

SC-Database

Software version = 5.81 Data version = 4.62

Experiment list contains 62 experiments for
(no ligands specified)

Metal : Pm+++

(no references specified)

(no experimental details specified)

e- HL Electron (442)
Electron;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Pm+++	oth	none	25°C	0.0	U			1974JOb (806)	1	
								K(Pm+3e=Pm(s))=-116.1(-2.29)		
								K(Pm+e=Pm(II))=-42(-2.5V)		

Method: Literature evaluated data

Pm+++	oth	none	25°C	0.0	U			1952LAb (807)	2	
								K(Pm+3e)=-122.8(-2420 mV)		

Cl- HL Chloride CAS 7647-01-0 (50)
Chloride;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Pm+++	oth	KCl	15°C	var	U			1969MKc (5486)	3	
								K1=0.7		
								K2(?)=-0.8		

Medium: HCl. Method: paper electrophoresis

F- HL Fluoride CAS 7644-39-3 (201)
Fluoride;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Pm+++	oth	NaClO4	25°C	0.10M	U			1973MSg (7108)	4	
								method:electromigration or transference number		

I03- HL Iodate CAS 7782-68-5 (1257)
Iodate;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Pm+++	dis	NaClO4	25°C	0.10M	U			1973CBd (8547)	5	

NO3- HL Nitrate CAS 7697-37-2 (288)
Nitrate;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
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Pm+++    dis NaClO4 25°C 1.0M U      K1=0.26      1967KOb (9870)  6
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Pm+++    dis NaClO4 25°C 1.0M U      K1=0.39      1965CSb (9871)  7
*****
OH-
Hydroxide;          HL      Hydroxide          (57)
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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
-----
Pm+++    oth R4N.X 25°C 0.00 U      K1=10.4  B2=19.8  1972SSf (11931)  8
Medium: NH4ClO4 at I=0.005 M. Method: electrical migration or transference
number
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Pm+++    dis NaClO4  ?  0.10M U T      *K1=-6.5      1971GDb (11932)  9
Medium: LiClO4
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Pm+++    sol oth/un  ?  var U      Kso(Pm(OH)3)=-34  1958STb (11933)  10
*****
PO4---          H3L      Phosphate          CAS 7664-38-2 (176)
Phosphate;
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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
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Pm+++    ix none 25°C 0.0 U      K(Pm+H2L)=2.51  1972EZb (13302)  11
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Pm+++    ix R4N.X 25°C 0.20M U I      K(Pm+H2L)=1.69  1966BEc (13303)  12
Medium: NH4ClO4. K=2.51 (I=0 corr)
*****
P309---          H3L          CAS 13566-25-1 (235)
Cyclotrimetaphosphate;
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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
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Pm+++    ix none 25°C 0.0 U      K1=6.26      1972EZb (13968)  13
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Pm+++    ix R4N.X 25°C 0.20M U I      K1=3.80      1967ELa (13969)  14
Medium: NH4ClO4. K1=5.74(I=0 corr)
*****
SCN-          HL      Thiocyanate          CAS 463-56-9 (106)
Thiocyanate;
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Metal      Mtd Medium Temp Conc Cal Flags Lg K values      Reference ExptNo
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Pm+++    dis oth/un 30°C 1.0M C      K1=0.18  B2= 0.33  1980KMe (15229)  15
In 1.0 M NH4ClO4/NH4SCN. Extraction of 147Pm into hexane/ammonium dinonyl-
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naphthalene sulfonate.

S04-- H2L Sulfate CAS 7664-93-9 (15)
Sulfate;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Pm+++ dis NaClO4 55°C 2.0M U T H K1=1.60 B2=2.28 1967CCd (16471) 16
K1=1.08(0 C), 1.34(25 C), 1.49(40 C); B2=1.62(0 C), 1.88(25 C), 2.00(40 C)
DH(K1)=16.3 kJ mol⁻¹, DS=79.4 J K⁻¹ mol⁻¹

CH503P H2L CAS 13590-71-1 (1752)
Methylphosphonic acid; CH3.PO3H2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Pm+++ ix none 25°C 0.00 U I 1967BEa (18133) 17
K(Pm+HL)=2.67

At I=0.5 M NH4ClO4: K(Pm+HL)=1.72

CH504P H2L CAS 2617-47-2 (1977)
Hydroxymethylphosphonic acid; HO.CH2.PO3H2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Pm+++ ix R4N.X 25°C 0.20M U 1972EZd (18151) 18
K(Pm+HL)=1.65
K(Pm+2HL)=3.30

Medium: NH4ClO4

C2H2O4 H2L Oxalic acid CAS 144-62-7 (24)
Ethanedioic acid; (COOH)₂

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Pm+++ oth oth/un 25°C 0.10M U K1=5.20 B2=8.80 1971STe (19033) 19
Method : electrical migration or transference number

Pm+++ dis R4N.X 20°C 1.00M U B2=8.3 1966STa (19034) 20
B3=11.8

Medium : NH4Cl

C2H5NO2 HL Glycine CAS 56-40-6 (85)
2-Aminoethanoic acid; H2N.CH2.COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Pm+++ dis NaClO4 25°C 2.0M U T H 1968TCa (21682) 21
K(Pm+HL)=0.67
K=0.45(0 C), 0.52(11 C), 0.79(40 C). At 25 C:DH(K1)=14.6 kJ mol⁻¹, DS=62.7

C2H5O5P H3L CAS 4408-78-0 (4225)
Phosphonoethanoic acid; H00C.CH2.PO3H2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Pm+++ ix none 25°C 0.00 U 1972EZc (21894) 22

K(Pm+HL)=5.15
B(Pm+2HL)=8.50
K(Pm+H2L)=2.75

C3H6O3 HL L-Lactic acid CAS 79-33-4 (82)
L-2-Hydroxypropanoic acid; CH3.CH(OH).COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Pm+++ oth KCl 10°C 1.50M U K1=2.54 B2=4.24 1972SNa (25517) 23
Method: (gelatinized cellulose acetate), electrophoresis

Pm+++ ix NaCl04 20°C 0.20M U K1=2.43 B2=4.20 1968WZa (25518) 24
B3=3.35

Pm+++ ix oth/un 25°C 0.10M U B2=5.38 1967DVa (25519) 25

C4H6O6 H2L L-Tartaric acid CAS 87-69-4 (92)
L-Tartaric acid, L-2,3-Dihydroxybutanedioic acid; H00C.CH(OH).CH(OH).COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Pm+++ dis oth/un 20°C 0.10M U K1=3.9 B2=6.8 1966STa (31335) 26
Medium: NH4Cl

Pm+++ oth NaCl ? 0.10M U B2=5.81 1965MSd (31336) 27
Method: paper electrophoresis

C4H8O3 HL CAS 594-61-6 (81)
2-Hydroxy-2-methylpropanoic acid; (CH3)2C(OH).COOH

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

Pm+++ oth oth/un 25°C 0.10M U K1=2.79 B2=4.69 1971SHb (33505) 28
B3=6.20

Method is electrical migration or transference number

Pm+++ ix NaCl04 20°C 0.20M U K1=2.63 B2=4.78 1968WZa (33506) 29
B3=5.90

Pm+++ ix oth/un ? ? U B2=6.00 1967DVa (33507) 30

C4H11O4P HL (4276)

Diethylphosphoric acid; (C2H5O)2.PO.OH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Pm+++	oth	oth/un	25°C		U			K1=1.54	1971MGb (35265)	31
Estimated										

C4H14N2O4P2		H2L						CAS 37107-07-6	(4287)	
Ethylenebis(iminomethylenephosphonous acid)										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Pm+++	ix	oth/un	25°C	0.50M	U			K(Pm+H2L)=5.78	1971EZd (35832)	32

C4H14N2O6P2		H2L		EDDPO				CAS 1733-49-9	(2435)	
1,2-Diaminoethane-N,N'-bis(methylenephosphonic) acid; (H2O3P.CH2.NH.CH2)2										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Pm+++	ix	R4N.X	25°C	0.50M	U			K(Pm+H2L)=5.72	1973EZa (35891)	33
Medium: NH4ClO4										

C6H8O7		H3L		Citric acid				CAS 77-92-9	(95)	
2-Hydroxypropane-1,2,3-tricarboxylic acid; HOOCCH2.CH(OH)(COOH).CH2COOH										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo
Pm+++	dis	NaClO4	25°C	0.15M	U			K(Pm+HL+L)=11.13	1973HHc (46231)	34
Pm+++	ix	NaCl	25°C	0.10M	U			K1=7.00 B2=11.91 K(Pm+HL)=5.46 K(PmHL+HL)=8.42	197200a (46232)	35
Pm+++	oth	oth/un	25°C	0.10M	U			K1=7.75 B2=10.95 K(PmL+HL)=2.40	1971STe (46233)	36

Constants obtained by survey of literature data

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg	K values	Reference	ExptNo

C6H9NO6		H3L		NTA				CAS 139-13-9	(191)	
Nitrilotriethanoic acid; N(CH2.COOH)3										
Pm+++	dis	NaClO4	20°C	0.10M	U	T		K1=11 B2=19.71	1966STa (46983)	37

C6H10O3		HL						CAS 16841-19-3	(3649)	
1-Hydroxycyclopentanecarboxylic acid; HO.C5H8.COOH										

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Pm+++	oth	NaClO4	25°C	0.10M	U		K1=2.73 B2=4.77 K3=1.40	1966PRb (47994)	38

 C6H11NO5 H2L HIMDA CAS 93-62-9 (192)
 N-(2-Hydroxyethyl)iminodiethanoic acid; HO.CH2.CH2.N(CH2.COOH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Pm+++	dis oth/un		25°C	0.10M	U		K1=8.97	1971EVb (48781)	39

 C7H15O3P HL CAS 9095-99-6 (4458)
 Diethylphosphinylpropanoic acid; (CH3.CH2)2.PO.CH2.CH2.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Pm+++	ix	R4N.X	25°C	0.50M	U		K1=1.82 B2=3.25	1972EZa (58026)	40

 C8H5O2F3S HL TTA CAS 326-91-0 (165)
 4,4,4-Trifluoro-1-(2-thienyl)butane-1,3-dione; F3C.CO.CH2.CO.C4H3S

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Pm+++	gl	alc/w	22°C	80%	U		K1=6.34 B2=11.84 K3=4.06	1995MTa (58665)	41

Medium: 0.1 M NaClO4 in 80% (v/v) EtOH/H2O.

 C8H8O3 HL Mandelic Acid CAS 611-72-3 (80)
 2-Phenyl-2-hydroxyethanoic acid; C6H5.CH(OH).COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Pm+++	ix	NaClO4	20°C	0.20M	U		K1=2.32 B2=4.02 B3=5.11	1968WZa (59861)	42

 C8H19O4P HL CAS 107-66-4 (2130)
 Dibutylphosphoric acid; (C4H9O)2P(O)OH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Pm+++	dis oth/un		26°C	0.10M	C I			1992SNc (63189)	43

K(Pm+5HL(org))=PmL3(HL)2(org)+3H)=15.7. Method: extraction of 147Pm from HNO3 solution into CFC-112. For extraction into benzene, K=2.54.

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Pm+++	kin oth/un		25°C	?	U		K1=2.40	1971MGb (63190)	44

 C8H22N2O6P2 H4L EDDIPH CAS 13516-59-1 (1355)
 Diaminoethane-N,N'-di(isopropylphosphonic)acid; (CH2.NH.C(CH3)2.PO3H2)2

 C14H16O3P2 HL CAS 1638-77-3 (5072)
 (Methylenephosphinylmethyl)phenylphosphinic acid;

 Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

 Pm+++ ix R4N.X 25°C 0.20M U I K1=3.40 1972EZb (88027) 58
 Medium: NH4ClO4. I=0: K1=4.21

 C14H22N2O8 H4L CDTA CAS 482-54-2 (200)
 trans-1,2-Diaminocyclohexane-N,N,N',N'-tetraethanoic acid;

 Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

 Pm+++ ix oth/un 25°C 0.10M U I K1=18.50 1971EZc (88752) 59
 I=near 0, K1=21.16
 At 80 C: K1(I=0.05)=18.99, K1(0.06)=19.01, K1(0.07)=18.93, K1(0.17)=17.83

 Pm+++ dis R4N.X 20°C 0.10M U K1=18.17 1966STa (88753) 60
 Medium: NH4Cl

 C16H9N2OBr3 HL CAS 84317-74-8 (5169)
 1-(2,4,6-Tribromophenylazo)-2-hydroxynaphthalene;

 Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

 Pm+++ kin oth/un 25°C 0.02M U K1=4.75 1972GSe (92661) 61

C16H35O4P HL CAS 298-07-7 (1625)
 Di-(2-ethylhexyl)-phosphoric acid; (C2H5C6H12O)2P(O)OH

 Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo

 Pm+++ dis oth/un 20°C 0.10M C 1992SNb (95513) 62
 Extraction of 147Pm from 0.10 M LiNO3/HNO3 medium into 90% CFC-112/benzene
 K(Pm+4HL(org))=PmL3(HL)(org)+3H=2.00

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EXPLANATORY NOTES

DATA Flags are :-

T Data at other TEMPERATURES
 I Data with various BACKGROUNDS
 H Data for THERMOCHEMICAL quantities

EVALUATION Flags are :-

T or IUP=T signifies EVALUATION RATING = Tentative by IUPAC

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