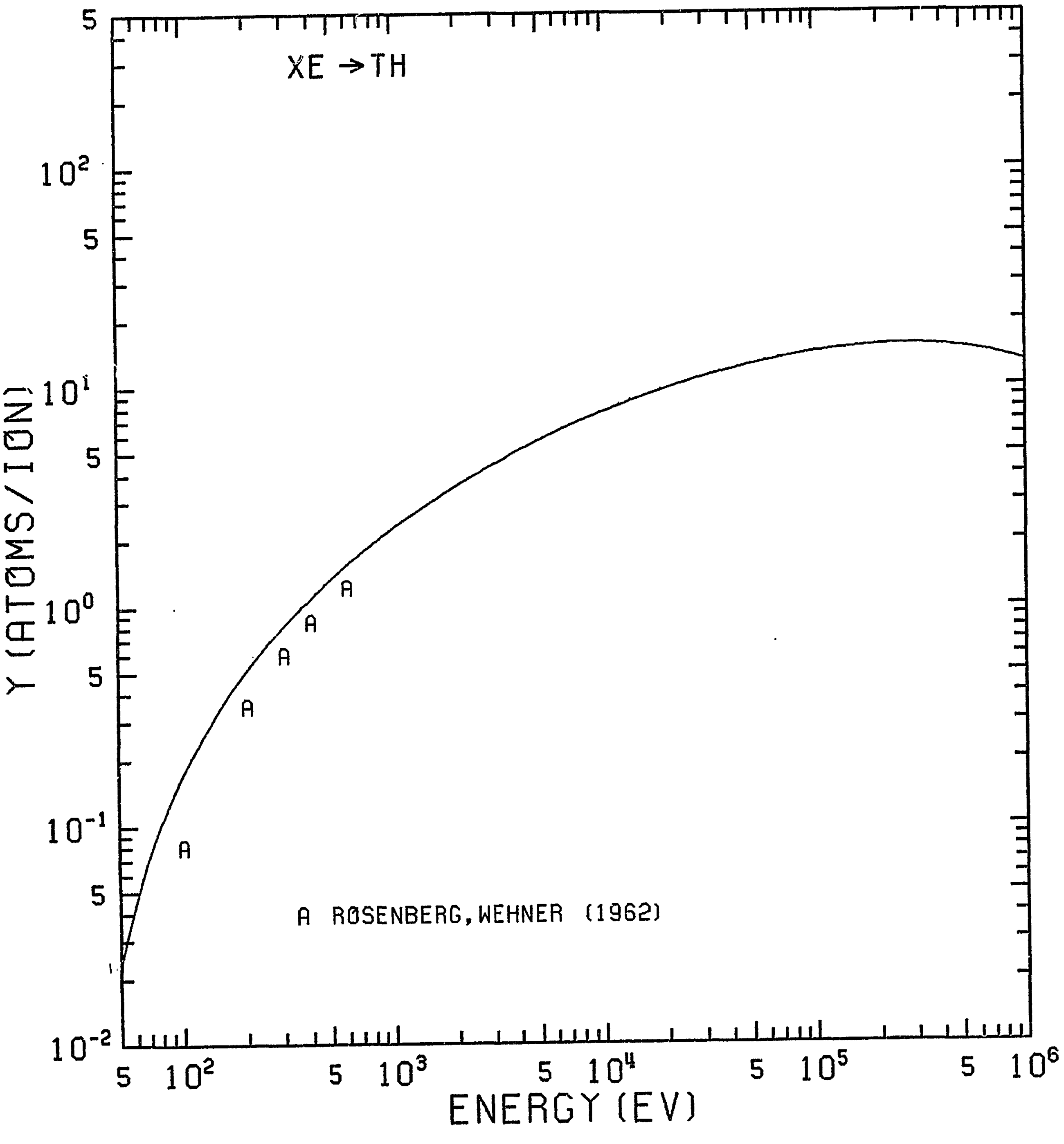
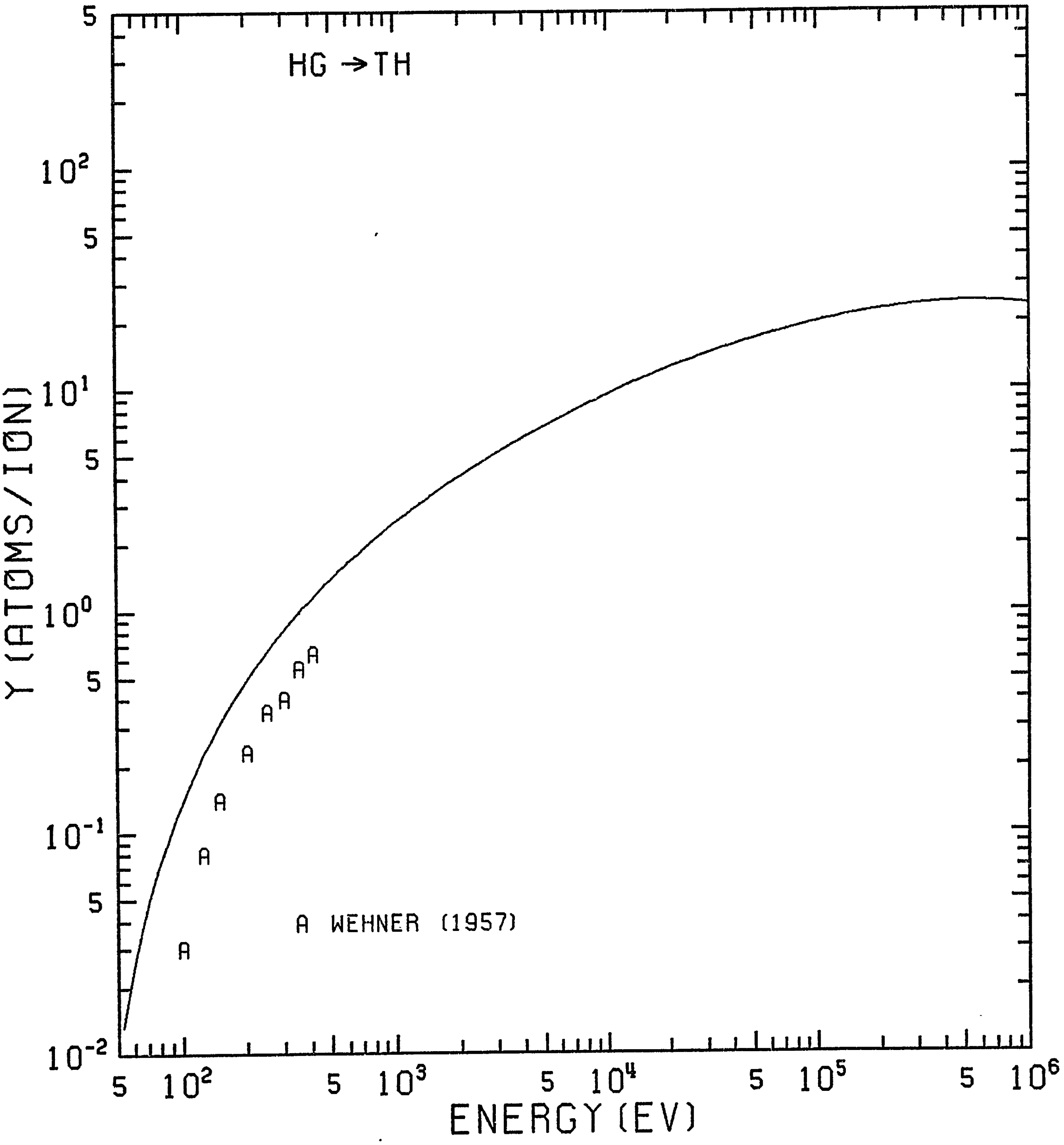
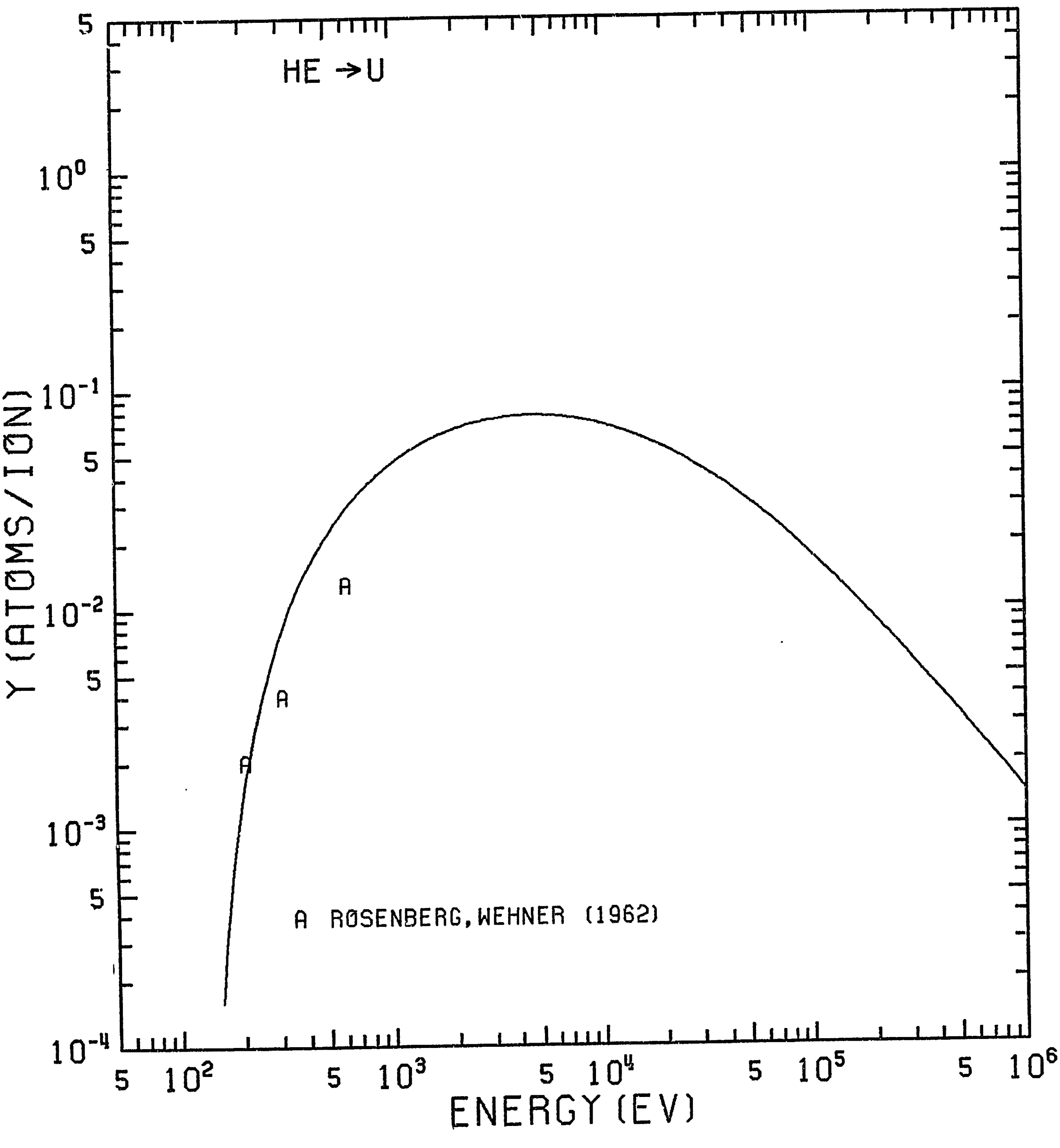
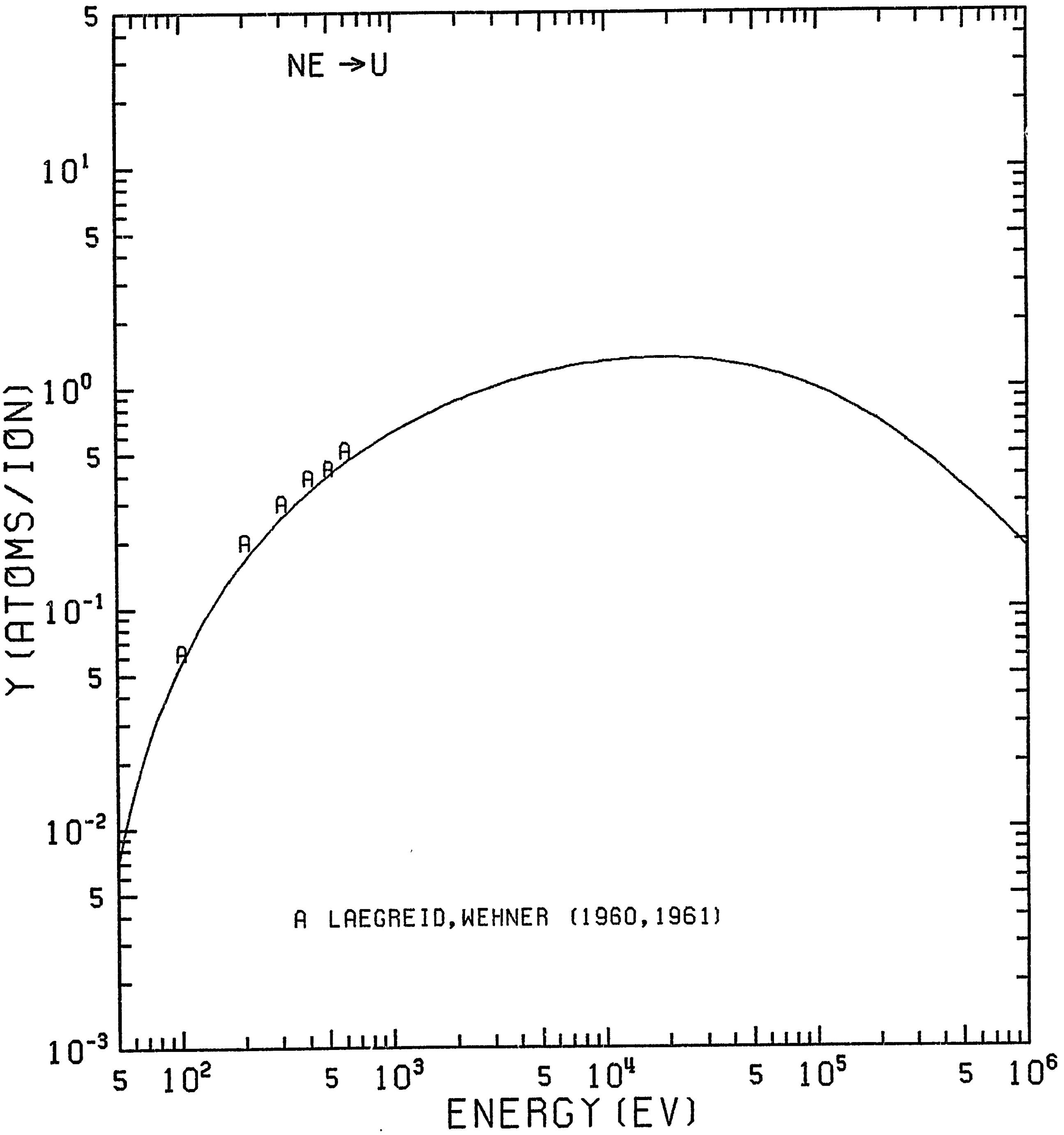
10^6
A LAEGREID, WEHNER (1961)
B STUART, WEHNER (1962)
C SLETTEN, KNUDSEN (1972)


KR → TH
Y (ATOMS/ION)
ENERGY (EV)
A ROSENBERG, WEHNER (1962)
A
5
10^2
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6


XE → TH
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
A ROSENBERG, WEHNER (1962)


HG →TH
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A WEHNER (1957)


HE →U
Y (ATOMS/ION)
ENERGY (EV)
A ROSENBERG, WEHNER (1962)
A
5
10^{0}
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^{2}
5
10^{3}
5
10^{4}
5
10^{5}
5
10^{6}


NE → U
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
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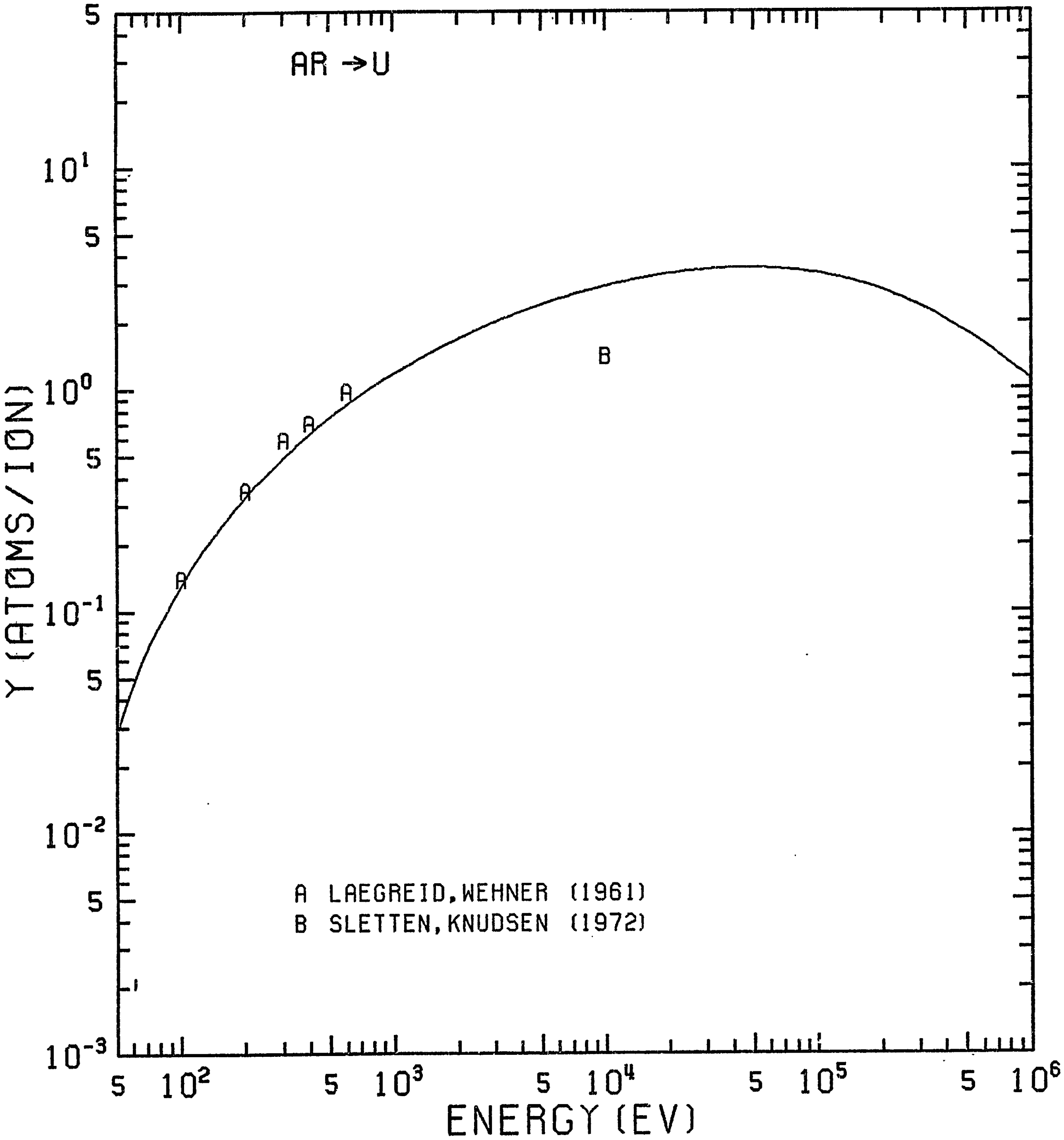
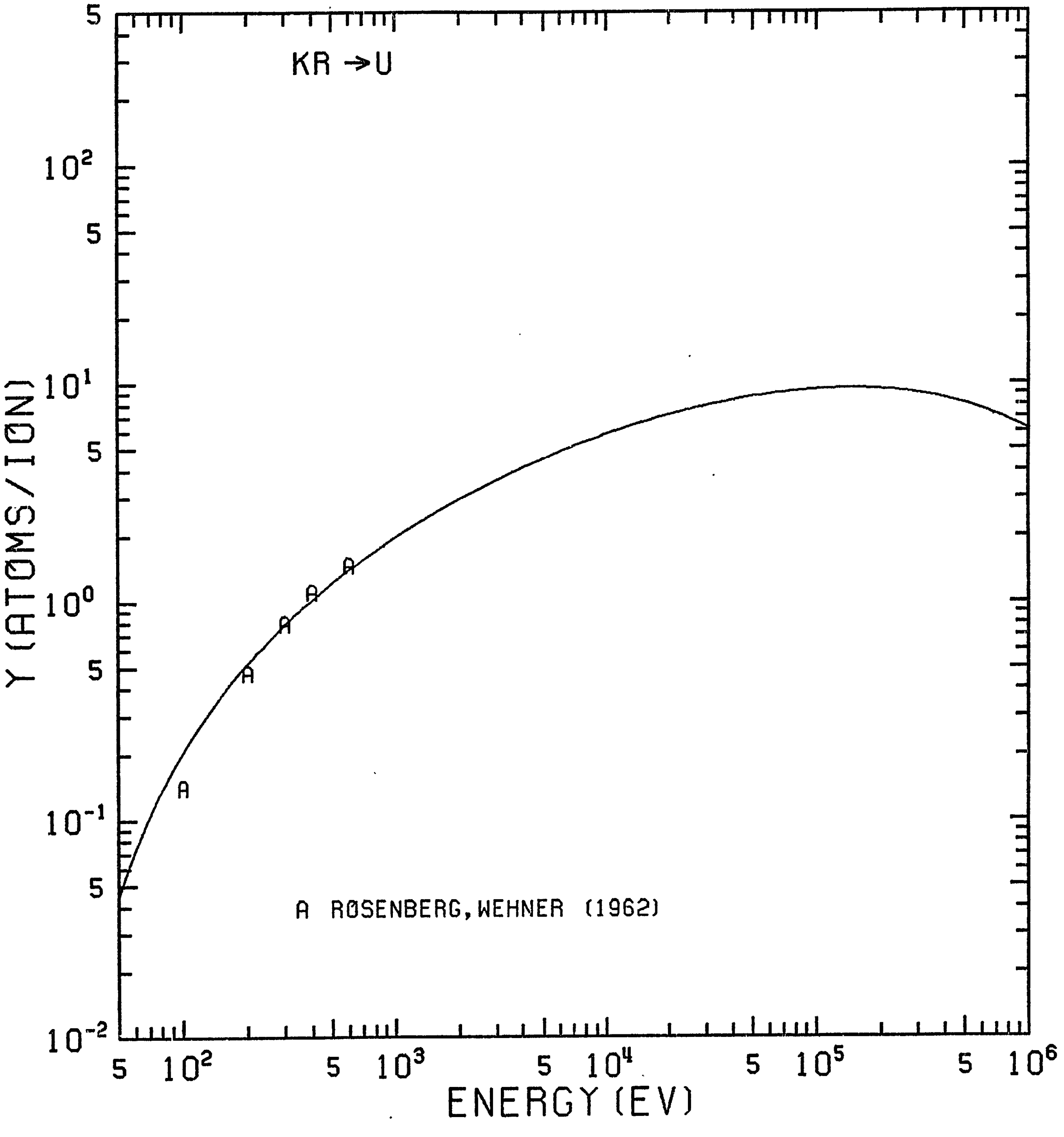
10⁵
5
10⁶
A LAEGREID, WEHNER (1960, 1961)


AR → U
Y (ATOMS/ION)
ENERGY (EV)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B
A LAEGREID, WEHNER (1961)
B SLETTEN, KNUDSEN (1972)


KR →U
A ROSENBERG,WEHNER (1962)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^{-1}
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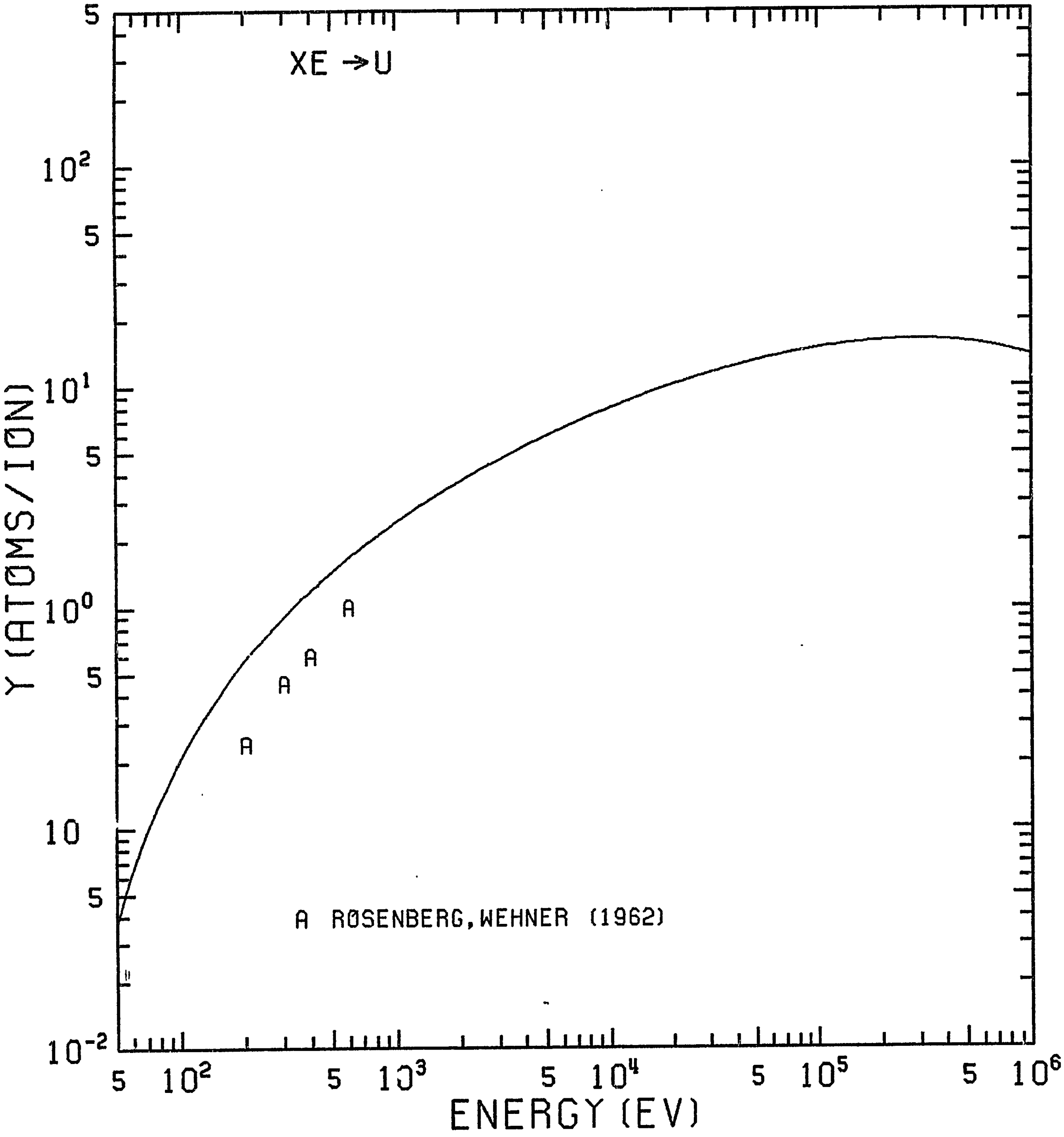
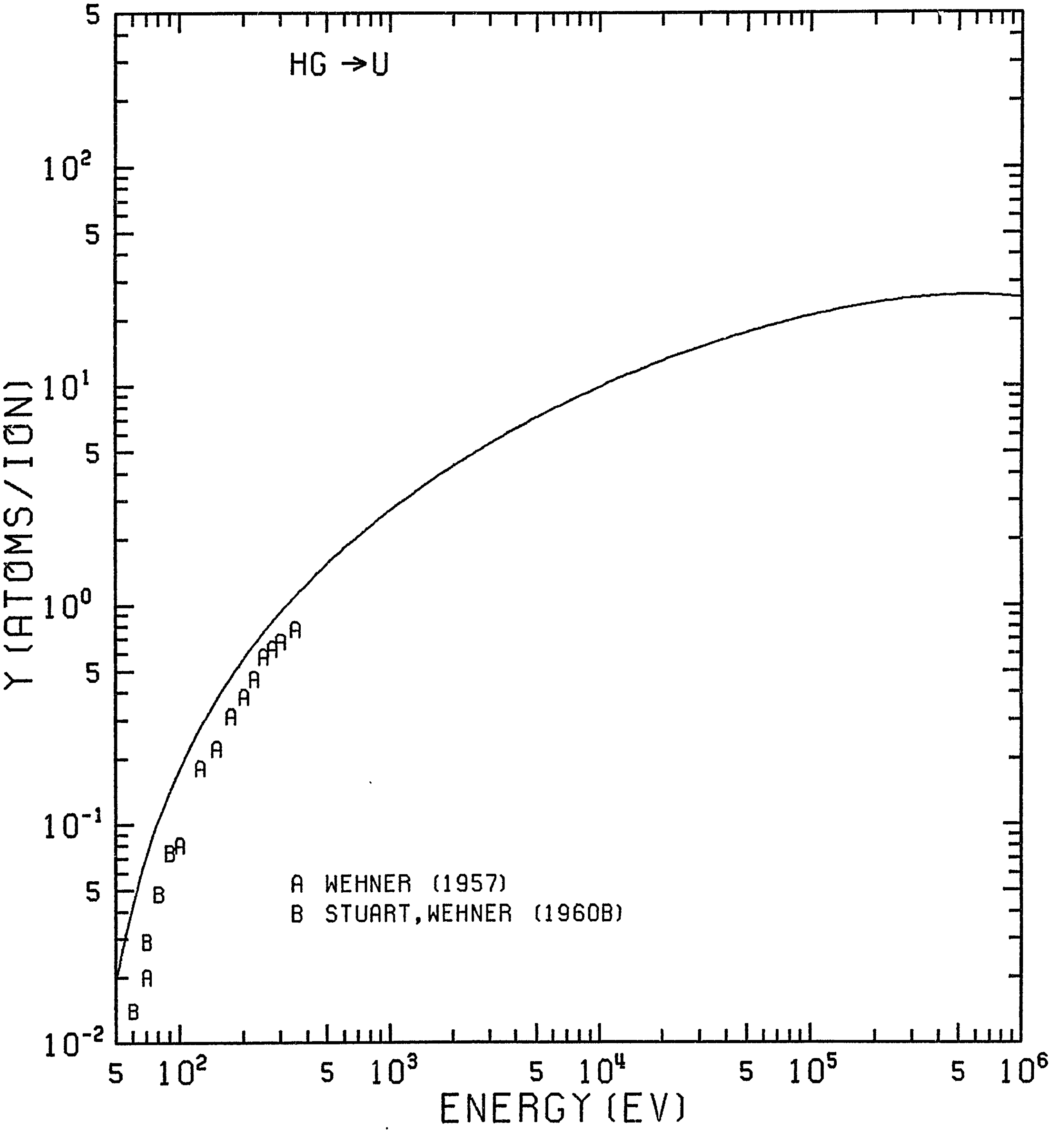
10^{-2}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6


XE → U
Y (ATOMS/ION)
5
10²
5
10¹
5
10⁰
5
10
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
ENERGY (EV)
A
A
A
A
A ROSENBERG, WEHNER (1962)


HG →U
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A WEHNER (1957)
B STUART, WEHNER (1960B)

References for graphs

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IPPJ-AM-32

ERRATUM

On page 2, the reference cited in line 7 from the bottom should be "8." On page 3, the reference cited in line 3 from the bottom should be "9."

On page 4, line 11, the condition should read

"$Ks_n(\varepsilon) > 2.5 \times 10^{-16}$ eVcm^2."

On page 7,

in line 9, "0.39×10^{-3}" should read "0.39,"

in line 11, "K=..." should read "K=8.478...,"

in line 15, "α=..." should read "α^*=...,"

in line 16, "= 1.4568" should read "= 1.09,"

in line 20, the equation should read

$$\text{"}\; Y = 0.42 \times \frac{1.09 \times 1.3 \times 8.76 \times 0.392}{3.49 \times (1 + 0.35 \times 3.49 \times 0.39)} \;\text{"} .$$

On page 10, in Table I, atomic numbers and sublimation energies for Zn, Cd and Pb should be added;

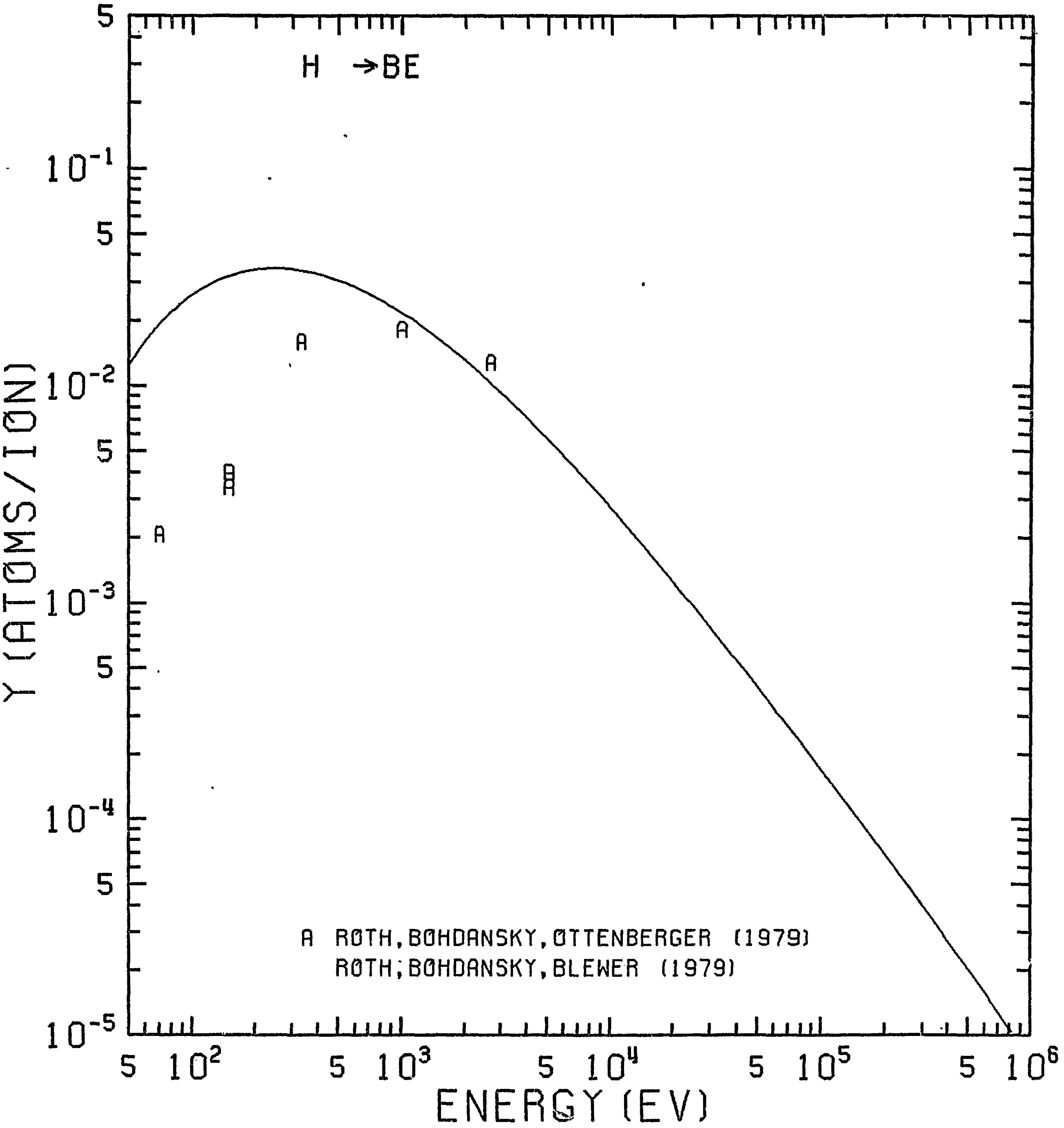
	atomic number	sublimation energy (eV)
Zn	30	1.35
Cd	48	1.16
Pb	82	2.03 .

The Q values are not obtained for these targets.

Ar->Zn in Table II, page 11 should be on Table III, page 12. The graph on page 48 should be removed.

On page 153, the heading should be "He^3->Mo" and the heading on page 253 should be "He^3->Au."

The graphs for Be, Zn, Cd and Pb targets should be added. The graphs on page 19 (H->B), page 57 (H->V), page 115 (Ni->Cu) , page 131 (H->Zr) should be removed, because they are on Table III, page 12.

H →BE
Y (ATOMS/ION)
ENERGY (EV)
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^{-4}
5
10^{-5}
5
10^{2}
5
10^{3}
5
10^{4}
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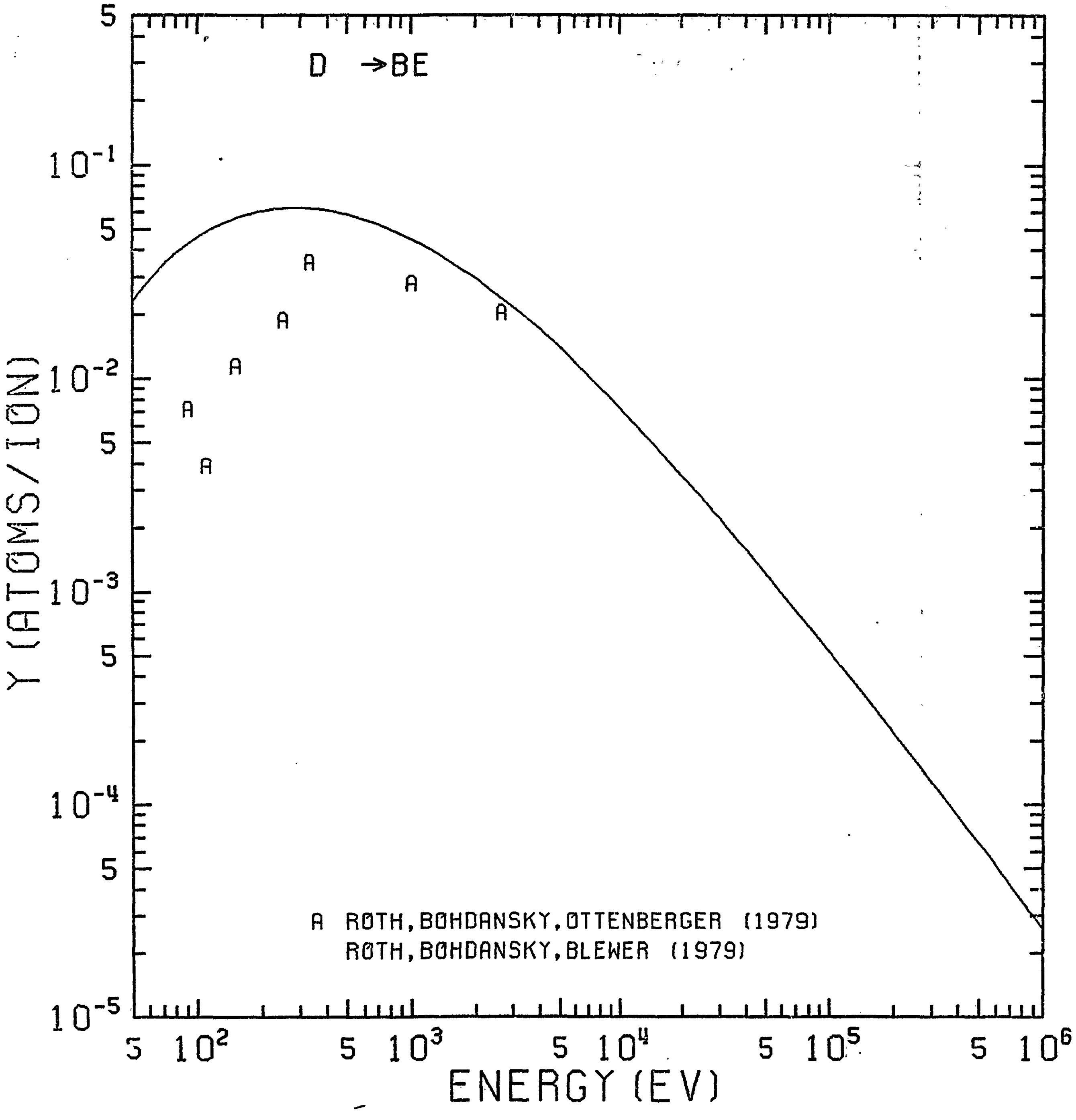
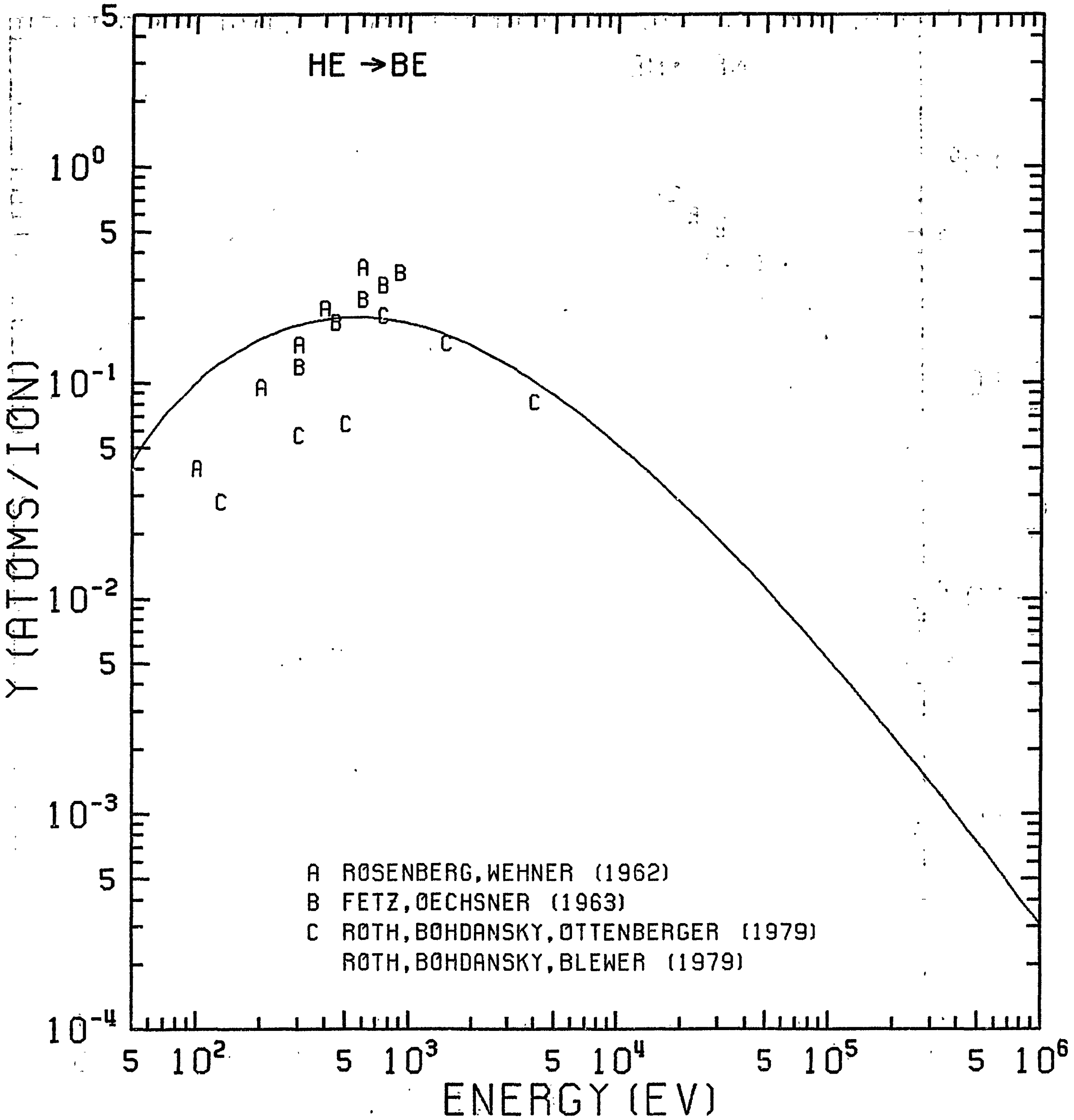
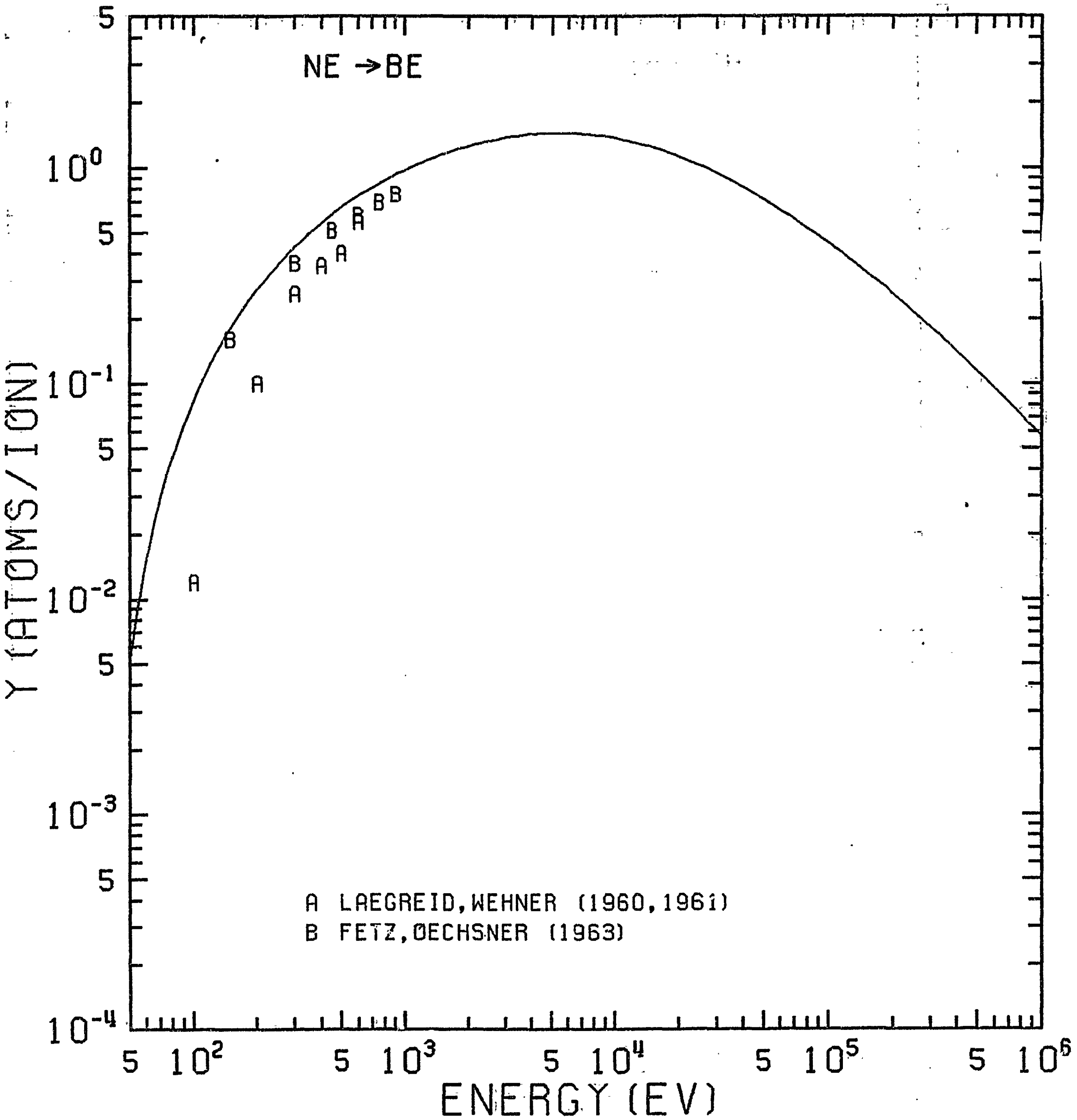
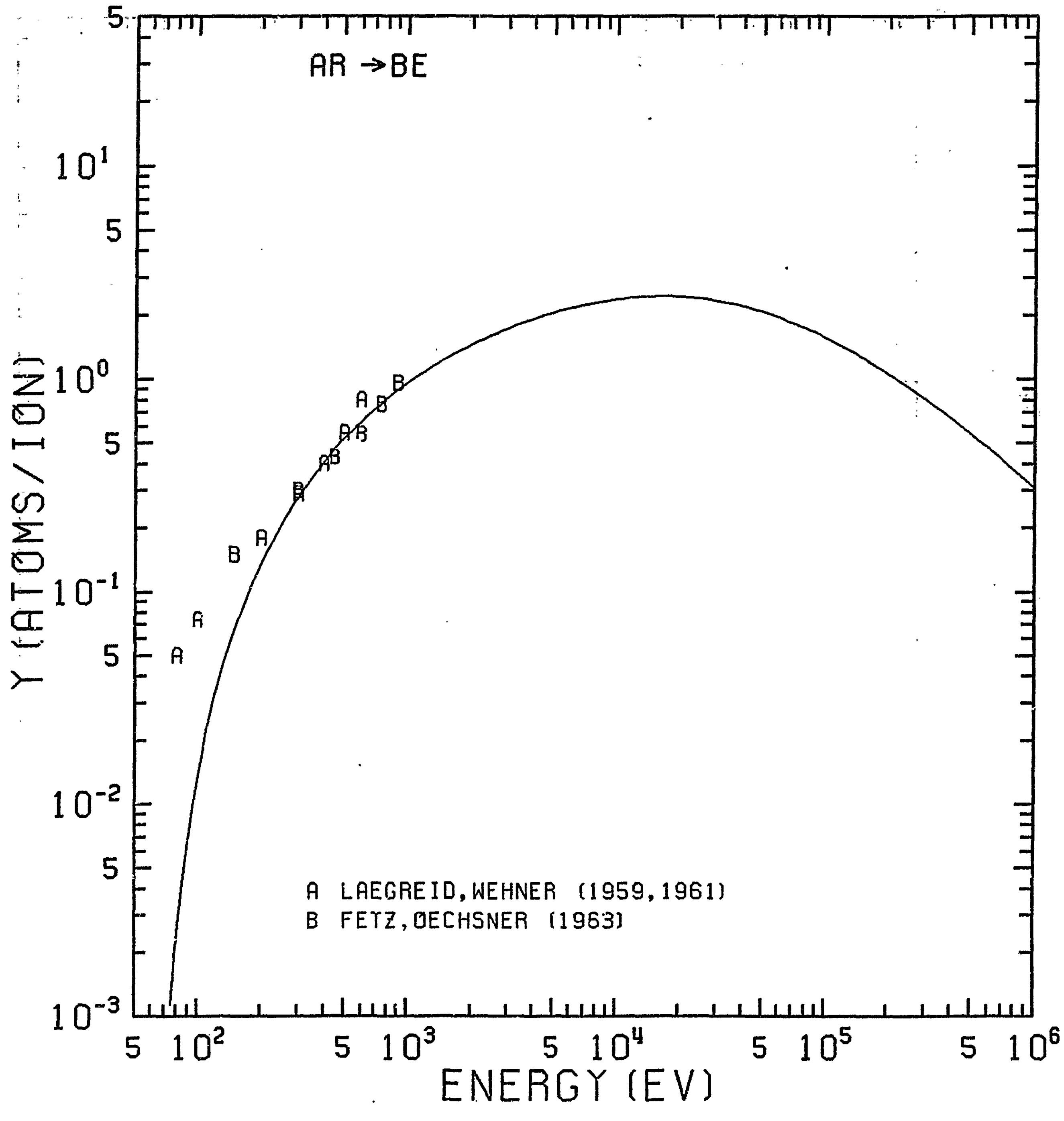
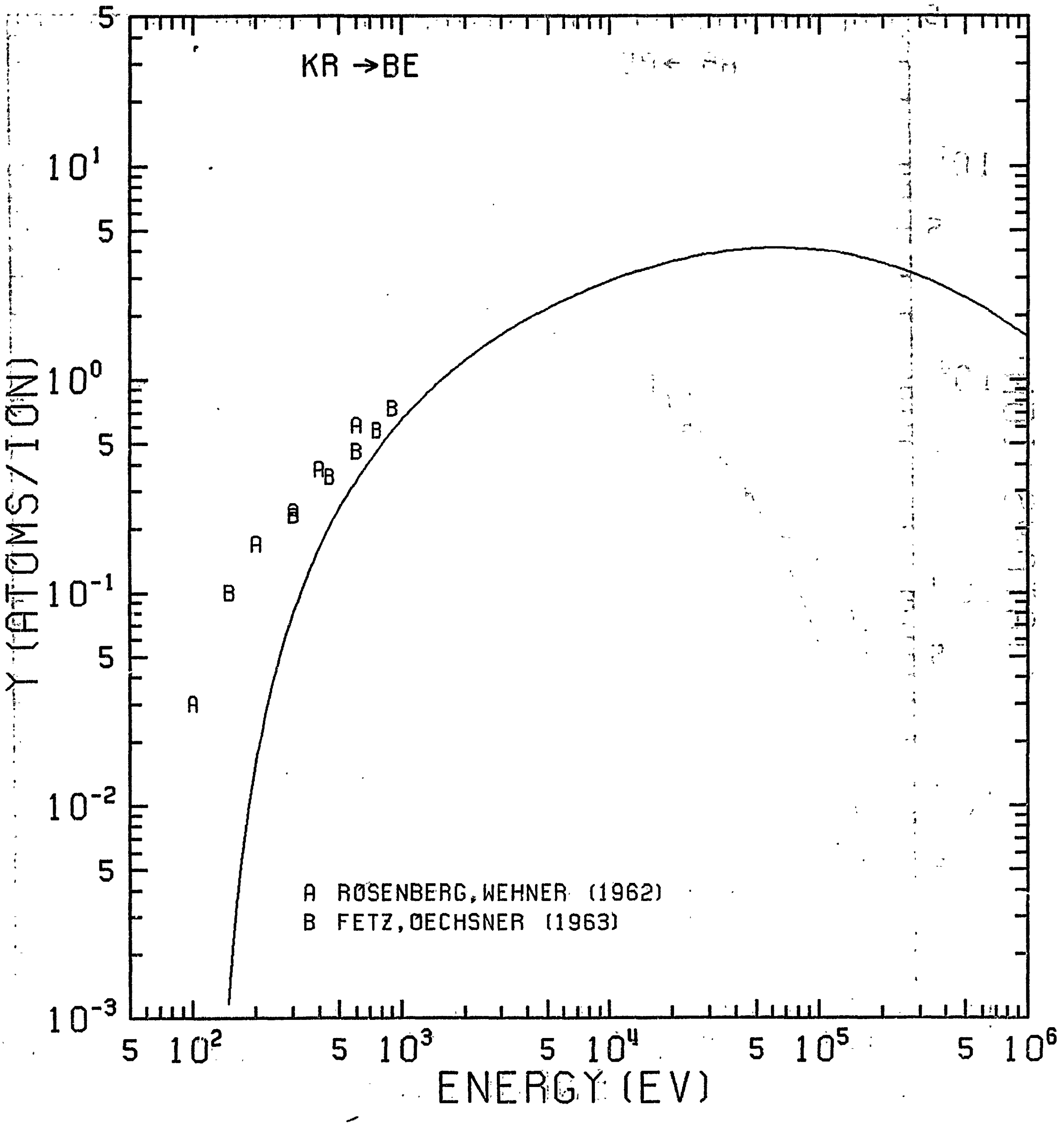
10^{5}
5
10^{6}
A ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, BLEWER (1979)

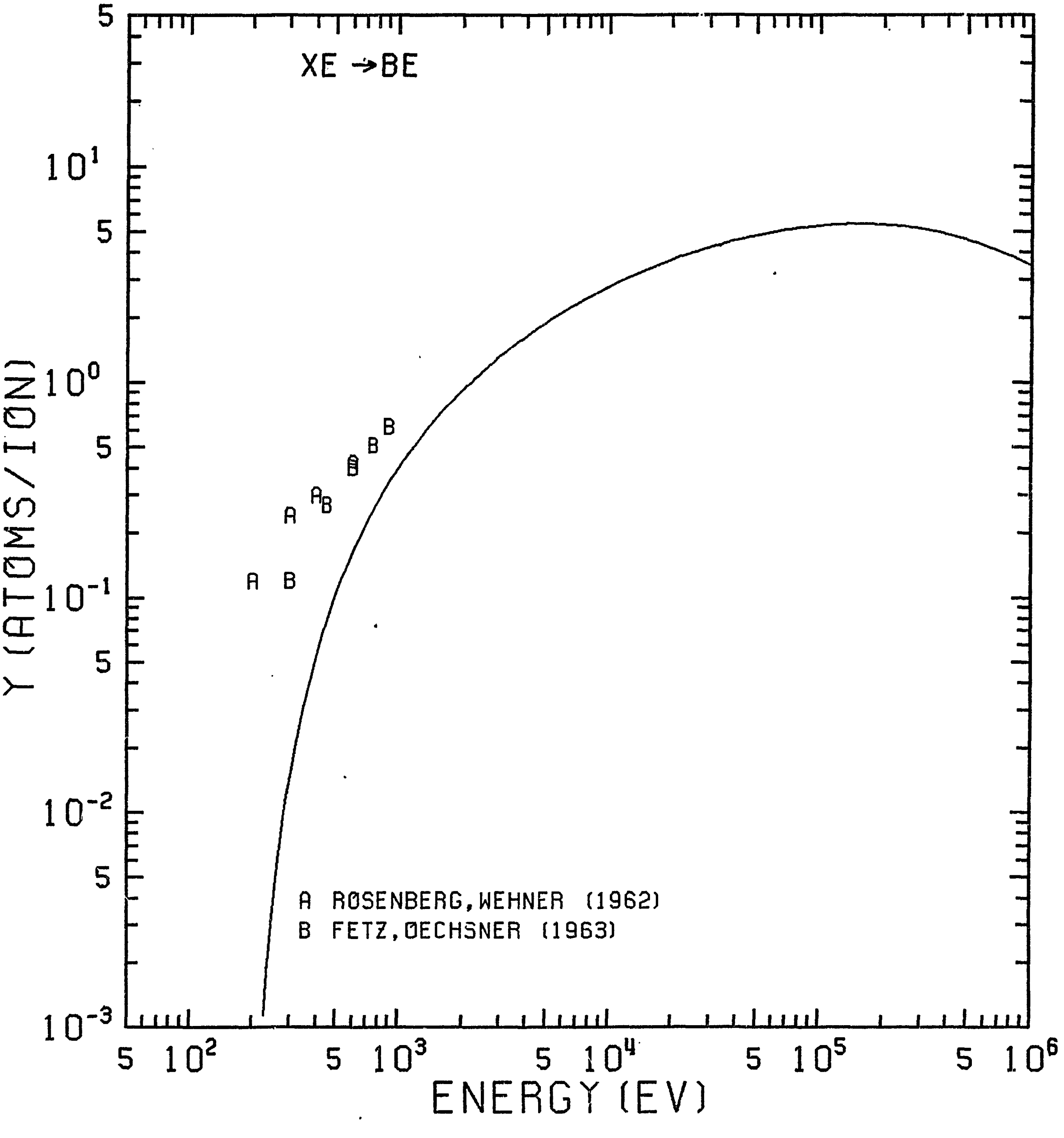

D →BE
Y (ATOMS/ION)
ENERGY (EV)
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^-5
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, BLEWER (1979)

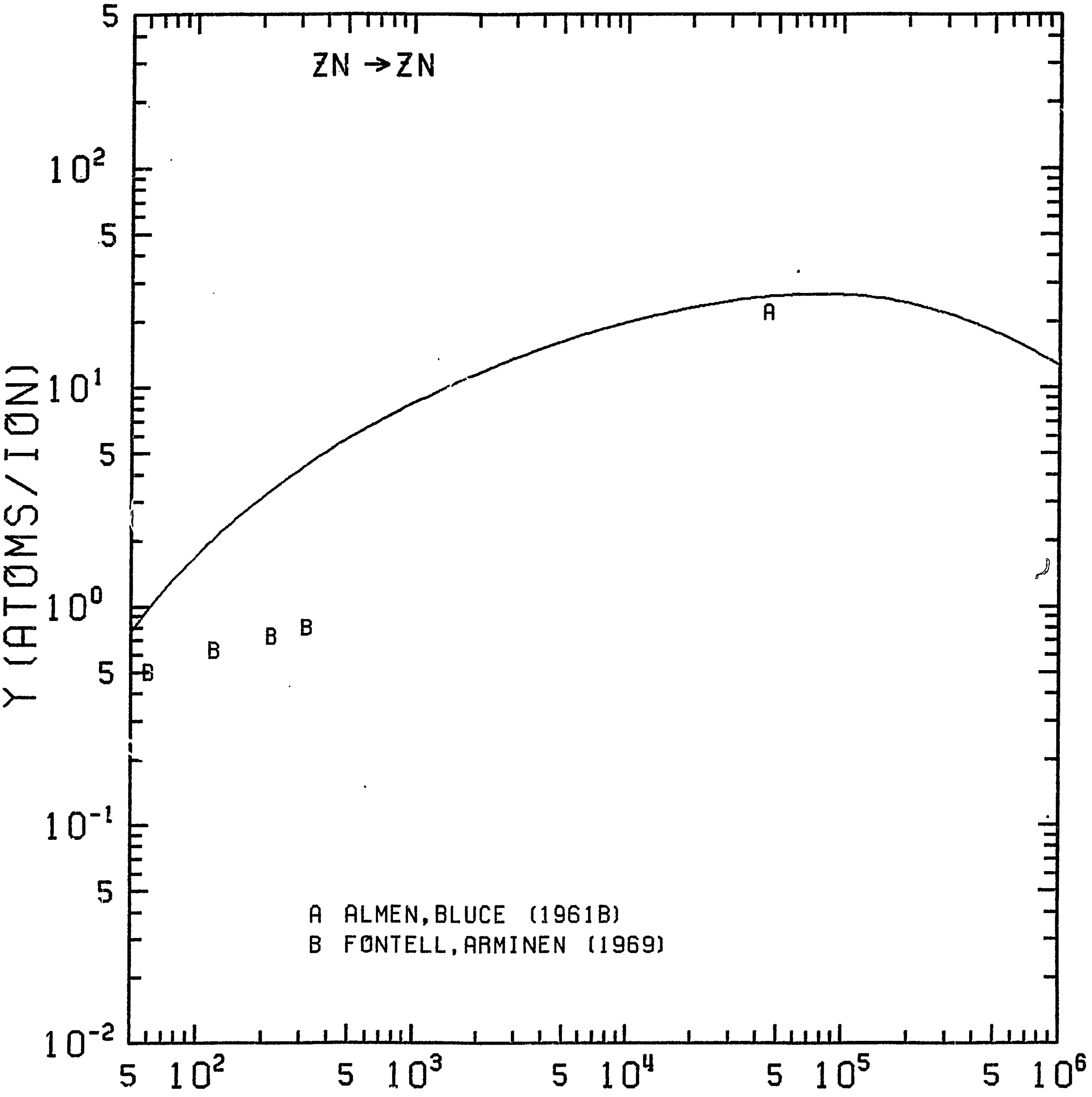

HE →BE
Y (ATOMS/ION)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
ENERGY (EV)
A ROSENBERG, WEHNER (1962)
B FETZ, OECHSNER (1963)
C ROTH, BOHDANSKY, OTTENBERGER (1979)
ROTH, BOHDANSKY, BLEWER (1979)

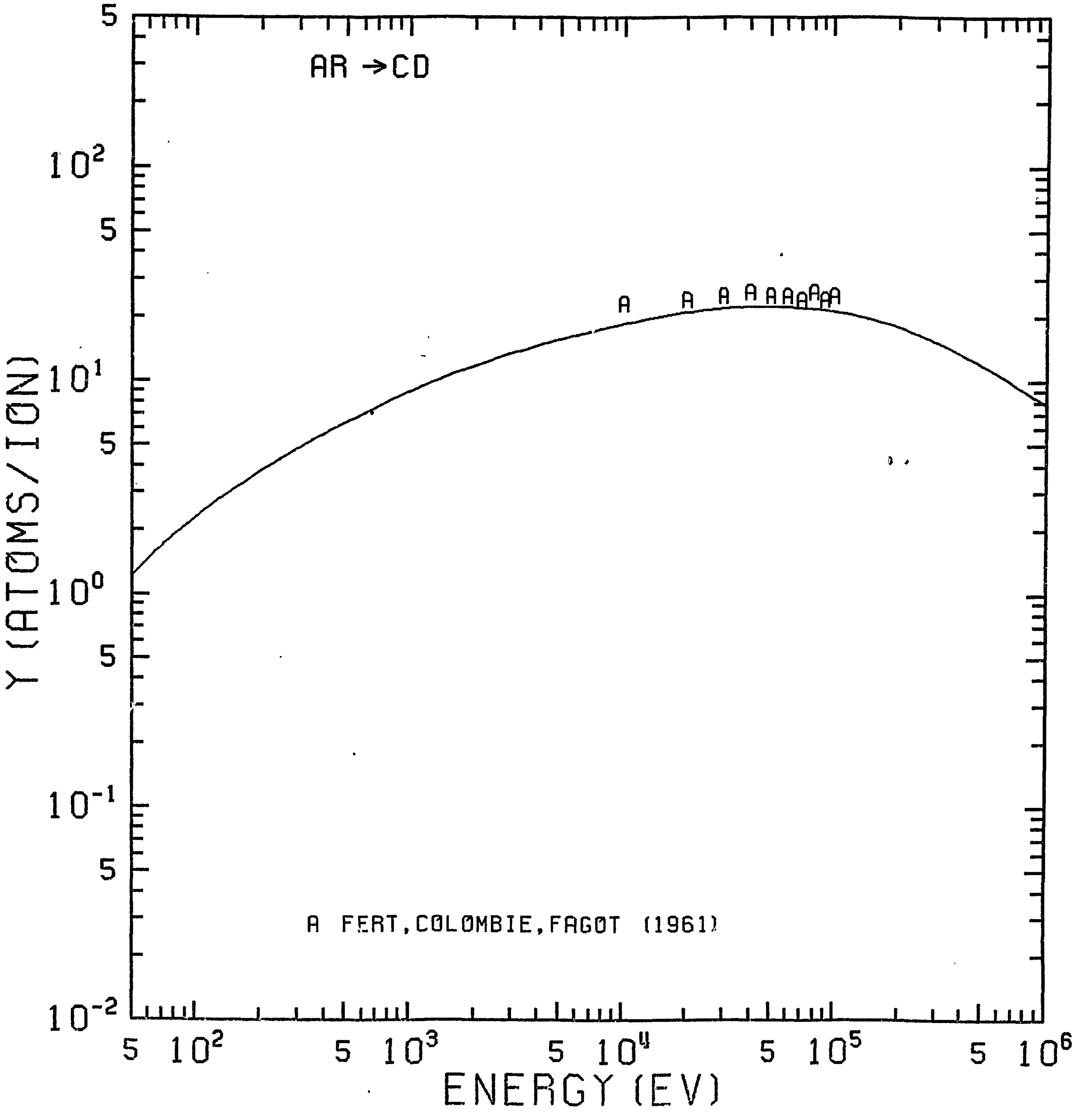

NE → BE
Y (ATOMS/ION)
ENERGY (EV)
5
10^0
5
10^-1
5
10^-2
5
10^-3
5
10^-4
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A LAEGREID, WEHNER (1960, 1961)
B FETZ, OECHSNER (1963)
A
B

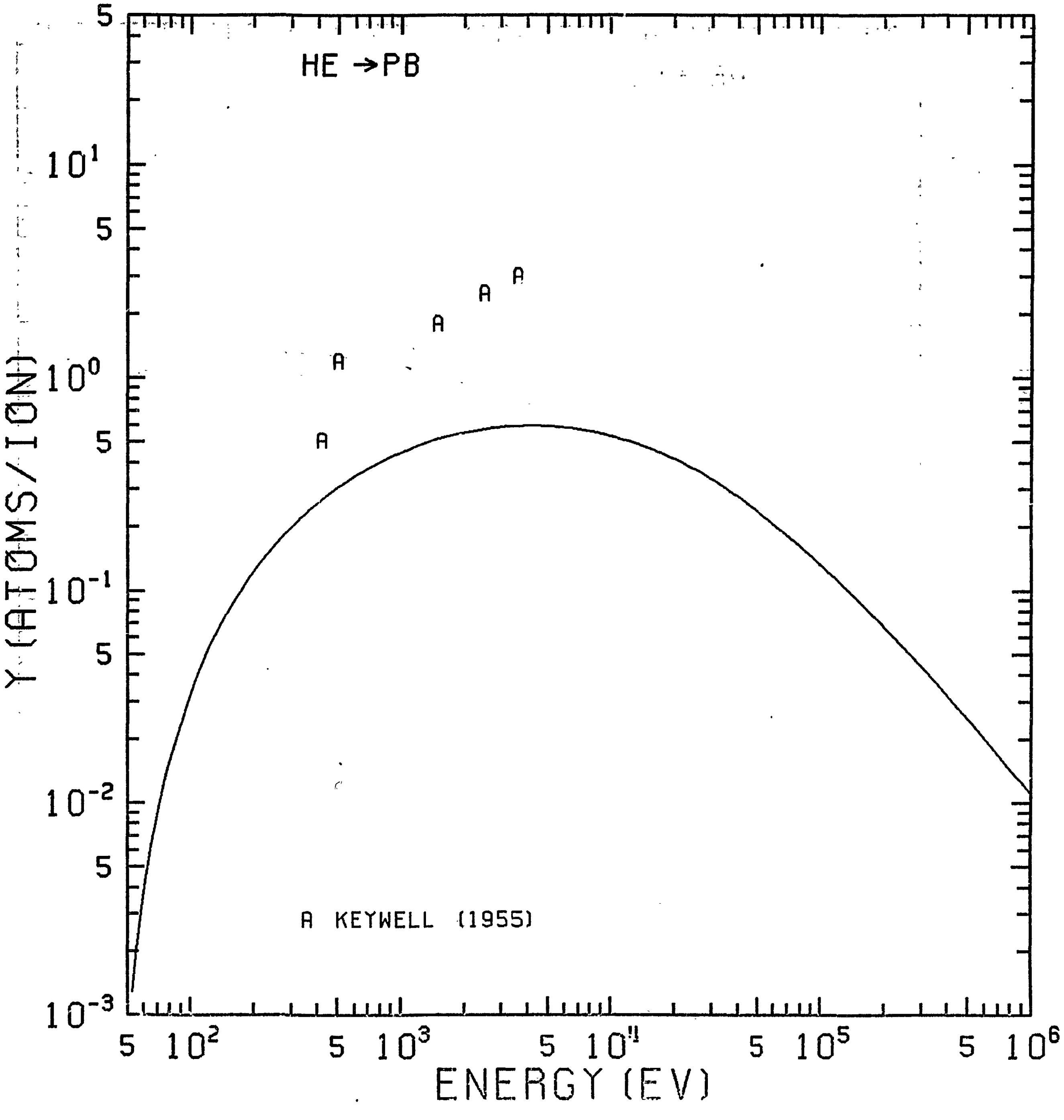

AR →BE
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5 10²
5 10³
5 10⁴
5 10⁵
5 10⁶
A LAEGREID, WEHNER (1959, 1961)
B FETZ, OECHSNER (1963)

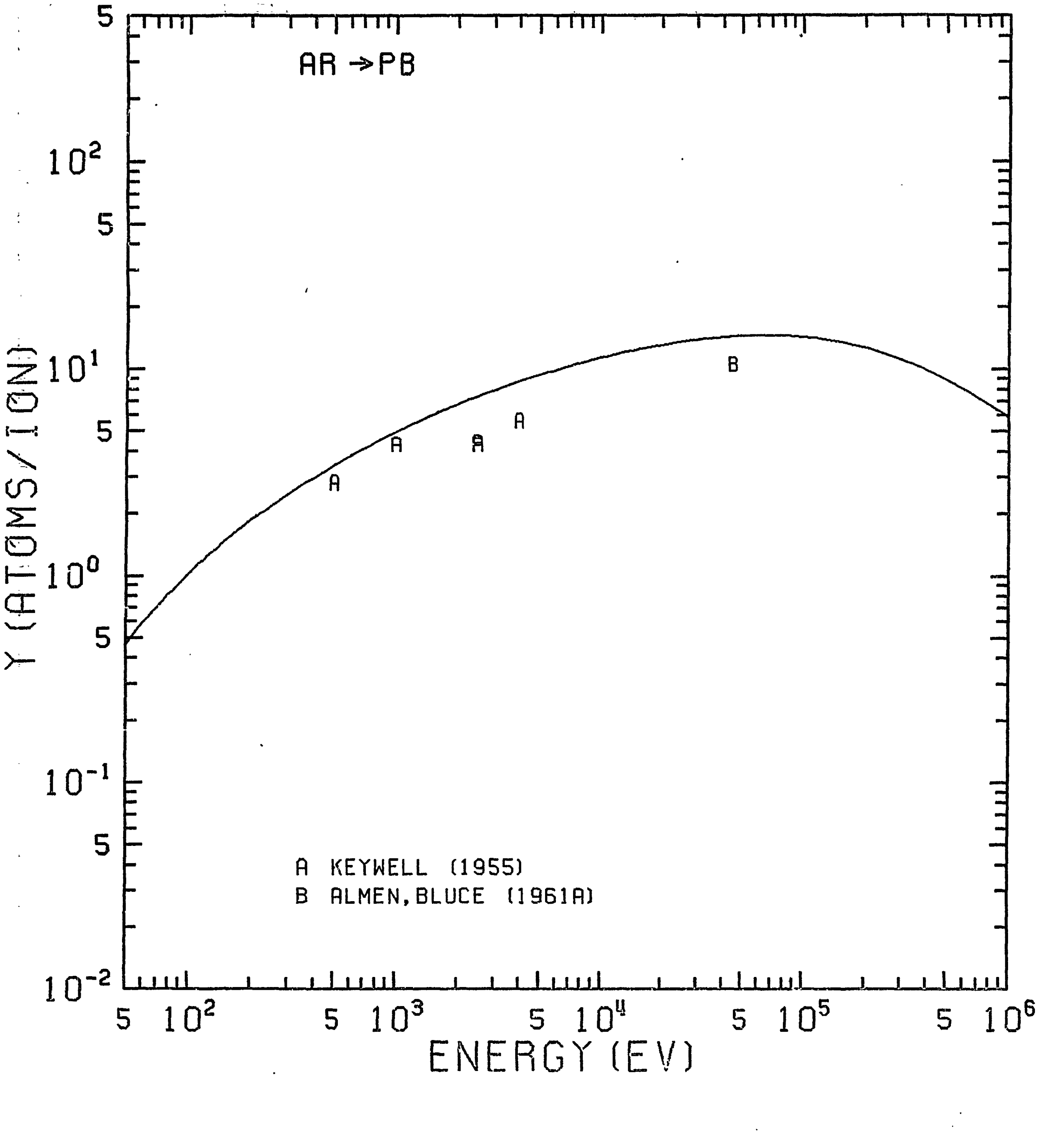

KR →BE
Y (ATOMS/ION)
ENERGY (EV)
A ROSENBERG,WEHNER (1962)
B FETZ,OECHSNER (1963)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6


XE → BE
Y (ATOMS/ION)
ENERGY (EV)
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10⁻³
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A ROSENBERG, WEHNER (1962)
B FETZ, OECHSNER (1963)


ZN → ZN
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6
A
B
B
B
B
A ALMEN, BLUCE (1961B)
B FONTELL, ARMINEN (1969)


AR →CD
A FERT, COLOMBIE, FAGOT (1961)
Y (ATOMS/ION)
ENERGY (EV)
5
10^2
5
10^1
5
10^0
5
10^-1
5
10^-2
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6


HE →PB
Y (ATOMS/ION)
ENERGY (EV)
A KEYWELL (1955)
5
10^1
5
10^0
5
10^{-1}
5
10^{-2}
5
10^{-3}
5
10^2
5
10^3
5
10^4
5
10^5
5
10^6


AR →PB
A KEYWELL (1955)
B ALMEN, BLUCE (1961A)
Y (ATOMS/ION)
ENERGY (EV)
5
10²
5
10¹
5
10⁰
5
10⁻¹
5
10⁻²
5
10²
5
10³
5
10⁴
5
10⁵
5
10⁶
A
A
A
A
A
B