START Experiments recorded for
    from SC-Database on Saturday, 01 January, 2000 at 00:10:19
Software version = 5.81 Data version = 4.62
Experiment list contains 101 experiments for
 (no ligands specified)
 2 metals : Nb(V), Nb++++
 (no references specified)
 (no experimental details specified)

****
e- HL Electron (442)
Electron;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Nb(V) vlt oth/un 25°C 1.00M U 1965MHb (709) 1
  K'=14.40, 426 mV
K': Nb6Cl12++++ + 2e=Nb6Cl12++.

Nb(V) vlt oth/un 25°C 12MM U 1954CVa (710) 2
  K(Nb+e)=-3.60, -213 mV
Medium 12 M HCl

Nb(V) oth none 25°C 0.0 U 1952LAb (711) 3
  K=-54.4(-650 mV)
  K(Nb(III)+3e)=-56 (-1100 mV)
K: 0.5Nb2O4(s)+5H+5e=Nb(s)+2.5H2O. From thermodynamic data

Nb(V) EMF oth/un 18°C 6.25M U I 1938GGa (712) 4
  K=-10.84(-313 mV)
Medium:H2SO4. K: Nb+2e=Nb(III). At I=4.95 M: K=-10.74(-310 mV), 3 M: -12.02
(-347 mV). Also at 18 C. At I=0: K(NbO+2H+2e=Nb(III)+H2O)=-11.88(-343 mV)

Nb(V) EMF oth/un 25°C 9.87M U I 1928KHa (713) 5
  K=-14.41(-426.1 mV)
Medium: H2SO4. K(Nb+2e=Nb(III). At I=5.9: K=-13.02(-384.9 mV), I=3: -12.62
(-373.0 mV)
****
Br- HL Bromide CAS 10035-10-6 (19)
Bromide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Nb(V) sp oth/un 25°C var M 1973LJb (2150) 6
  K(NbOOHL4+H+L=NbOL5+H2O)=-5.2
Medium: HBr
****
Cl- HL Chloride CAS 7647-01-0 (50)
Chloride;

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Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Nb(V)      cal non-aq 25°C 100%  U   HM                    1993DSb  (5278)   7
Metal:Nb(IV). Medium:iso-Propyl ether. DH(Nb(H-1A)2B2(s)+2HL=NbL2(H-1A)2+
2HB)=-216.4 kJ mol-1. A:Cyclopentadiene. B:CH3. Also for B=PhS and p-ClC6H4S
-------------------------------------------------------------------------
Nb(V)      dis KCl          var  U                        1968SSf  (5279)   8
                                        Kd(Nb+4Cl+3TBP(benzene))=-1.8
*************************************************************************
F-                     HL    Fluoride         CAS 7644-39-3  (201)
Fluoride;
-------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
-------------------------------------------------------------------------
Nb(V)      ISE non-aq   ?  100%  C                         1978GRa  (7039)   9
                                        K6=6.88
                                        K(NbF5+NbF6=Nb2F11)=1.32
Medium: liquid anhydrous HF
-------------------------------------------------------------------------
Nb(V)      sp  mixed    ?   20%  U                         1973LCa  (7040)  10
                                        K(NbH2O2+F)=2.62
                                        K(NbH2O2+2F)=1.72
                                        K(NbH2O2+3F)=1.58
                                        K(NbH2O2+4F)=1.52
Medium: 20% H2SO4
-------------------------------------------------------------------------
Nb(V)      ISE NaClO4 25°C 0.50M U                       1972LOa  (7041)  11
                                        K(NbOF2+F)=3.80
                                        K(NbOF3+F)=4.30
                                        K(NbOF4+F)=4.51
                                        K(NbOF5+F)=4.67
Medium: (Na,H)ClO4. Nb(V)=NbO+++. K(NbOF6+2H+F=NbF7+H2O)=11.4;
K(NbF7+F)=3.08, K(NbF8+F)=4.0
-------------------------------------------------------------------------
Nb(V)      EMF KCl    25°C  3.0M U                       1970NEb  (7042)  12
                                        K(Nb(OH)2F4+F)=2.51
-------------------------------------------------------------------------
Nb(V)      dis NaClO4 25°C  5.0M U T                     1969ESa  (7043)  13
                                        K6K7=10.66
-------------------------------------------------------------------------
Nb(V)      sp  oth/un   ?  17.0M U        K1=7.12        1969PEc  (7044)  14
Medium: H2SO4
-------------------------------------------------------------------------
Nb(V)      sol KNO3   18?°C 0.50M U                      1967BNd  (7045)  15
                                        Ks(Nb(OH)2F(s))=-5.22
                                        K(Nb(OH)4F+HF=Nb(OH)4F2+H)=3.6
                                        K(Nb(OH)4F+F)=6.8
In 3 M HNO3: Ks(Nb(OH)4F2(s)=Nb(OH)4F2)=-4.82, K(Nb(OH)3F2+HF=Nb(OH)2F3)=4.2
*************************************************************************
I-                     HL    Iodide           CAS 10034-85-2  (20)
```

Iodide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Nb(V) cal non-aq 25°C 100% U HM 1993DSb (8273) 16
Metal:Nb(IV). Medium: Toluene or iso-Propyl ether. DH(Nb(H-1A)2B2(s)+2I2=
NbI2(H-1A)+2BI)=-289.9 kJ mol-1. A:Cyclopentadiene. B:CH3.
****
OH- HL Hydroxide (57)
Hydroxide;

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Nb(V) gl KCl 25°C 3.00M C I 1994EFa (11777) 17
K(Nb6O19+H=HNb6O19)=13.63
K(Nb6O19+2H=H2Nb6O19)=23.55
K(Nb6O19+3H=H3Nb6O19)=32.90
Values at I=0 corr: K=16.11, K(Nb6O19+2H)=27.97, K(Nb6O19+3H)=39.91.
K(Nb2O5(s)+5H2O=2Nb(OH)5)=-9.71. K(6Nb(OH)5=H3Nb6O19+5H)=-14.46.

Nb(V) dis NaClO4 25°C 0.10M U 1970GFb (11778) 18
*B(NbO2+H2O=NbO2OH+H)=-3.2
Medium: LiClO4
****
O2-- H2L Peroxide CAS 7772-84-1 (2813)
Peroxide; -O.O-

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Nb(V) sp oth/un 25°C 95% U T H 1971VZa (12683) 19
K(NbOSO4+H2L)=3.67
Medium:95% H2SO4. K=3.83(15 C), 3.53(35 C), 3.41(45 C). DH=-25 kJ mol-1
63% H2SO4. K=2.73(25 C), 2.56(35 C), 2.42(45 C). DH=-29

Nb(V) sp oth/un 0°C 10% U 1969CKa (12684) 20
K(NbOSO4+H2L)=5
Medium: 10% H2SO4

Nb(V) EMF KCl 0°C 1.0M U 1969SPc (12685) 21
K(3NbO2L+H=HNb3O6L3)=13.08
K(3NbL3+3H2O+H=HNb3O3L6+3H2L)=4.50. In 3 M KCl: K(NbL4+OH=NbOL3+HL)=1.5,
K(HNbOL3+H2L+OH=NbL4+2H2O)=3.3

Nb(V) sp oth/un ? var U 1966BNa (12686) 22
K(Nb(OH)4HL+H)=2.7

Nb(V) sp mixed 23°C 97% U 1957AHb (12687) 23
K(2Nb(V)+3H2L)=12.70
Medium: 97.2% H2SO4.

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Nb(V)      sp  oth/un   ?   96%  U                        1956SSc (12688)  24
                                  K(Nb(V)+H2L)=3.6
********************************************************************************
SCN-                   HL    Thiocyanate      CAS 463-56-9  (106)
Thiocyanate;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Nb(V)      sp  alc/w    ?  100%  U  I     K1=3.58   B2=6.74   1964GSc (15186)  25
                                  B3=9.23
Medium:MeOH. In BuOH: K1=4.37, B2=8.58, B4=16.92. In Me2NCHO: K1=3.08,
B2=6.11, B3=8.92, B4=11.55, B5=14.45, B6=16.72, B7=19.28.  Nb added as NbCl5
********************************************************************************
SO4--                  H2L    Sulfate          CAS 7664-93-9  (15)
Sulfate;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Nb(V)      ix  oth/un 20°C  var  U                        1969MNc (16395)  26
                                  K(NbO(OH)2+L)=1.7
Medium: H2SO4. By distribution: K(NbO(OH)2+2L+2H=NbOL2+2H2O)=3.12
In NH42SO4: K(NbO(OH)3L+L+H=NbO(OH)2L+H2O)=1.09
--------------------------------------------------------------------------------
Nb(V)      sp  oth/un 22°C 10.0M U                        1966GAc (16396)  27
                                  B(Nb(III)4Nb2)=4.3?
Medium: H2SO4
********************************************************************************
CH4O                    L    Methyl alcohol   CAS 67-56-1  (597)
Methanol; CH3.OH
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Nb(V)      EMF alc/w  20°C 100%  U                        1971GSa (17891)  28
                                  K(Nb+3L=Nb(H-1L)3+3H) > 1
                                  K(Nb(H-1L)3+H-1L)=14.3
Medium: MeOH, 1 M Me4NCl
--------------------------------------------------------------------------------
Nb(V)      EMF alc/w  20°C 100%  U    M                   1965GBa (17892)  29
                                  K(NbA(L')4+2L'=Nb(L')6+A)=5.1
                                  K(Nb(H-1L)4+A)=10.84
                                  K(NbA(H-1L)3+L)=12.4
                                  K(Nb(L')5+HA=NbA(L')4+L)=5.18
Method: H electrode. Medium: MeOH, 1.0 M Me4NCl. L'=H-1L; HA=acetylacetone
--------------------------------------------------------------------------------
Nb(V)      EMF alc/w  20°C 100%  U    M                   1965GBa (17893)  30
                                  K(NbAL'3+H2A+L'=NbA2L'2)=13.9
                                  K(NbA2L'2+H2A+L'=NbA3L')=7.0
                                  K(NbA(L')3+L'=NbA(L')4)=7.89
                                  K(NbAL'4+NbAL'3=Nb2A2L'7)=2.5
Method: H electrode. Medium: MeOH, 1.0 M Me4NCl. L'=H-1L; H2B=catechol
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--------------------------------------------------------------------------------
Nb(V)      EMF alc/w  20°C 100%  U                        1964GUa (17894)  31
                                      K(Nb(H-1L)4+H-1L)=10.45
                                      K(Nb(H-1L)5+H-1L)=5.45
                                      K(Nb(H-1L)6+H=Nb(H-1L)5)=6.15
                                      K(Nb(H-1L)7+H=Nb(H-1L)6)=11.15
Method: H electrode. Medium: MeOH, 1.0 M Me4NCl
--------------------------------------------------------------------------------
Nb(V)      EMF alc/w  20°C 100%  U                        1964GUa (17895)  32
                                      K(NbO(H-1L)2+H-1L)=10.51
                                      K(NbO(H-1L)4+H)=6.03
Method: H electrode. Medium: MeOH, 1.0 M Me4NCl
********************************************************************************
C2H2NBr                 L                      CAS 590-17-0  (4217)
Cyanomethyl bromide; Br.CH2.CN
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Nb(V)      nmr non-aq -60°C 100%  U    M                    1971MBa (18364)  33
                                      K(NbCl5A+L=NbCl5L+A)=0.99
                                      K(NbCl5B+L=NbCl5L+B)=0.43
Medium: CHCl3. A=cyanomethyl fluoride, B=cyanomethyl chloride
--------------------------------------------------------------------------------
Nb(V)      nmr non-aq -60°C 100%  U    M                    1971MBa (18365)  34
                                      K(NbCl5A+L=NbCl5L+A)=0.55
                                      K(NbCl5A+L=NbCl5L+A)=0.37
Medium: CHCl3. A=cyanomethyl fluoride, B=POCl3
********************************************************************************
C2H2NI                  L                      CAS 624-75-9  (4219)
Cyanomethyl iodide; I.CH2.CN
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Nb(V)      nmr non-aq -60°C 100%  U    M                    1972MBb (18366)  35
                                      K(NcCl5A+L=NbCl5L+A)=0.75
                                      K(NbCl5B+L=NbCl5L+B)=1.18
                                      K(NbCl5C+L=NbCl5L+C)=0.64
Medium: CHCl3. A=cyanomethyl bromide, B=cyanomethyl chloride, C=Et2O
********************************************************************************
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
--------------------------------------------------------------------------------
Nb(V)      sol NaClO4   ?     ?  U                        1970ZPa (18980)  36
                                      K3=6.17
Metal ion is NbO+++. Medium : HClO4
--------------------------------------------------------------------------------
Nb(V)      sol oth/un 18°C 0.50M U        B2=35.9        1968BMb (18981)  37
Metal ion is NbO+++
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Nb(V) sol oth/un 18°C 0.50M U 1968BMb (18982) 38
K(NbO(OH)2+L)=9.08

Nb(V) dis NaCl 20°C 4.50M U 1967KOd (18983) 39
Medium: 4.5(NaCl or NaNO3+2.5 M H). K(Nb(OH)4+H2L=Nb(OH)4HL+H)=3.55
K(Nb(OH)4+2H2L=Nb(OH)2L2+2H)=5.13

Nb(V) EMF oth/un 25°C 0.50M U 1967NSb (18984) 40
K(Nb(OH)4+2HL)=12.11
K(Nb(OH)4+2HL+L)=17.15
****
C2H3N L Cyanomethane CAS 75-05-8 (1399)
Acetonitrile; CH3.CN

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Nb(V) nmr non-aq -60°C 100% U M 1974GMa (19189) 41
K(NbBr5A+L=NbBr5L+A)=0.15
Medium: CH2Cl2. A=t-butylcyanide

Nb(V) nmr non-aq -60°C 100% U M 1972MBb (19190) 42
K(NbCl5A+L=NbCl5L+A)=0.46
Medium: CHCl3. A=1,4-dioxan

Nb(V) nmr non-aq -60°C 100% U M 1971MBa (19191) 43
K(NbCl5A+L=NbCl5L+A)=0.76
Medium: CHCl3. A=1-chloro-4-cyanobenzene. K=0.34, A=cyanobenzene;
K=0.68, A=cyanoethane; K=0.38, A=dimethylether.
****
C2H6NOCl2P L CAS 667-43-0 (910)
Dichloro(dimethylamine)phosphine oxide; (CH3)2N.P(O)Cl2

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Nb(V) nmr non-aq -60°C 100% U M 1974GMa (21900) 44
K(NbBr5A+L=NbBr5L+A)=0.72
Medium: CH2Cl2, A=acetonitrile
****
C2H6O L CAS 115-10-6 (4214)
Dimethyl ether; CH3.O.CH3

Metal Mtd Medium Temp Conc Cal Flags Lg K values Reference ExptNo
---
Nb(V) nmr non-aq -40°C 100% U M 1972MBb (22019) 45
K(NbCl5A+L=NbCl5L+A)=0.08
Medium: CHCl3. A=dioxan. K=0.38, A=1-chloro-4-cyanobenzene (-60 C)

Nb(V) nmr non-aq -60°C 100% U M 1971MBa (22020) 46
K(NbCl5A+L=NbCl5L+A)=0.38

Medium: CHCl3. A=1-chloro-4-cyanobenzene

****

C2H6S L CAS 75-18-3 (151)

Dimethyl sulfide; CH3.S.CH3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M	K(NbBr5A+L=NbBr5L+A)=1.52	1974GMa (22190)	47

Medium: CH2Cl2, A=t-butylcyanide

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M	K(NbCl5A+L=NbCl5L+A)=1.32	1972MBb (22191)	48

Medium: CHCl3. A=t-butylnitrile

****

C3H4O4 H2L Malonic acid CAS 141-82-2 (79)

Propanedioic acid; CH2(COOH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	dis	NaCl	20°C	4.50M	U	T		1967KOd (24509)	49

Medium:4.5(NaCl or NaNO3+2.5 HCl). K(Nb(OH)4+H2L=Nb(OH)4HL+H)=1.72

****

C3H9O4P L CAS 512-56-1 (2431)

Trimethyl phosphate; (CH3O)3.P:O

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M	K(NbCl5L+A=NbCl5A+L) > 2.0	1972BMb (28024)	50

K(NbCl5OPCl3+L=NbCl5L+OPCl3) > 7.0,. A=tris(dimethylamino)phosphine oxide

Medium: CHCl3

****

C4H6O4 H2L Succinic acid CAS 110-15-6 (112)

1,4-Butanedioic acid; HOOC.CH2.CH2.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	dis	NaCl	20°C	4.50M	U			1967KOd (30004)	51

K(Nb(OH)4+H2L=Nb(OH)4HL+H)=1.53, Medium: (NaCl or NaNO3+2.5 HCl)

****

C4H6O5 H2L Malic acid CAS 617-48-1 (393)

2-Hydroxybutane-1,4-dioic acid, Hydroxy-succinic acid; HOOC.CH2.CH(OH).COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	dis	NaCl	20°C	4.50M	U			1967KOd (30682)	52

K(Nb(OH)4+H2L=Nb(OH)4HL+H)=2.01. Medium: NaCl or NaBO3 + 2.5 M HCl

****

C4H6O6 H2L L-Tartaric acid CAS 87-69-4 (92)

L-Tartaric acid, L-2,3-Dihydroxybutanedioic acid; HOOC.CH(OH).CH(OH).COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	dis	KCl	20°C	1.00M	U		B2=33.5	1971LFc (31314)	53

Metal ion: NbO+++

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	oth	oth/un	?	?	U		K1=25.15 B2=33.00	1969EMa (31315)	54

Metal ion: NbO+++

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	dis	NaCl	20°C	4.50M	U			1967KOd (31316)	55

K(Nb(OH)4+H2L=Nb(OH)4HL+H)=2.34. Medium: NaCl or NaNO3 + 2.5 M HCl

****

C4H7NO4 H2L Aspartic acid CAS 56-84-8 (21)

Aminobutanedioic acid; H2N.CH(CH2.COOH).COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	dis	KNO3	20°C	2.00M	U			1969KOb (31898)	56
							K(NbO2+H2L)=4.82		

Medium: HNO3

****

C4H8OS L 1,4-Thioxane CAS 15980-15-1 (4266)

1,4-Oxathiane; cyclo(-O.CH2.CH2.S.CH2.CH2-)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M		1972MBb (33190)	57
							K(NbCl5A+L=NbCl5L+A)=0.08		

Medium: CHCl3. A=t-butyl nitrile

****

C4H8S L CAS 110-01-0 (150)

Tetrahydrothiophene; cyclo(-CH2.CH2.S.CH2.CH2-)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U			1972MBb (33739)	58
							K(NbCl5A+L=NbCl5L+A)=1.80		

A=t-butyl mercaptan. Medium: CHCl3

****

C4H8S2 L 1,4-Dithiane CAS 505-29-3 (4255)

1,4-Dithiane; cyclo-(S.CH2.CH2.S.CH2.CH2-)

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U			1972MBb (33743)	59
							K(NbCl5A+L=NbCl5L+A)=0.16		

A=t-butyl nitrile. Medium: CHCl3

****

C4H10O L Ether CAS 60-29-7 (3573)

Diethyl ether (ethyl ether, ethoxyethane); C2H5.O.C2H5

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M	K(NbClA+L=NbClL+A)=0.11	1972MBb (34652)	60

A=cyanomethyl bromide. Medium: CHCl3. When A=cyanomethyl chloride, K=0.54

****

C4H10S L CAS 352-93-2 (4259)

Diethyl sulfide; C2H5.S.C2H5

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M	K(NbBr5A+L=NbBr5L+A)=0.59	1974GMa (34719)	61

A=t-butyl nitrile. Medium: CH2Cl2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-40°C	100%	U	M	K(NbCl5A+L=NbCl5L+A)=0.66	1972MBb (34720)	62

A=dimethyl ether. Medium: CHCl3. When A=acetone, K=0.88

****

C5H8O2 HL Acetylacetone CAS 123-54-6 (164)

Pentane-2,4-dione; CH3.CO.CH2.CO.CH3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	EMF	non-aq	20°C	100%	U	M	K(NbA5+HL=NbA4L+HA)=5.18 K(NbA3L+A)=12.40 K(NbA4L+2A=NbA6+L)=5.06	1971GSa (38035)	63

Medium: CH3OH, 1 M Me4NCl. A=CH3OH

****

C5H9N L t-Butylnitrile CAS 7188-38-7 (913)

t-Butylcyanide;(CH3)3C.CN

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M	K(NbBr5A+L=NbBr5L+A)=1.68	1974GMa (38453)	64

Medium: CH2Cl2, A=dimethylether

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M	K(NbCl5A+L=NbCl5L+A)=0.42	1972MBb (38454)	65

Medium: CHCl3. A=dimethyl ether. When A=1,4-dioxan, K=0.50

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M	K(NbCl5A+L=NbCl5L+A)=0.04	1971MBa (38455)	66

Medium: CHCl3. A=cyanomethane. When A=cyanoethane, K=0.72

****

C6H6N2O2 HL Cupferron CAS 135-20-6 (637)

N-Nitrosophenylhydroxylamine; C6H5.N(OH).NO

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	alc/w	25°C	50%	U		1967LSb (43419)		67
							K(NbOL2+L)=4.83		

Medium: 50% EtOH, 0.1 M (NH4)2SO4

****

C6H6O2 H2L Catechol CAS 120-80-9 (534)
1,2-Dihydroxybenzene, pyrocatechol; HO.C6H4.OH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	EMF	alc/w	20°C	100%	U	M		1971GSa (43797)	68
							K(NbA3L+A)=7.89		
							K(NbA3L+NbA4L=Nb2A7L2)=2.50		
							K(NbA3L+H2L+A=NbA2L2+2HA)=13.9		
							K(NbA2L2+H2L+A=NbAL3+2HA)=6.98		

Medium: MeOH, 1.0 M Me4NCl. HA=CH3OH

****

C6H6O3 H3L Pyrogallol CAS 87-66-1 (696)
1,2,3-Trihydroxybenzene; C6H3(OH)3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	23°C	96%	U		1981BVa (43971)		69
							K(Nb(V)+H3L)=5.62		

Medium: 96% H2SO4. In 85%: K(Nb(V)+H3L)=2.30

****

C6H7NO3S HL CAS 599-71-3 (4398)
Benzenesulfohydroxamic acid; C6H5.SO2.NH.OH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	20°C	1.0M	U	M		1971GVa (45071)	70

Medium: 1-10 M HCl. K(NbOCl5+2H2L=(H2L)2NbOCl5)=4.91

****

C6H8O6 H2L Ascorbic acid CAS 50-81-7 (285)
Ascorbic acid (Vitamin C);

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	?	?	U		K1=9.4	1966SAb (45649)	71

****

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
Nb(V)	dis	oth/un	20°C	4.50M	U			1967KOd (46195)	72

Medium: 4.5(NaCl or NaNO3+2.5 HCl). K(Nb(OH)4+H3L=Nb(OH)4H2L+H)=2.94 ?

****

C6H12O7 HL Gluconic acid CAS 526-95-4 (904)

D-Gluconic acid, 2,3,4,5,6-Pentahydroxyhexanoic acid; HO.CH2(CHOH)4.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	gl	oth/un	25°C	0.10M	U			1968LOb (49738)	73
							K(Nb(OH)n+L)=2.78		
							K(Nb(OH)nH-1L+H)=7.82		

****

C7H4NCl L CAS 1885-81-0 (4433)

1-Chloro-4-cyanobenzene; Cl.C6H4.CN

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M		1971MBa (52380)	74
							K(NbCl5A+L=NbCl5L+A)=1.91		

A=cyanomethyl bromide. When A=cyanomethyl iodide, K=1.16

****

C7H5N L Cyanobenzene CAS 100-47-0 (4406)

Cyanobenzene, benzonitrile; C6H5.CN

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	nmr	non-aq	-60°C	100%	U	M		1971MBa (52569)	75
							K(NbCl5A+L=NbCl5L+A)=0.04		

Medium: CHCl3. A=dimethyl ether

****

C7H6O3 H2L Salicylic acid CAS 69-72-7 (14)

2-Hydroxybenzoic acid, Salicylic acid; HO.C6H4.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	25°C	0.04M	U			1962BVa (54266)	76
							K(NbO+2L)=22.60		

****

C7H6O4 H3L Protocatechuic CAS 99-50-3 (875)

3,4-Dihydroxybenzoic acid; C6H3(OH)2.COOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	20°C	0.10M	U			1964SHa (54685)	77
							K(NbO2+H3L=NbO2LH2+H)=2.3		
							K(NbO2LH2+H3L=NbOL2H2+H)=1.3		
							K(NbO2+3HL+4H)=63.1		

****

C7H7NO3 H2L CAS 89-73-6 (204)

2-Hydroxybenzohydroxamic acid (salicylhydroxamic acid); HO.C6H4.CO.NHOH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	20°C	dil	U	M		1972LVa (55604)	78
							K(NbOCl5+2H3L)=4.58		

****

C9H6N2O5S H2L CAS 5263-74-1 (2738)
7-Nitroso-8-hydroxyquinoline-5-sulfonic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	gl	alc/w	27°C	50%	C	H	K1=6.15 B2=11.53	1986EAa (63877)	79

****

C9H7N3O2S H2L TAR CAS 2246-46-0 (707)
4-(2'-Thiazolylazo)-resorcinol; C3H2NS.N:N.C6H3(OH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	alc/w	25°C	50%	U			1967NPb (64716)	80
							K(NbO3+H2L)=9.5(?)		

Medium: 50% MeOH, 0.1 M NaClO4

****

C10H8O8S2 H4L Chromotropic ac CAS 148-25-4 (1875)
1,8-Dihydroxynaphthalene-3,6-disulfonic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	NaCl	20°C	0.10M	U	I		1964SHa (69962)	81
							K(NbO2+3L+4H)=64.7		

In 3 M NaClO4: K(NbO2+2H+2L)=42.5

****

C10H12O5 H3L CAS 121-79-9 (3895)
3,4,5-Trihydroxybenzoic acid propyl ester; (HO)3.C6H2.CO.O.CH2.CH2.CH3

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	mixed	22°C	5%	U			1968LSc (71685)	82
							K(?)=3.48		

Medium: 5% 1-PrOH, carbonate buffer

****

C10H16N2O8 H4L EDTA CAS 60-00-4 (120)
1,2-Diaminoethane-N,N,N',N'-tetraethanoic acid, Sequestric acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	dis	KNO3	20°C	2.0M	U			1969KKf (73986)	83
							K(NbO2+H3L)=10.54		
Nb(V)	vlt	KCl	?	0.40M	U		K1=39.4	1969SVd (73987)	84
Nb(V)	vlt	oth/un	20°C	1.0M	U			1967VSd (73988)	85

K(Nb(OH)2+L)=40.78

****

C11H9N3O2 H2L PAR CAS 1141-59-9 (636)
4-(2'-Pyridylazo)-1,3-dihydroxybenzene; C5H4N.N:N.C6H3(OH)2

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	25°C	?	U		1967ADa (77564)		86
							K(?)=4.3		

****

C13H11NO2 HL CAS 304-88-1 (181)
N-Phenylbenzohydroxamic acid; C6H5.CO.N(C6H5).OH

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	dis	KCl	20°C	1.0M	U		1971LFc (85167)		87
							B((NbO)L3)=53.1		

****

C14H8O7S H3L DASA CAS 83-61-4 (950)
1,2-Dihydroxyanthraquinone-3-sulfonic acid, Alizarin Red S;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	?	?	U		1968ADa (86745)		88
							B((NbO)L2)=8.33		

****

C14H15N4OBr HL CAS 14337-50-9 (5095)
5-(5-Bromo-2-pyridylazo)-2-ethylamino-4-hydroxy-1-methylbenzene;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	?	?	U	M	1969EMa (87766)		89
							K(NbOA+L)=20.63		

H2A=tartaric acid.

****

C14H16N4O HL PAAC CAS 13059-69-3 (5067)
5-Ethylamino-4-methyl-2-(2'-pyridylazo)phenol;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	?	?	U	M	1969EMa (88019)		90
							K(NbOA+L)=21.0		

H2A=tartaric acid

****

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
Nb(V)	vlt	oth/un	25°C	2.0M	U		1970PLa (88728)		91

K(?)=15.60 pH 5
****
C15H13NO2 HL CAS 7369-44-0 (4066)
N-3-Diphenylpropenohydroxamic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	dis	KCl	20°C	1.0M	U		1971LFc (91639)		92
							K(NbO+3L=59.7		

****
C15H18N4O HL CAS 14337-52-1 (5124)
5-Diethylamino-2-(2-pyridylazo)phenol;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	?	?	U	M		1969EMa (92097)	93
							K(NbOA+L)=20.63		

H2A=tartaric acid
****
C16H11N2O5ClS H3L CAS 3567-23-5 (5202)
5-Chloro-2-hydroxy-3-(2-hydroxy-1-naphthylazo)-benzenesulfonic acid;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	EMF	oth/un	?	?	U	M		1971ENc (92770)	94
							K(NbOA+L)=27.5		

H2A=tartaric acid
****
C16H11N3O10S2 H4L (5174)
2-Hydroxy-1-(2'-hydroxy-4'-nitro)phenylazo-3,6-disulfonaphthalene;

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	25°C		?	U		1971RCd (92882)	95
							K(?)=5.51		

****
C17H17NO3 HL CAS 58434-59-6 (1213)
2'-Hydroxy-4-methoxy-5'-methylbenzylidene acetophenone oxime

Metal	Mtd	Medium	Temp	Conc	Cal	Flags	Lg K values	Reference	ExptNo
Nb(V)	sp	oth/un	30°C	8.00M	U	M		1980GKa (96190)	96
							K(NbO(SCN)+L)=2.67		
							K(NbO(SCN)L+L)=2.27		

****
C17H21N5O HL (5223)
3-Amino-1-hydroxy-6-(2-N-methylanabasinyl-alpha-azo)benzene;

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

```
Nb(V)      sp  oth/un   ?     ?  U                        1967TTa (96389)  97
                                        K(?)=11.36
********************************************************************************
C31H32N2O13S          H6L    Xylenol orange   CAS 63721-85-5  (432)
5,5'-Bis-N,N-bis(carboxymethyl)aminomethyl-4'-hydroxy-3,3'-dimethylfuchsone-2"-sul
fonic acid;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Nb(V)      sp  oth/un 25°C    ?  U                        1967ADc (105482)  98
                                        K(?)=4.7
********************************************************************************
CH4O                    L    Methyl alcohol   CAS 67-56-1  (597)
Methanol; CH3.OH
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Nb++++     EMF alc/w  20°C 100%  U                        1971GSa (17896)  99
                                        K(Nb(L')2+L')=12.6
                                        K(2Nb(L')3+3L'=Nb2(L')9)=23.9
Medium: MeOH, 1 M LiCl
********************************************************************************
C11H9N3O2             H2L    PAR              CAS 1141-59-9  (636)
4-(2'-Pyridylazo)-1,3-dihydroxybenzene; C5H4N.N:N.C6H3(OH)2
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Nb++++     sp  oth/un   ?     ?  U    M                   1969EMa (77565) 100
                                        K(NbOA+L)=21.22
H2A=tartaric acid
********************************************************************************
C22H14N4O16Cl2S4      H8L    ClSulfophenol S  CAS 2103-73-3  (4156)
2,7-Bis(5'-chloro-2'-hydroxy-3'-sulfo-phenylazo)chromotropic acid;
--------------------------------------------------------------------------------
Metal      Mtd Medium Temp Conc Cal Flags Lg K values       Reference ExptNo
--------------------------------------------------------------------------------
Nb++++     sp  KNO3   20°C 0.20M U                        1965BSe (101484) 101
                                        B(NbO2+6H+L)=53.0
Metal: Nb(III)

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EXPLANATORY NOTES

DATA Flags are :-

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

END Experiments recorded for
from SC-Database on Saturday, 01 January, 2000 at 00:10:19