COMPONENTS:					ORIGINAL MEASUREMENTS: Shevtsova, Z.N.: Korshunov, B.G.: Safanov			
[10024-93-8]				V.V.; Kogan, L.M.; Gudkova, V.I.				
(2) Hexachloro-1, 3-butadiene; C ₄ Cl ₆ ; [87-68-3]				Inorg	. Chem. (E	. <u>1968</u> , 15, ngl. Transl	3096-9; Kuss, J.	
[07-00-5]			1596-	8.		<u> </u>		
WADT	ADIECA				DDDDAD	ED BV.		
VARI.	ADLES:				T MA	ED DI: advalat and	N C -1	
Tem	perature	9			1. MI	oduski and	M. Salomon	1
EXPE	RIMENTAI	VALUES:						
Com	position	a, densities	, viscosities a	and refra	ictive	indices of	saturated	solutions.
			. a					nature of the
	10 -	solub1	.1ty	.,	-3		20	
:	t/°C	mass %	mol kg	d/g d	m	n/p	ⁿ D	solid phase
	25	0.029	0.00116	1.679)	0.0389	1.5553	NdC13.3.5H20
	50	0.037	0.00148	1.648	3	0.0311	1.5553	11
	75	0.055	0.00220	1.612	2	0.0249	1.5550	NdCl3H_O
								5 2
							·· ··· ·······························	
			AU	XILIARY	INFORM	ATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method. Equilibrium attained after 12 d at 25°C, 10 d at 50°C, and 7 d at 75°C. Initial salt, liquid phases and solid phases analysed for Nd by the oxalate method or by titration with Trilon B using Xylene Orange indicator, and for chloride by the Volhard method. Presumably water was found by dif- ference. Solid phase compositions confirmed by X-ray analysis.				SOURCE NdCl $_3$ in HC lizin, oxide rare $_d$ and C for me Cl 26 Puriff the fe d4 ESTIMA Soly: Temp:	AND PURIT .6H ₂ 0 prep 1, evapora g, and dry: contained earths and u (0.01%). etal and hi .30%, H ₂ 0 ied solven bilowing p 1.6807 g 	Y OF MATERI d by dissol ting and co ing in a de oxide impu Fe (0.01%) The produ alide (mass 33.45%. t (method n roperties: cm ⁻³ , and n pecified.	ALS: ving 99.8% Nd.03 oling, recrystal- siccator. The rities of other , Ca((0.01-0.05%), ct was analysed %): Nd 40.25%, ot specified) had 20 = 1.5543.	
				remb:				
				REFERENCES:				
				ļ				

Neodymium Chloride

COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8]	EVALUATOR: Mark Salomon USA ET & DL Ft. Monmouth, NJ. U.S.A.
(2) Methanol; CH ₄ 0; [67-56-1]	and
	Tomasz Mioduski Institute of Nuclear Research Warsaw, Poland

CRITICAL EVALUATION:

The solubility of NdCl₃ in methanol has been reported in three publications (1-3). West (1) studied the solubility from 283-313 K and reported his results in volume units. The results in (2) for 273-323 K and in (3) for 298.15 K are both in mass units, but there is serious disagreement between these results. For example at 298.2 K Grigorovich (2) reports a solubility of 4.466 mol kg⁻¹ (solid phase is NdCl₃·3CH₃OH) while Merbach et al. (3) report a solubility of 2.75 mol kg⁻¹ (solid phase is NdCl₃·4CH₃OH).

While we cannot directly compare West's solubility result of ~ 2.25 mol dm⁻³ at 298.2 K with those in (2,3), it certainly is more consistent with the result of Merbach et al. This does not necessarily imply that there is some systematic error in the results of Grigorovich, but rather that a metastable phase is involved.

Merbach et al. report two values for the solubility of NdCl₃ in methanol at 298.15 K. The first value of 2.75 mol kg⁻¹ was obtained when the solution was equilibrated with the tetrasolvate. Starting with the anhydrous salt, Merbach et al. found a solubility of 2.84 mol kg⁻¹, and the difference in these two results (3 %) is much greater than the experimental precision of 0.5 % estimated by the compilers. It would thus appear that the higher solubility result of Merbach et al. represents a solution in "quasi" equilibrium with both the stable NdCl₃·4CH₃OH and metastable NdCl₃·3CH₃OH solid phases.

At this time we designate both results of Grigorovich (2) and Merbach et al. (3) as *tentative* solubility data. For 298.15 K the tentative solubility in the stable tetrasolvate system is 2.75 mol kg⁻¹ (3), and at 273.2 K, 298.2 K and 323.2 K the tentative solubilities for the metastable trisolvate system are 3.349 mol kg⁻¹, 4.466 mol kg⁻¹ and 5.133 mol kg⁻¹, respectively (2).

REFERENCES

- 1. West, D.H. Masters Thesis. University of Illinois. Urbana, IL. <u>1932</u>. Some of West's data have also been published in reference 4 below.
- 2. Grigorovich, Z.I. Zh. Neorg. Khim. 1963, 8, 986.
- 3. (a) Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u>, 55, 44.

(b) Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. 1971.

4. Hopkins, B.S.; Quill, L.L. Proc. Natl. Acad. Sci. U.S.A. 1933, 19, 64.

·····					
COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8]				ORIGINAL MEASURE West, D.H.	EMENTS :
(2) Methanol; CH ₄ 0; [67-56-1]			Masters Thesis Illinois. Urt	5. The University of Dana, IL. <u>1932</u> . ¹	
VARIABLES:	······································			PREPARED BY:	
T/K = 283 •	- 313			M. Salomon and	i T. Mioduski
EXPERIMENTAL	VALUES:				
	g Nd ₂ 03 in 10	cc of saturated	l sl	n	solubility of NdCl a,b
t/ ^o C	sample 1	sample 2 a	ver	•age [®]	mol dm ⁻³
10	3.5696	3.5737 3	8.57	17	2.1230
20	3.7587	3.7268 3	3.74	28	2.2247
30	3.838	3.8162 3	8.82	71 ^c	2.2748
40	3.9727	3.9955 3	.98	41	2.3681
8. Coloulated	by compilone				
Larcurated	by compilers.				
Calculated	l by compilers	based on average	ma	ss of Nd203.	
^C Author giv	es average val	ue of 3.8221 g/1	0 c	c.	
		The solid	pha	se was not analy	zed.
		AUXILIA	RY	INFORMATION	
METHOD/APPAR	ATUS/PROCEDURE:	:		SOURCE AND PURIT	TY OF MATERIALS:
Isothermal m	ethod. About	100 cc of alcohol	1	NdCl ₃ prepd by	addn of HCl to spectro-pure
pered bottle	, and rubber t	ubing placed over	p- r	which crystalli	zed upon cooling. The hydrate
the stopper	and neck of the	e bottle and a r	ub-	was dried in a	stream of dry HCl by slowly
tubing to pr	event leakage	of water into the	e	stored in cork-	stoppered bottles in a desic-
bottle. The	bottle was im	mersed in a them	mo-	cator over P205	. Analysis by conversion to
12 h. The s	aturated solut:	ions were then p	er-	the salt to be	anhydr. Commercial alcohol
mitted to se	ttle for a min	imum of 12 h, and	đ	placed over Ca0	for 1 week and then distil-
pipet. Wate	r was added to	the aliquots and	a	carded. CuSO4	test for H ₂ 0 was negative.
the sln heated and oxalic acid added to				ESTIMATED ERROR:	
precipitate was filtered, washed with			Soly: precision (compilers	probably within $\pm 3\%$ s).	
and weighed.	ter, and ignit	ed to the oxide		Temp: precision	<u>+</u> 0.2 K (author).
				REFERENCES:	
				1. Some data fro ed in graphic Quill, L.L. 1 <u>1933</u> , 19, 64	om West's Thesis was publish- cal form by Hopkins, B.S.; Proc. Natl. Acad. Sci. U.S.A.
		······			

COMPONENTS :	ORIGINAL MEASUREMENTS .
<pre>(1) Neodymium chloride; NdCl₃; [10024-93-8]</pre>	Grigorovich, Z.I.
(2) Methanol; CH ₄ 0; [67-56-1]	Zh. Neorg. Khim. <u>1963</u> , 8, 986–9.
VARIABLES:	PREPARED BY:
Temperature	T. Mioduski
EXPERIMENTAL VALUES:	
	solubility ^a
t/ ^o C m	ass % mol kg ⁻¹
0 4	5.63 3.349
25 5	2 91 4 466
50 5	6.26 5.133
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for NdCl ₃ (no details were given). The alcohol adduct was studied thermographi-	SOURCE AND FURITY OF MATERIALS: NdCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The result- ing chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods."
cally.	ESTIMATED ERROR: Soly: author states accuracy to be about 0.05 %. Temp: nothing specified. REFERENCES: 1. Freeman, I.H. J. Inorg. Nucl. Chem. <u>1958</u> , 7, 286.

COMPONENTS :	ORIGINAL MEASUREMENTS:			
<pre>(1) Neodymium chloride; NdCl₃; [10024-93-8]</pre>	Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.			
(2) Methanol; CH ₄ 0; [67-56-1]	Pitteloud, M.N. These. Faculte des Sciences de l'Universi- de Lausanne. <u>1971</u> .			
VARIABLES:	PREPARED BY:			
T/K = 298.2	T. Mioduski and M. Salomon			
EXPERIMENTAL VALUES:	ha			
	mean solubilities/mol kg ⁻¹			
t/°c	a b			
25	2.75 2.84			
a. Initial salt is the adduct NdCl ₃ . ⁴ CH ₃ OF found to be NdCl ₃ . ⁴ CH ₃ OH.	I. Equilibrated solid phase analyzed and			
b. Solutions equilibrated with anhydrous M analyzed, but assumed by the compilers	MdCl ₃ . Equilibrated solid phases not to be $NdCl_3$. ${}^{L}CH_3OH$.			
AUXILIARY	INFORMATION			
HETHOD/AFFARATOS/FROCEDORE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Neodymium determined by titration with (NH4) ₃ H(EDTA) using a small amount of uro- tropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO ₃ solution. Composition of the adduct NdCl ₃ .4CH ₃ OH confirmed by ¹ H NMR and X-ray diffraction. The reported solubilities are mean values of	SOURCE AND PORITY OF MATERIALS: Nd ₂ O ₃ of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The salt was dehydrated as described in (3). The adduct NdCl ₃ . ⁴ CH ₃ OH prepared by dissolving the hydrate in a small excess of o-methly- formate followed by distillation and crystal- lization from methanol. Methanol was purified and dried by the Vogel method.			
2-4 determinations.	ESTIMATED ERROR:			
Reference (3) was incorrectly cited in the source paper as: J. Inorg. Nucl. Chem. <u>1958</u> , 7, 224 (this is the reference to a paper by J.H. Freeman and M.L. Smith which describes	<pre>Douy: precision ±0.5% as in (1) (compilers). Temp: precision probably at least ± 0.05 K</pre>			
the preparation of anhydrous salts by treat- ment with thionyl chloride). Reference (3) was corrected by the compilers.	 REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta <u>1964</u>, 47, 14. 2. Flatt, R. Chimia <u>1952</u>, 6, 62. 3. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl Chem. <u>1962</u>, 24, 387 (see COMMENTS at left). 			

Neodymium Chloride

COMPONENTS:	EVALUATOR:
(1) Neodymium chloride; NdCl ₃ ; [10024-93-8]	Mark Salomon USA ET & DL Ft. Monmouth, NJ, U.S.A.
(2) Ethanol; C _o H ₂ O; [64-17-5]	and
	T. Mioduski
	Institute of Nuclear Research
	Warsaw, Poland

CRITICAL EVALUATION:

The solubility of NdCl₃ in ethanol has been reported in three publications (1-3). King (1) studied the solubility from 273-323 K and reported his results in volume units. The results in (2) for 273-323 K and in (3) for for 298.15 K are both in mass units, but there is serious disagreement between these results. For example at 298.2 K Grigorovich (2) reports a solubility of 3.080 mol kg⁻¹ (solid phase is NdCl₃·2C₂H₅OH) while Merbach et al. (3) report a solubility of 1.35 mol kg⁻¹ (solid phase is NdCl₃·3C₂H₅OH).

While we cannot directly compare King's solubility result of 1.2858 mol dm⁻³ at 298 K with those in (2,3), it certainly is more consistent with the result of Merbach et al. This does not necessarily imply that there is some systematic error in the results of Grigorovich, but rather that a metastable phase is involved.

Merbach et al. report two values for the solubility of NdCl₃ in ethanol at 298.15 K. The first value of 1.35 mol kg⁻¹ was obtained when the solution was equilibrated with the trisolvate. Starting with the anhydrous salt, Merbach et al. found a solubility of 1.52 mol kg⁻¹, and the difference in these two results (ll %) is much greater than the experimental precision of 0.5 % estimated by the compilers. It would thus appear that the higher solubility result of Merbach et al. represents a solution in "quasi" equilibrium with both the stable NdCl₃·3C₂H₅OH and NdCl₃·2C₂H₅OH solid phases.

At this time we designate both results of Grigorovich (2) and Merbach et al. (3) as *tentative* solubility data. For 298.15 K the tentative solubility in the stable trisolvate system is 1.35 mol kg⁻¹, and at 273.2 K, 298.2 K and 323.2 K, the tentative solubilities for the metastable disolvate system are 2.420 mol kg⁻¹, 3.080 mol kg⁻¹ and 2.333 mol kg⁻¹, respectively. At this time we cannot explain the decrease in the solubility at 323.K in the metastable system: either an error exists or the system has reverted to the stable trisolvate system.

REFERENCES

- 1. King, F.E. Masters Thesis. University of Illinois. Urbana, IL. <u>1932</u>. Some of King's data have also been published in reference 4 below.
- 2. Grigorovich, Z.I. Zh. Neorg. Khim. 1963, 8, 986.
- 3. (a) Merbach, A.; Pitteloud, M.N.: Jaccard, P. Helv. Chim. Acta <u>1972</u>, 55, 44.
 (b) Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u>.
- 4. Hopkins, B.S.; Quill, L.L. Proc. Natl. Acad. Sci. U.S.A. <u>1933</u>, 19, 64.

		Neou	ymum chior	luc		157
COMPONENTS: (1) Neodyn [1002] (2) Ethand	mium chloride; 1 4-93-8] ol; C ₂ H ₆ 0; [64	ORIGINA King, Maste Urbana	L MEASUREME F.E. rs Thesis. 2, IL. <u>1932</u>	NTS: University of 1	Illinois.	
VARIABLES: T/K = 273 ·	PREPARE M. Sal	D BY: Lomon and T.	Mioduski			
EXPERIMENTAL	L VALUES: g Nd ₂ 0 ₃ in 10	cc satd sln	densit	/g cm ⁻³	solubility	of NdCl3 ^{a,b}
t/ ^o C	experimental	average	exptl	ava	mol dm ⁻³	mol kg ⁻¹
0 0	1.5598 1.5748	1.5673	1.0102 1.0108	1.0105	0.9316	0.9219
10 10	1.6053 1.6190	1.6122	1.0370 1.0378	1.0374	0.9582	0.9237
15 15	1.6338 1.6322	1.6330	1.0502 1.0507	1.0505	0.9706	0.9240
20 20	2.0129 2.0035	2.0082	1.0613 1.0615	1.0614	1.1937	1.1246
25 25	2.4274 2.4113	2.4194	1.1183 1.1185	1.1184	1.4380	1.2858
30 30	1.9223 1.9260	1.9242	1.0524 1.0524	1.0524	1.1437	1.0868
40 40	2.2178 2.2333	2.2256	1.0832 1.0831	1.0832	1.3228	1.2213
40 ^с 40 ^с	3.0182 3.0164	3.0173	1.207		1.7935	1.486
50 50	2.9742 2.9667	2.9705	1.1740 1.1750	1.1745	1.7656	1.5033
^a Calculated ^b Calculated ^c These poir	l by compilers. l by compilers ι nts detd after 1	ising average v two points at 5	values for ma	uss Nd ₂ 0 ₃ an . after coo	d density of s ling from 50 ⁰ C	atd slns. to 40°C.

AUXILIARY INFORMATION

Salt and alcohol placed in 250 cc stoppered bottle and mechanically agitated in a thermo- stat for at least 24 h. Bottle sealed by placing rubber tubing over stopper and neck of bottle. Sins allowed to settle for at least 12 h and duplicate 10 cc aliquots re- moved with pipet previously rinsed with the sin. Analyses performed by evapn of alcohol, addn of water, and pptn of the rare earth with oxalic acid. The oxalate was filtered and ignited to const weight as the oxide. Densities measured with a pycnometer, but author states loss by evapn resulted in slightly low values. Soly detns using single bottle by (1) starting at 0°C and raising the temp for the next detn, and (2) by cooling the bottle to a lower temp for a second	<pre>Source AND PORITY OF MALERIALS: NdCl₃ prepd from spectro-pure Nd₂O₃ by treat- ment with aq HCl, and evapn to the point of crystn. Crystals dried in atm of dry HCl for 24 h followed by slow heating in dry HCl until the anhydr salt was obtained. The salt was stored in a vac desiccator over P₂O₅. The salt was analyzed for presence of H₂O by gravimetric analysis (oxlalate-oxide method), but results not given: presumably little or no water was found. Ethanol ob- tained from the stock room (i.e. source and purity unknown) dried with anhydr Na₂SO₄. ESTIMATED ERROR: Soly: precision no better than ± 5% (compilers). Temp: precision ± 1 K.</pre>
bottle as needed. The results of the second duplicate analysis (i.e. by cooling) resulted in higher soly values (see table). Several samples of the solid were taken for analyses, but <i>temperature not given</i> . These samples were dried in vac over P ₂ 05, weighed, con- verted to the oxalate and ignited to the oxide. Two analyses gave 2.59 and 1.65	REFERENCES: 1. Some of the data from King's Thesis was published in graphical form by Hopkins, B.S.; Quill, L.L. Proc. Natl. Acad Sci. U.S.A. <u>1933</u> , 19, 64.

COMPONENTS	OPTOTNAL WEACHIDENERY TO .		
(1) Neodymium chloride; NdCl ₃ ; [10024-93-0]	Grigorovich, Z.I.		
(2) Ethanol; C ₂ H ₆ 0; [64-17-5]	Zh. Neorg. Khim. <u>1963</u> , 8, 986-9.		
VARIABLES:	PREPARED BY:		
Temperature	T. Mioduski		
EXPERIMENTAL VALUES:			
	solubility ^a		
t/ ⁰ C	mass % mol kg ⁻¹		
0	37.75 2.420		
25	43.56 3.080		
50	36.89 2.333		
^a Molalities calculated by the compiler. At NdCl ₃ ,2C ₂ H ₅ OH.	25 ⁰ C the solid phase is		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:		
Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for NdCl ₃ (no details were given).	NdCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The result- ing chloride was dehydrated by treatment with thionyl chloride (1).		
The alcohol adduct was studied thermo- graphically.	The alcohol was purified and dried by "standard methods."		
	Soly: author states accuracy to be about 0.05%.		
	Temp: nothing specified.		
	REFERENCES: 1. Freeman, I.H. J. Inorg. Nucl. Chem. <u>1958</u> , 7, 286.		

COMPO	NENTS :	ORIGINAL MEASUREMENTS:					
(1)	Neodymium chloride; NdCl ₃ ; [10024-93-8]	Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.					
(2)	Ethanol; C _{2^H6} 0; [64-17-5]	Pitteloud, M.N. <i>These</i> . Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .					
VARI	ABLES:	PREPARED BY:					
т/к	= 298.2	T. Mioduski and M. Salomon					
EXPER	RIMENTAL VALUES:						
		mean solubilities/mol kg ⁻¹					
	t/ ^o C	a b					
	25	1.35 1.52					
a.	Initial salt is the adduct $MdCl_3.3C_2H_5C_3$ found to be $MdCl_3.3C_2H_5OH.$	OH. Equilibrated solid phase analyzed and					
Ъ.	Solutions equilibrated with anhydrous I analyzed, but assumed by the compilers	MdCl ₃ . Equilibrated solid phases not to be NdCl ₂ , 3CoHrOH.					
	AUXILIARY	INFORMATION					
METH Isotl were longe box. (NH ₄ trop: Chlo: titre of th NMR The 1 of 2-	DD/APPARATUS/PROCEDURE: nermal method as in (1,2). Mixtures equilibrated for at least 4 days. Pro- ed operations were performed in a dry Neodymium determined by titration with) ₃ H(EDTA) using a small amount of uro- ine buffer and Xylenol Orange indicator. ride was determined by potentiometric tion with AgNO ₃ solution. Composition ne adduct NdCl ₃ .3C ₂ H ₅ O confirmed by ¹ H and X-ray diffraction. reported solubilities are mean values -4 determinations.	SOURCE AND PURITY OF MATERIALS: Nd ₂ O ₃ of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The salt was dehydrated as in (3). The adduct NdCl ₃ .3C ₂ H ₆ O prepared by dissolving the hydrate in a small excess of o-ethylformate followed by distillation and crystalliza- tion from ethanol. Ethanol (Fluka) was used as received. Purity and absence of water was confirmed by NMR method.					
COMM	ENTS AND/OR ADDITIONAL DATA:	Soly: precision $\pm 0.5\%$ as in (1) (compilers).					
Refer source 7, 22 J.H. the p treat (3) v	rence (3) was incorrectly cited in the re paper as: J. Inorg. Nucl. Chem. <u>1958</u> , 24 (this is the reference to a paper by Freeman and M.L. Smith which describes preparation of anhydrous salts by ment with thionyl chloride). Reference was corrected by the compilers.	 Temp: precision probably at least ± 0.05K as in (1) (compilers). REFERENCES: 1. Brunisholz, F.; Quinche, J.P.; Kalo, A.M. Helv. Chim. Acta 1964, 47, 14. 2. Flatt, R. Chimia 1952, 6, 62. 3. Taylor, M.D.; Carter, C.P. J. Inong. Nucl Chem. 1962, 24, 387 (see COMMENTS at left). 					

COMPONENTS :				ORIGINAL MEASUREMENTS:		
<pre>(1) Neodymium chloride; NdCl₃; [10024-93-8]</pre>				Sakharova, N.N.; Sakharova, Yu.Gl; Ezhova, T.A.; Izmailova, A.A.		
(2) Ethanol; C ₂ H ₆ O; [64-17-5] (3) Water; H ₂ O; [7732-18-5]				Zh. Neorg. Khim. <u>1975</u> , 20, 1479-83; Russ. J. Inorg. Chem. (Engl. Transl.) <u>1975</u> , 20, 830-2.		
		PREPARED BY:				
		T. Mioduski a	nd M. Salomon			
of NdCl ₃ .6H ₂ C) in 96.8% C	2 ^H 5 ^{OH^a}				
sample 2 g/100 g	sample 3 g/100 g	sample 4 g/100 g	mean solubi g/100 g	lities mol kg ^{-lc}		
35.54	35.44	35.50	35.47	0.989		
36.80	36.87	36.70	36.80	1.026		
38.86	39.39	39.03	39.05	1.089		
43.19	48.64 ^d	42.78	42.89	1.196		
47.60	47.68	48.18	47.84	1.334		
tated whether	the mixture	is 96.8 mass	% or 96.8 volu	me % ethanol.		
^C Molalities calculated by the compilers. ^d This value appears to be a typographical error the reported mean solubility of 42.89 g/100 g should be 42.64 g/100 g (compilers).				n. To obtain s data point		
	AUXILIARY	INFORMATION				
EDURE: red. Equilibrium lige quilibrium the data points after 3 h of equilibrium after 3 h of equilibrium a each aliquot a each aliquot a by complex m B. ds withdrawn a t the solid pha- brian was phases. red at 126.9-12	lum was esults ob- from above s in the equilibra- points bration. taken for kometric at 20°C, ase to be not found 28.1°C.	SOURCE AND PUR NdCl ₃ .6H ₂ 0 pr oxide in dil crystn. The cator over Ca analysed for B, and for Cl Found (%) for 98.8% ethanol c.p. grade 93 followed by d refractometri ESTIMATED ERRC Soly: results ± 0.8%. Temp: nothing REFERENCES:	ITY OF MATERIA epd by dissolv (1:3) HC1 foll crystals were Cl2, P ₂ O ₅ and the metal by t by the Volhar Nd:40.30, 40. Cl; 29.59, 29 prepd by prol .5% ethanol wi istn. Ethanol cally and pycr R: apparently pr (compilers).	LS: 'Ing c.p. grade .owed by evapn and dried in a desic- NaOH. The crystak :itrn with Trilon 'd method. 10 (calcd 40.20). 0.45 (calcd 29.69). Longed boiling of th anhydr CuSO4 . concn determined nometrically. recise to within		
	ide; NdCl ₃ ; [64-17-5] 732-18-5] of NdCl ₃ .6H ₂ C sample 2 g/100 g 35.54 36.80 38.86 43.19 47.60 tated whether ed as grams of ed by the comp to be a typogr olubility of 4 00 g (compiler EEDURE: red. Equilibrium the data points after 3 h of compiler by complexity of 4 1 dentical results after 3 h of compiler after 3 h of compiler after 3 h of compiler after 3 h of compiler by complexity of 4 a each aliquot a each aliquot a each aliquot a ds withdrawn a b the solid phases. a dat 126.9-12	ide; NdCl ₃ ; [64-17-5] 732-18-5] of NdCl ₃ .6H ₂ O in 96.8% C sample 2 sample 3 g/100 g g/100 g 35.54 35.44 36.80 36.87 38.86 39.39 43.19 48.64 ^d 47.60 47.68 tated whether the mixture ed as grams of hexahydrat ed by the compilers. to be a typographical err olubility of 42.89 g/100 00 g (compilers). EEDURE: red. Equilibrium was Identical results ob- ug equilibrium from above the data points in the after 3 h of equilibra- ing two data points 4 h of equilibration. a each aliquot taken for ned by complexometric on B. ds withdrawn at 20°C, 1 the solid phase to be a ethanol was not found phases. red at 126.9-128.1°C.	ide; NdCl_3;ORIGINAL MEASUide; NdCl_3;Sakharova, N.J[64-17-5]T.A.; Izmailor732-18-5]Zh. Neong. Kh732-18-5]PREPARED BY:T. Mioduski andSample 2of NdCl_3, 6H_20 in 96.8% C2H50H ^A sample 2sample 3sample 2sample 3g/100 gg/100 g35.5435.4435.5036.8036.8036.8736.8036.8738.8639.3943.1948.64d42.7847.6047.6848.18tated whether the mixture is 96.8 massed as grams of hexahydrate in 100 g ofed by the compilers.to be a typographical error in the Englolubility of 42.89 g/100 g, the correct00 g (compilers).SOURCE AND PURAUXILIARY INFORMATIONEEDURE:eed. Equilibrium from abovehe data points4 h of equilibration.ing two data points4 h of equilibration.is withdrawn at 20°C,it the solid phase to beet at 126.9-128.1°C.REFERENCES:ed at 126.9-128.1°C.	ORIGINAL MEASUREMENTS: ide; NdCl3; [64-17-5] 732-18-5] Sakharova, N.N.; Sakharova, A.A. [732-18-5] Sakharova, N.N.; Sakharova, A.A. 21. PREPARED SY: T. Mioduski and M. Salomon of NdCl3, 6H20 in 96.8% C2H50H ^a sample 2 sample 3 g/100 g g/100 g 35.54 35.44 36.80 36.87 36.80 36.87 36.86 39.39 39.03 39.05 43.19 48.64 ^d 42.78 42.89 47.60 47.68 48.18 47.84 tated whether the mixture is 96.8 mass % or 96.8 volu ed as grams of hexahydrate in 100 g of solvent. ed by the compilers. to be a typographical error in the English translatic olubility of 42.89 g/100 g, the correct value for thi 00 g (compilers). AUXILIARY INFORMATION ZEDURE: ed. Equilibrium was Identical results ob- g equilibrium trom above he date points in the		

COMPONENTS: (1) Neodym [10024	uium chloride; NdC -93-8]	,1 ₃ ;	ORIGINAL Racster Masters	ORIGINAL MEASUREMENTS: Racster, L.V. Masters Thesis. University of Illinois.			
(2) 1,2-Et C ₂ H ₆ O ₂	hanediol (ethylen ; [107-21-1]	e glycol);	Urbana,	IL. <u>1932</u>			
VARIABLES:	<u></u>		PREPARED	BY:			
T/K ≈ 283 -	333		M. Salo	mon and T. M	ioduski		
EXPERIMENTAL	VALUES:	-f astd alm	donaity/a	-3	colubility N/	a,b	
t/ ^o C	g Na ₂₀₃ in 10 cc experimental	oi satu sin average ^a	exptl	ava	mol dm ⁻³	mol kg ⁻¹	
10 10	1.5788 1.6205	1.5996	1.3123		0.9508	0.7245	
15 15	2.2830 2.2818	2.2824	1.4029 		1.3566	0.9670	
20 20	2.7850 2.8268	2.8059	1.4087 1.4087	1.4087	1.6678	1.1839	
25 25	2.7790 2.7895	2.7843	1.4550 1.4560	1.4555	1.6549	1.1370	
30 30	2.3184 2.3244	2.3214°	1.3490 1.3489	1.3490	1.3798	1.0229	
40 40	2.9200 2.9878	2.9539 ^d	1.4666 1.4666	1.4666	1.7554	1.1972	
50 50	3.3283 3.3750	3.3517	1.5050 1.5070	1.5060	1.9922	1.3228	
60 60	3.0925 3.0703	3.0814			1.8316		

^aCalculated by compilers.

 $^{\rm b}{\rm Calculated}$ by compilers from average mass ${\rm Nd_20_3}$ and average density of satd sln.

^CAuthor gives av value of 2.3218 g Nd₂O₃: this appears to be a typographical error.

^dAuthor gives av value of 2.9589 g Nd₂O₃: this appears to be a typographical error. The solid phase was not analyzed.

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: NdCl₃ and solvent placed in 250 cc glass stoppered bottle and mechanically agitated for 24 h. Rubber tubing placed over stopper and neck of bottle, and end of tubing sealed with a rubber stopper to prevent water from entering the bottle. Slns allowed to settle for 12-18 h, but slight turbidity persisted, particularly at the lowest and highest temps. At 60°C turbidity was significant and appeared different leading author to speculate possible reaction between solute and solvent. Results at 50° and 60°C said to be approximate. Duplicate 10 cc aliquots pipetted from the bottle for each temp. Each aliquot diluted with 25 cc H20 and the rare earth pptd as the oxalate with oxalic acid. The oxalate was filtered, ignited, and weighed as the oxide. Densities of satd slns detd pycnometrically using pycnometer calibrated at each temp. Densities at $10^{\circ}\mathrm{C}$ and 15°C may be high due to the condensation of atm water on the surface of the pycnometer.

SOURCE AND PURITY OF MATERIALS: NdCl₃ prepd by addn of HCl to spectro-pure Nd2O₃, and evapn of solvent until crystn. Crystals dehydrated by method of Kremers (2). Salt analyzed for presence of H₂O gravimetrically by conversion to oxalate and ignition to the oxide. No water of crystn was found. Ethylene glycol (source and purity not specified) was distilled and initial 5% of distillate discarded. The distilled solvant was stored in a flask sealed with paraffin.

ESTIMATED ERROR:

Soly: precision no better than <u>+</u> 3% (compilers).

Temp: not specified.

REFERENCES:

- Some data from Racster's Thesis was published in graphical form by Hopkins, B.S.; Quill, L.L. Proc. Natl. Acad. Sci. U.S.A. <u>1933</u>, 19, 64.
- Kremers, H.C. J. Am Chem Soc. <u>1925</u>, 17, 298.

COMPONENTS:	EVALUATOR:
(1) Neodymium chloride; NdCl ₃ ; [10024-93-8]	USA ET & DL Ft. Monmouth, NJ, U.S.A.
(2) 1-Propanol; C.H.O; [71-23-8]	and
(-, , 38,	Tomasz Mioduski
	Institute of Nuclear Research
	Warsaw, Poland

CRITICAL EVALUATION:

The solubility of NdCl₃ in 1-propanol has been reported in three publications (1-3). West (1) reported solubility data over the temperature range of 283-313 K, and his data are in volume units. The results for 273-323 K (2) and 298 K (3) are both in mass units, but there is serious disagreement between these two publications. For example at 298.2 K Grigorovich (2) reports a solubility of 1.587 mol kg⁻¹ (solid phase is NdCl₃·2C₃H₇OH), and Kirmse (3) reports a solubility of 1.295 % (the nature of the solid phase was not specified).

Since the difference in the results of (2,3) is much greater than the experimental precision in either study, a probable explaination is that the results of Grigorovich are for metastable equilibria (see the critical evaluations for the NdCl₃ - CH_3OH and NdCl₃ - C_2H_5OH systems).

Kirmse's data probably represent the stable system at 298 K, and for which we assign a tentative solubility of 1.295 mol kg⁻¹ and a solid phase of NdCl₃·nC₃H₇OH where $n \geq 3$.

Grigorovich's data probably represent metastable equilibria involving the solid phase NdCl₃·2C₃H₇OH, and for which the *tentative* solubilities at 273.2 K, 298.2 K and 323.2 K are 1.474 mol kg⁻¹, 1.547 mol kg⁻¹ and 1.483 mol kg⁻¹, respectively. Again the low solubility at 323.2 K either represents experimental error or (partial) reversion to the stable higher solvate system.

REFERENCES

- 1. West, D.H. Thesis. University of Illinois. Urbana, IL. <u>1932</u>. Some data from West's thesis were published in graphical form in reference 4 below.
- 2. Grigorovich, Z.I. Zh. Neorg. Khim. 1963, 8, 986.
- 3. Kirmse, E.M. Tr. II Vses Konf. po Teor. Rastvorov 1971, 200.

4. Hopkins, B.S.; Quill, L.L. Proc. Natl. Acad. Sci. U.S.A. 1933, 19, 64.

Neodymium Chloride 1				163	
COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8] (2) 1-Propanol; C ₃ H ₈ 0; [71-23-8]			ORIGINAL MEASUREMENT West, D.H. Masters Thesis. The Illinois. Urbana,	rS: e University of IL. <u>1932</u> . ¹	
VARIABLES			PREPARED BY:		
T/K = 283-313			M. Salomon and T. Mioduski		
EXPERIMENTAL VALUES:			<u></u>		
g t/ ^o C sa	Nd ₂ 0 ₃ in 10 c mple 1	c of saturate sample 2	ed sln average ^a	solubility of NdCl ₃ mol dm ⁻³	_
10 1.	4392	1.4694	1.4543	0.8644	
20 1.	8311	1.8353	1.8332	1.0896	
30 2.	0328	2.0293	2.0311	1.2072	
40 2.	5593	2.5753	2.5673	1.5260	
The solid phase was not analyzed.					
		AUXILIARY	INFORMATION		
AUXILIARY METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 cc of alcohol and excess salt placed in 250 cc glass stop- pered bottle, and rubber tubing placed over the stopper and neck of the bottle and a rubber stopper fitted into the open end of the tubing to prevent leakage of water into the bottle. The bottle was immersed in a thermostat and mechanically agitated for at least 12 h. The saturated solutions were then permitted to settle for a minimum of 12 h, and duplicate 10 cc aliquots removed with a pipet. Water was added to the aliquots and the sln heated and oxalic acid added to precipitate the rare earth oxalate. The precipitate was filtered, washed with dis- tilled water, and ignited and weighed as the oxide.			SOURCE AND PURITY OF NdCl ₃ prepd by add Nd ₂ O ₃ , and evapora which crystallized drate was dried in slowly increasing was stored in cork desiccator over P ₂ sion to the oxalat ide showed the sal cial alcohol place then distilled: th were discarded. Cu ESTIMATED ERROR: Soly: precision pr (compilers). Temp: precision ±	F MATERIALS: In of HCl to spectro-putting the sln to a past a upon cooling. The hy a stream of dry HCl b the temp. The anhyd s -stoppered bottles in 05. Analysis by conve e and ignition to the t to be anhydr. Comme d over CaO for 1 wk an e first and last 15-20 (SO4 test for H ₂ O was no obably within ± 3% 0.2 K (author).	re e - y alt a r- ox- r- d cc eg.

REFERENCES: 1. Some data from West's Thesis was published in graphical form by Hopkins, B.S. Quill, L.L. Proc. Natl. Acad. Sci. U.S.A. <u>1933</u>, 19, 64.

COMPONENTS:	ORIGINAL MEASUREMENTS:		
<pre>(1) Neodymium chloride; NdCl₃; [10024-93-8]</pre>	Grigorovich, Z.I.		
(2) 1-Propanol; C ₃ H ₈ 0; [71-23-8]	Zh. Neorg. Khím. <u>1963</u> , 8, 986–9.		
VARTABLES :	DEFDADED BY.		
Temperature	T. Mioduski		
-			
EXPERIMENTAL VALUES:			
	solubility ^a		
t/°c	mass % mol kg ⁻¹		
o	26.98 1.474		
25	28.46 1.587		
50	27.10 1.483		
^a Molalities calculated by the compiler. At $MdCl_3 \cdot 2C_3H_7^{OH}$.	25 ⁰ C the solid phase is		
METUOD ADDADATIIS (DEACEDINDE.			
Isothermal method used. Solutions were	NdCl ₃ prepared by dissolving "experimental"		
Both the saturated solutions and the solid	grade oxide in distilled HCL. The resulting chloride was dehydrated by treatment with		
phase were analyzed for NdCl ₃ (no details	thionyl chloride (1).		
were grven).	The alcohol was purified and dried by		
The alcohol adduct was studied thermo- graphically.	"standard methods."		
	ESTIMATED ERFOR-		
	Soly: author states accuracy to be about 0.05 %.		
	Temp: nothing specified.		
	REFERENCES:		
	1. Freeman, I.H. J. Inorg. Nucl. Chem. <u>1958</u> , 7, 286.		

COMPONENTS :			ORIGINAL MEASUREN	ÆNTS:	
(1) Neodymium chlori [10024-93-8]	.de; NdCl ₃ ;		Kirmse, E.M.		
(2) Alcohols			Tr. II Vses. Konf. po Teor. Rastvorov <u>1971</u> , 200-6.		
VARIABLES:			PREPARED BY:		
T/K = 298			T. Mioduski and	M. Salomon	
EXPERIMENTAL VALUES:				<u></u>	
			NdCl ₃ solut	pility ^{a,b}	
solvent			mass %	mol kg ⁻¹	
2-methoxyethanol;	°3 ^{H8} °2;	[109-86-4]	16.8	0.806	
2-ethoxyethanol;	^C ^H 10 ⁰ 2;	[110-80-5]	18.3	0.894	
1,2-ethanediol;	^с 2 ^н 6 ⁰ 2;	[107-21-1]	31.0	1.793	
l-propanol;	с _{3^н8} о;	[71-23-8]	24.5	1.295	
B. Molalities celculate	d by the co	mpilers.			
101a110103 Curculate	a by one co	mp11010.			
Nature of the solid	phases not	specified.			
			- <u>-</u>		
		AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCE	DURE:		SOURCE AND PURITY	OF MATERIALS:	
Experimental details probably similar to p	not given, revious worl	but were ks of the	work by the auth	ors the aphydrous salt was	
author which are comp volume.	iled throug	nout this	probably prepare and Carter (1).	d by the method of Taylor	
			ESTIMATED ERROR:	_	
			Notning specifie	a.	
			REFERENCES:	Carter, C.P.	
			J. Inorg. Nuc	l. Chem. <u>1962</u> , 24, 387.	

COMPONENTS:			ORIGINAL MEASUREMENTS:		
(1) Neodymium chloride; NdCl ₃ ;			West, D.H.		
(2) 2-Propanol; C ₃ H ₈ 0; [67-63-0]			Masters Thesis. The University of Illinois. Urbana, IL. <u>1932</u> 1		
VARIABLES:			PREPARED BY:		
т/к = 283 - 31	.3		M. Salomon and	T. Mioduski	
			<u></u>		
EXPERIMENTAL VA	LUES:				
	g Md_20_3 in	10 cc of satura	ted sln	solubility of NdCl ^b 3	
t/ ⁰ C	sample l	sample 2	average ^a	mol dm ⁻³	
10	0.0152	0.0149	0.0151	0.00895	
20	0.0175	0.0187	0.0181	0.0108	
30	0.0300	0.0295	0.0298	0.0177	
40	0.0743	0.0710	0.0727	0.0432	
The solid phase was not analyzed.					
-		AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 cc of alcohol and excess salt placed in 250 cc glass stop- pered bottle, and rubber tubing placed over the stopper and neck of the bottle and a rubber stopper fitted into the open end of the tubing to prevent leakage of water into the bottle. The bottle was immersed in a thermostat and mechanically agitated for at least 12 h. The saturated solutions were then permitted to settle for a minimum of 12 h, and duplicate 10 cc aliquots removed with a pipet. Water was added to the aliquots and the sin heated and oxalic acid added to pre- cipitate the rare earth oxalate. The pre- cipitate was filtered, washed with distilled water, and ignited and weighed as the oxide.			SOURCE AND PURIT NdCl ₃ prepd by a Nd ₂ O ₃ , and evapo which crystalliz was dried in a s increasing the t stored in cork-s cator over P ₂ O ₅ , the oxalate and the salt to be a placed over CaO led: the first carded. CuSO ₄ t ESTIMATED ERROR: Soly: precision (compilers Temp: precision REFERENCES: 1. Some data from ed in graphic Quill, L.L. F 1933, 19, 64.	Y OF MATERIALS: addn of HCl to spectro-pure brating the sln to a paste zed upon cooling. The hydrate stream of dry HCl by slowly temp. The anhyd salt was stoppered bottles in a desic Analysis by conversion to ignition to the oxide showed anhydr. Commercial alcohol for 1 week and then distil- and last 15-20 cc were dis- test for H ₂ 0 was negative. probably within $\pm 3\%$ s). ± 0.2 K (author). Dom West's Thesis was publish- cal form by Hopkins, B.S.; Proc. Natl. Acad. Sci. U.S.A.	

COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8]	ORIGINAL MEASUREMENTS: Merbach, A.; Pitteloud, M.N.; Jaccard, P. Helv. Chim. Acta <u>1972</u> , 55, 44-52.		
(2) 2-Propanol; C ₃ H ₈ 0; [67-63-0]	Pitteloud, M.N. These. Faculte des Sciences de l'Universite de Lausanne. <u>1971</u> .		
VARIABLES:	PREPARED BY:		
$\pi/r = 208.0$	T Mioduski and M Salomon		
1/4 - 290.2	1. HOULSKI and M. DATOMON		
EXPERIMENTAL VALUES:	l		
t/ ^o C	mean solubilities/mol kg ⁻¹		
t/ ^o c	a b		
25	0.04 0.06		
	0.04		
a. Initial salt is the adduct $MdCl_3 \cdot 3C_3H_7$ found to be $NdCl_3 \cdot 3C_3H_7OH$.	DH. Equilibrated solid phase analyzed and		
b. Solutions equilibrated with anhydrous I analyzed, but assumed by the compilers	MCL_3 . Equilibrated solid phases not to be $MdCl_3.3C_3H_7OH$.		
	5 - 5		
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method as in (1,2). Mixtures were equilibrated for at least 4 days. Pro- longed operations were performed in a dry box. Neodymium determined by titration with (NH ₄) ₃ H(EDTA) using a small amount of uro- tropine buffer and Xylenol Orange indicator. Chloride was determined by potentiometric titration with AgNO ₃ solution. Composition of the adduct NdCl ₃ .3C ₃ H ₈ O confirmed by ¹ H NMR and X-ray diffraction.	SOURCE AND PURITY OF MATERIALS: Nd ₂ O ₃ of at least 99.9% purity dissolved in HCl to produce the hexahydrate. The salt was dehydrated as in (3). The adduct NdCl ₃ .3C ₃ H ₈ O prepared by dissolving the hydrate in a small excess of o-methylformate followed by distillation and trans-solvation of the methanol complex with 2-propanol. Iso-propanol (Fluka) was used as received. Purity and absence of water was confirmed by MMP		
The reported solubilities are mean values of 2-4 determinations.	by mm.		
	ESTIMATED ERROR:		
COMMENTS AND/OR ADDITIONAL DATA:	ESTIMATED ERROR: Soly: precision ± 0.5% as in (1) (compilers).		

COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8] (2) 2 2 Decembrical (chronol) 6 H 2			ORIGIN Dawso Maste	ORIGINAL MEASUREMENTS: Dawson, L.R. Masters Thesis. University of Illinois.			
(2) 1,2,3- [56-81	Propanetrioi (giy 5]	'cerol); U ₃ n ₈ 0	'3'	Urban	a, IL. <u>19</u>	<u>32</u> .1	
VARIABLES:				PREPA	RED BY:		
T/K = 283 -	• 333			M. Sa	lomon and	T. Mioduski	
EXPERIMENTA	L VALUES: g Nd ₂ 0 ₃ in 25 cc	satd sln	den	usity/g	cm ⁻³	soly Na	dCl ^{a,b} 3
t/ ^o C	experimental	average	exp	tl	ave ^C	mol dm ⁻³	mol kg ⁻¹
10 10	0.4982 0.4959	0.4971	1.2 1.2	2690 2784	1.2737	0.1182	0.0928
20 20	2.7237 2.7290	2.7264	1.3 1.3	3593 3597	1.3595	0.6482	0.4768
25 25	2.1932 2.1851	2.1892	1.3 1.3	3386 3403	1.3395	0.5205	0.3886
30 30	1.3407 1.3429	1.3418	1.3 1.3	3135 3147	1.3141	0.3190	0.2428
40 40	2.2771 2.2793	2.2782	1.3 1.3	330 329	1.330	0.5417	0.407
50 50	3.0694 3.0875	3.0785	1.3 1.3	3727 3718	1.3723	0.7319	0.5334
60 60	2.8782 2.8865	2.8824				0.6853	
^a Calculated	i by compilers.	_	-		-	_	
^b Based on a	verage mass of Nd	¹ 2 ⁰ 3. The s	olid	i phase	was not a	analyzed.	
_ Recarcuray	ed by compilers.	AUXIL	TARY	TNFORM	44TTON		
NETHOD /APPA	PATUS / PPOCEDURE :			Teoligci	- AND DIRI	W OF MATERIA	
METHOD/APPARATUS/PROCEDURE: About 175 cc glycerol placed in 250 cc glass stoppered bottles and "liberal amounts" of salt added. Mixtures mechanically agitated in thermostat for 2 ¹ h, then permitted to stand for 15 h after which slns were still turbid. For analyses, duplicate 25 cc ali- quots of turbid slns were taken from each bot tle and the rare earth pptd as the oxalate. The ppt was filtered, ignited, and weighed as the oxide. Author states the presence of turbidity had a small effect on the overall			ass f ed .1 .1 bot e. ed as	NdCl ₃ Nd ₂ O ₃ point carri room ll0 ^o C prepd H ₂ SO ₄ c.p. reduce rejec	E AND FULL prepd by of crysta ed out in temp for 2 for ~ 6 H from NaCl drying to or A.R. gr ed pressu ted (no ot	TY OF TRAIENTS adding HCl to porating the s illization. I a stream of d 24 h, then at 1, and 200°C f 1 + H ₂ SO ₄ and pwers. Glycer rade: compiler re and the "fi ther details (NS: D spectro-pure solvent to the Dehydration was dry HCl first at 100°C for ~ 12 h for 3-4 h. HCl passed through rol (presumably rs) distilled at irst portion" given).
accuracy of the soly determinations. Densi- ties of satd slns determined by withdrawing samples from the bottles, placing them into a pycnometer, and weighing "as quickly as possible." The pycnometer was calibrated for each temp. COMMENTS AND/OR ADDITIONAL DATA:			ESTIM Soly: temp around due to Temp:	ATED ERROF based upo control, c d ± 3% (cc o turbidit precision run where	The precision is the precision of the precision of the precision of the precision of the precision with the	in analyses and sion in soly rror in accuracy ept for the 10° C as ± 1.5 K.	
Since there is a sharp rise in soly from 10° C to 20° C followed by a sharp decrease to 30° C at which point the soly begins to rise again, it is evident that the solid phase in equil with the satd slns is changing. Unsuccessful attempts were made to isolate and identify the solid phases.			REFER 1. Son pul B.: Sc	ENCES: me of the blished ir S.; Quill, ¿. U.S.A.	data from Daw 1 graphical fc , L.L. Proc. N <u>1933</u> , 19, 61	vson's Thesis was orm by Hopkins, Vatl. Acad. 4.	

COMPONENTS :			ORIGINAL MEASUREM	ents:	
(1) Neodymiu [10024-9 (2) 1-Butano	m chloride; NdC 3-8] 1; C ₄ H ₁₀ 0; [71	²¹ 3; 36-3]	West, D.H. Masters Thesis. The University of Illinois. Urbana, IL. <u>1932</u> . ¹		
VARIABLES:			PREPARED BY:		
T/K = 283 - 313			M. Salomon and T. Mioduski		
EXPERIMENTAL VA	ALUES:				
	g Nd ₂ 03	in 10 cc of satu	rated sln	Solubility of $MdCl_3^b$	
t/ ^o C	sample 1	sample 2	average ^a	mol dm ⁻³	
10	1.9230	1.9047	1.9139	1.1376	
20	2.1378	2.1323	2.1351	1.2691	

^aCalculated by compilers

30

40

 $^{\rm b} {\rm Calculated}$ by compilers using average mass of ${\rm Nd}_2 {\rm 0}_3.$

2.3028

2.8954

2.2974

2.9250

The solid phase was not analyzed.

2.3001

2.9102

1.3672

1.7298

. ,

AUXILIARY INFORMATION

METHOD/APPARATUS/PROCEDURE: Isothermal method. About 100 cc of alcohol and excess salt placed in 250 cc glass stop- pered bottle, and rubber tubing placed over the stopper and neck of the bottle and a rubber stopper fitted into the open end of the tubing to prevent leakage of water into the bottle. The bottle was immersed in a thermostat and mechanically agitated for at least 12 h. The saturated solutions were then permitted to settle for a minimum of 12 h, and duplicate 10 cc aliquots removed with a pipet. Water was added to the aliquots and the sln heated and oxalic acid added to precipitate the rare earth oxalate. The precipitate was filtered, washed with dis- tilled water, and ignited and weighed as the oxide.	<pre>SOURCE AND PURITY OF MATERIALS: NdCl₃ prepd by addn of HCl to spectro-pure Nd₂O₃, and evaporating the sln to a paste which crystallized upon cooling. The hydrate was dried in a stream of dry HCl by slowly increasing the temp. The anhyd salt was stored in cork-stoppered bottles in a desic- cator over P₂O₅. Analysis by conversion to the oxalate and ignition to the oxide showed the salt to be anhydr. Commercial alcohol placed over CaO for 1 week and then distil- led: the first and last 15-20 cc were dis- carded. CuSO₄ test for H₂O was negative. ESTIMATED ERROR: Soly: precision probably within ± 3% (compilers). Temp: precision ± 0.2 K (author). REFERENCES: 1. Some data from West's Thesis was publish- ed in graphical form by Hopkins, B.S.;</pre>
precipitate the rare earth oxalate. The precipitate was filtered, washed with dis- tilled water, and ignited and weighed as the oxide.	<pre>ESTIMATED ERROR: Soly: precision probably within ± 3% (compilers). Temp: precision ± 0.2 K (author). REFERENCES: 1. Some data from West's Thesis was publish- ed in graphical form by Hopkins, B.S.; Quill, L.L. Proc. Natl. Acad. Sci. U.S.A. 1933, 19, 64.</pre>

COMPONENTS:	ORIGINAL MEASUREMENTS:		
<pre>(1) Neodymium chloride; NdCl₃; [10024-93-8]</pre>	Grigorovich, Z.I.		
(2) 1-Butanol; C ₁ H ₁₀ 0; [71-36-3]	Zh. Neorg. Khim. <u>1963</u> , 8, 986–9.		
4 10			
VARTABLES :	DDEDADEN RV.		
Temperature	T. Mioduski		
EXPERIMENTAL VALUES:			
	solubility ^a		
t/ ^o c	mass % mol kg ⁻¹		
0	16.01 0.761		
25	17.64 0.855		
50	25.00 1.330		
2NdCl ₃ .3C ₄ H ₉ OH.			
AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. Solutions were thermostated and equilibrated for 3 days. Both the saturated solutions and the solid phase were analyzed for NdCl ₃ (no details were given). The alcohol adduct was studied thermo- graphically.	SOURCE AND PURITY OF MATERIALS: NdCl ₃ prepared by dissolving "experimental" grade oxide in distilled HCl. The resulting chloride was dehydrated by treatment with thionyl chloride (1). The alcohol was purified and dried by "standard methods."		
	ESTIMATED ERROR: Solv: author states accuracy to be about		
	0.05%.		
	Temp: nothing specified.		
	REFERENCES: 1. Freeman, I.H. J. Inorg. Nucl. Chem. <u>1958</u> , 7, 286.		

COVIDE				ODICINAL MEACH		
(1) Neodymium chloride; NdCl ₃ ;			-3;	ORIGINAL MEASUREMENTS: West. D.H.		
[10024-93-8]). <i>C</i> U O.	Masters Thesis. The University of Illinois.		
(2)	1-Pentanol [71-41-0]	(amyi alconol	- ⁷ ; ⁰ 5 ⁿ 12 ⁰ ;	Urbana, IL. <u>1</u>	932.1	
VARIA	BLES:			PREPARED BY:		
T/K	= 283 - 313			M. Salomon an	d T. Mioduski	
EXPER	IMENTAL VALU	ES:			a,b	
		g Nd ₂ 03 i	n 10 ce of satu	rated sln	solubility of NdCl ₃	
	t/ ^o C	sample 1	sample 2	average	mol dm ⁻³	
	10	2.5211	2.4910	2.5061	1.4896	
	20	2.5312	2.5403	2.5358	1.5072	
	30	2.5545	2.5825	2.5685	1.5267	
	40	2.8731	2.8873	2.8802	1.7120	
я						
Cai	curated by a	compiters.				
^b Cal	culated by (compilers from	n average mass N	1ª2 ⁰ 3.		
			The solid phas	e was not anal	yzed.	
			·····			
			AUXILIARY	INFORMATION		
METHO	D/APPARATUS/	PROCEDURE:	an of sloopol	SOURCE AND PUR	ITY OF MATERIALS:	
and e	ermai metho excess salt j	placed in 250	cc glass stop-	NdCl ₃ prepd b NdcO ₂ , and ev	y addn of HCl to spectro-pure aporating the sln to a paste	
pered the s	l bottle, and i	d rubber tubin neck of the bo	ng placed over ottle and a rub-	which crystal	lized upon cooling. The hy-	
ber s	stopper fitt	ed into the or	pen end of the	slowly increa	sing the temp. The anhyd salt	
tubir bottl	e. The bot	t leakage of w tle was immers	sed in a ther-	was stored in designator ov	cork-stoppered bottles in a er PoOr. Analysis by conver-	
moste	at and mecha	nically agitat	ted for at least were then per-	sion to the o	xalate and ignition to the	
mitte	ed to settle	for a minimum	n of 12, and	oxide showed mercial alcoh	the salt to be annydr. Com- ol placed over CaO for 1 wk and	
dupli pipet	cate 10 cc . Water wa	aliquots remov s added to the	ved with a e aliquots and	then distille	d: the first and last 15-20 cc d. CuSOL test for HoO was neg.	
the s	aln heated a	nd oxalic acid e earth oxalat	d added to pre- te. The pre-	ESTIMATED ERRC	R:	
cipit	ate was fil	tered, washed ed and weighed	with distilled as the	Soly: precisi (compil	on probably within $\pm 3\%$ ers).	
oxide				Temp: precisi	on \pm 0.2 K (author).	
				REFERENCES:		
				1. Some data	from West's Thesis was pub- graphical form by Hopkins, B.S.	
				Quill, L.I	. Proc. Natl. Acad. Sci. U.S.A.	
i I				<u>1933</u> , 19,	04.	

COMPONENTS :		ORIGINAL MEASUREMENTS:		
<pre>(1) Neodymium chloride; N [10024-93-8]</pre>	NdCl ₃ ;	Grigorovich, Z.I.		
(2) 1-Pentanol; C ₅ H ₁₂ O;	[71-41-0]	2n. Neorg. Khim. <u>1963</u> , 8, 986–9.		
VARIABLES:		PREPARED BY.		
Temperature		T. Mioduski		
EXPERIMENTAL VALUES:				
		solubili	ty ^a	
	t/ ^o C	mass %	mol kg ⁻¹	
	0	15.96	0.758	
	25	15.30	0.721	
	50	14.23	0.662	
	AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Isothermal method used. S thermostated and equilibra Both the saturated solution phase were analyzed for No were given). The alcohol adduct was stu graphically.	Solutions were ated for 3 days. Ans and the solid ACL ₃ (no details adied thermo=	SOURCE AND PUF NdCl ₃ prepare grade oxide i chloride was thionyl chlor The alcohol w "standard met	RITY OF MATERIALS: d by dissolving "experimental" n distilled HC1. The resulting dehydrated by treatment with ide (1). as purified and dried by hods."	
		Soly: author 0.05%.	states accuracy to be about	
		Temp: nothing	specified.	
		REFERENCES: 1. Freeman, I <u>1958</u> , 7, 2	.н. J. Inorg. Nucl. Chem. 86.	

COMPONENTS:		ORIGINAL MEASUREMENTS:		
(1) Neodymium chloride; NdCl ₃ ;		McCarty, C.N.		
[10024-93-8]	J	Harton all	nianaa Thasis maa Matana at	
(2) 2-Methoxyethanol (methyl cellosolve);		of Illinois. Urbana, IL, USA. 1933.		
$C_{2}H_{8}O_{2};$ [109-86-4]				
502				
VARIABLES:		PREPARED BY:		
T/K = 273 - 323		M. Salomon ar	nd T. Mioduski	
EXPERIMENTAL VALUES:				
	Composition of Sat	curated Solutio	ons	
	B O FR	NACI D	Naci b	
	¹¹¹ 2 ⁰ 3		¹¹⁰⁰¹ 3	
t/ ^o c	g/25 cc	g/dm ³	mol/dm ³	
n	0.3470	20.67	0.0825	
10	0.5709	34.02	0.1357	
20	0.7465	44.48	0.1775	
30	0.9132	54.41	0.2171	
40	1.1691 1.265h	09.00 75.30	0.2100	
<u>,</u>	1.20)4	17.39	0.3009	
^a Apparently these are ave	rage values of at le	east two analys	es from a given bottle. The	
author did not indicate	whether there were a	my differences	in results using NdCl ₃ from	
preparations 1 and 20				
B Recalculated by the comp	ilers using 1977 IUB	AC recommended	atomic masses.	
Equilibrated solid phase not englyzed				
Equilibrated solid phase not analyzed				
	AUXILIARY	INFORMATION		
METHOD ADDADATUS ADDOCEDUDE	•	SOURCE AND DUE		
Isothermal method. About	: 75-100 cc of sol-	Commercial so	lvent was permitted to stand	
vent + excess salt were p	laced in bottles and	over CaO for	at least 1 wk and then distil-	
agitated in a thermostat	for at least 12 h.	led. A middl	e portion (fraction not speci-	
Ice + water was used for t	the O ^O C measure-	fied) was ret	ained and stored in a stoppered	
ments. The bottles were a	fitted with ground	flask: b.p. 1 double ammoni	23°C. Nd salts prepd in 1925 as	
mosphere by placing gum ru	bher tubing over	scopic purity	" and converted to the oxide	
the stoppers and necks of	the bottles, and a	(no details)	and the anhydr chloride prepd	
rubber stopper was fitted	into the open end	by two method	s. 1. The oxide was dissolved	
of the tubing. After equi	llibration, the	in aq HCl and	the excess HCl evapd. The	
solutions were allowed to	settle for at least	crystallized	salt was dehydrated by heating	
two samples were removed	for analysis. The	for several h	then at 200°C. 2. The rare	
samples were evaporated to	dryness and dis-	earth benzoat	e was pptd from the aq chloride	
solved in aq HCl and pptd	as the oxalate by	or nitrate wi	th sodium benzoate, and the	
addn of oxalic acid. The	samples were fil-	benzoate dehy	drated by heating to 110°C for	
tered, washed with dist wa	ter and ignited to	at least 24 h	. Extraction of the chloride	
Was found to be insoluble	in the organic	resulting chl	oride heated at 60°C first in	
solvent.	one or Banre	a stream of d	ry HCl and then in dry air.	
ESTIMATED ERROR:		The salt was	stored in a desiccator over	
Solv: precision probably	vithin 3%	HoSOL and by	1 was prepd from NaCl +	
(compilers).		through H2SO4	drying towers.	
Temp: precision \pm 0.2 K (a	uthor).		ſ	

•

NdCl ₃ ; (hyl cellosolve); (5] Composition of S Nd ₂ 0 ^a g/25 cc 0.2656 0.4642 0.6396 0.7627 0.9410 1.1581 rerage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	McCarty, C.N. Master of Science Thesis. The Universit of Illinois. Urbana, IL, USA. <u>1933</u> . PREPARED BY: M. Salomon and T. Mioduski aturated Solutions NdCl b NdCl b g/dm ³ mol/dm ³ 15.82 0.0631 27.66 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
Composition of S Nd ₂ 0 ^a g/25 cc 0.2656 0.4642 0.6396 0.7627 0.9410 1.1581 rerage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	Mastet of Science Thesis. The Universit of Illinois. Urbana, IL, USA. <u>1933</u> . PREPARED BY: M. Salomon and T. Mioduski aturated Solutions NdCl ₃ ^b NdCl ₃ ^b g/dm ³ mol/dm ³ 15.82 0.0631 27.66 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
Composition of S Nd ₂ O ₃ g/25 cc 0.2656 0.4642 0.6396 0.7627 0.9410 1.1581 rerage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	PREPARED BY: M. Salomon and T. Mioduski aturated Solutions NdCl 3 g/dm mol/dm ³ 15.82 0.0631 27.66 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
Composition of S Nd ₂ 0 ₃ ^a g/25 cc 0.2656 0.4642 0.6396 0.7627 0.9410 1.1581 Terage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	PREPARED BY: M. Salomon and T. Mioduski aturated Solutions NdCl_3 NdCl_3 g/dm mol/dm 15.82 0.0631 27.66 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl_3 from PAC recommended atomic masses. id phase not analyzed.
Composition of S Nd ₂ O ₃ ^a g/25 cc 0.2656 0.4642 0.6396 0.7627 0.9410 1.1581 Terage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	M. Salomon and T. Mioduski aturated Solutions NdCl ₃ ^b NdCl ₃ ^b g/dm ³ mol/dm ³ 15.82 0.0631 27.66 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ from PAC recommended atomic masses. id phase not analyzed.
Composition of S Nd ₂ O ₃ ^a g/25 cc 0.2656 0.4642 0.6396 0.7627 0.9410 1.1581 rerage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	aturated Solutions NdCl ₃ ^b NdCl ₃ ^b g/dm ³ mol/dm ³ 15.82 0.0631 27.66 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
Composition of S Nd ₂ 0 ₃ ^a g/25 cc 0.2656 0.4642 0.6396 0.7627 0.9410 1.1581 Terage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	aturated Solutions NdCl ₃ ^b NdCl ₃ ^b g/dm ³ mol/dm ³ 15.82 0.0631 27.66 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
Composition of S Nd ₂ 0 ₃ ^a g/25 cc 0.2656 0.4642 0.6396 0.7627 0.9410 1.1581 Terage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	aturated Solutions NdCl ₃ ^b NdCl ₃ ^b g/dm ³ mol/dm ³ 15.82 0.0631 27.66 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
Nd ₂ 0 ₃ ^a g/25 cc 0.2656 0.4642 0.6396 0.7627 0.9410 1.1581 Terage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	NdCl ₃ ^b NdCl ₃ ^b g/dm ³ mol/dm ³ 15.82 0.0631 27.66 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
g/25 cc 0.2656 0.4642 0.6396 0.7627 0.9410 1.1581 Terage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	g/dm ³ mol/dm ³ 15.82 0.0631 27.66 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
0.2656 0.4642 0.6396 0.7627 0.9410 1.1581 The whether there were pilers using 1977 IU Equilibrated sol	15.820.063127.660.110437.950.151445.440.181356.070.223769.000.2753east two analyses from a given bottle. Thany differences in results using NdCl3 froPAC recommended atomic masses.id phase not analyzed.
0.2050 0.4642 0.6396 0.7627 0.9410 1.1581 The address of at 1. Whether there were pilers using 1977 IU Equilibrated sol	15.02 0.0031 27.66 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
0.4042 0.6396 0.7627 0.9410 1.1581 whether there were pilers using 1977 IU Equilibrated sol	27.00 0.1104 37.95 0.1514 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
0.0390 0.7627 0.9410 1.1581 whether there were pilers using 1977 IU Equilibrated sol	91.97 0.1914 45.44 0.1813 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
0.027 0.9410 1.1581 Terage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	45.44 0.1013 56.07 0.2237 69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
1.1581 rerage values of at 1 whether there were pilers using 1977 IU Equilibrated sol	69.00 0.2753 east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
rerage values of at low whether there were pilers using 1977 IU. Equilibrated sol	east two analyses from a given bottle. Th any differences in results using NdCl ₃ fro PAC recommended atomic masses. id phase not analyzed.
rerage values of at low whether there were a pilers using 1977 IU. Equilibrated sol	east two analyses from a given bottle. Th any differences in results using NdCl3 fro PAC recommended atomic masses. id phase not analyzed.
AUXILIAR	Y INFORMATION
IRE:	SOURCE AND PURITY OF MATERIALS:
t 75-100 cc of sol- placed in bottles an for at least 12 h. the 0°C measurements with ground glass from the atmosphere bing over the stop- ttles, and a rubber the open end of the tion, the solutions or at least 12 h, an pipet, two samples s. The samples were d dissolved in aq ate by addn of oxali filtered, washed wit o constant weight as s found to be in- olvent.	Commercial solvent was permitted to sta over CaO for at least 1 week and then d led. A middle portion (fraction not sp fied) was retained and stored in a stop flask: b.p. 134°C. Nd salts prepd in 19 double ammonium nitrates were of "spect scopic purity" and converted to the oxi (no details) and the anhydr chloride pr by two methods. 1. The oxide was disso in aq HCl and the excess HCl evapd. T crystallized salt was dehydrated by hea in the presence of dry HCl first at 100 for several h, then at 200°C. 2. The earth benzoate was pptd from the aq chl c or nitrate with sodium benzoate, and th benzoate dehydrated by heating to 110°C at least 24 h. Extraction of the chlor was carried out with HCl satd ether, an resulting chloride heated at 60°C first stream of dry HCl and then in dry air. salt was stored in a desiccator over P ₂ Dry HCl was prepd from NaCl + H ₂ SO ₄ and passing the resulting HCl through H ₂ SO ₄ drying towers.
	RE: t 75-100 cc of sol- placed in bottles an for at least 12 h. the 0°C measurement with ground glass from the atmosphere bing over the stop- ttles, and a rubber the open end of the tion, the solutions or at least 12 h, an pipet, two samples s. The samples were d dissolved in aq ate by addn of oxali filtered, washed wit o constant weight as s found to be in- olvent.

COMPONENTS .	ORTGINAL MEASUREMENTS .
(1) New down as lowed to MICL	Dzhurzev Kh Sh · Mircoidov II ·
(1) Neodymium chioride; Naci3, [10024-93-8]	Kurbanbekov, A.; Rakhimova, A.
(2) Diethyl ether (ethyl ether); C ₄ H ₁₀ 0; [60-29-7]	Dokl. Akad. Nauk Tadzh. SSR <u>1976</u> , 19, 32-4.
VARIABLES:	PREPARED BY:
T/r = 202	T Mioduski
1/1 - 293	11 Middubki
EXPERIMENTAL VALUES:	
The solubility of $MdCl_3$ in diethyl ether at	20°C was reported to be
5.8 x	10 ⁻³ mass %
The corresponding molality calculated by the	e compiler is
2.31 x 1	L0 ⁻⁴ mol kg ⁻¹
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:
attained within 24 h and it was verified by	solvate method (no details given).
constancy in the Nd concentration. Both the saturated solution and the equilibrated	Ethyl ether was dried with Na and
solid phase were analyzed. Nd determined	distilled from LiAlH ₄ .
of urotropine buffer and methyl-thymol blue	
indicator. Chloride determined by titra-	
ponded to NdCl ₃ .0.3Et ₂ 0 (the etherate was	
dried under vacuum at 40°C prior to analysis).	
	ESTIMATED ERROR:
	Nothing specified.
	REFERENCES:

				_	
COMPONENTS: (1) Neodymium chloride; NdC [10024-93-8]	ORIGINAL MEAS Kirmse, E.M J.; Oelsner	ORIGINAL MEASUREMENTS: Kirmse, E.M.; Zwietasch, K.J.; Tirschmann, J.; Oelsner, L.; Niedergeases, U.			
(2) Ethers		Z. Chem. <u>19</u> Kirmse, E.M	<u>68</u> , 8, 472-3 . Tr. II Vs 1971 - 200-6	es. Konf. po Teor.	
		1445-64674.	<u>1911</u> , 200-0.		
VARIABLES:		PREPARED BY:			
Room temperature: T/K around	1 298	T. Mioduski	and M. Salo	mon	
EXPERIMENTAL VALUES:	<u> </u>	- I	<u></u>		
			solu	bility ^{a,b}	
solvent			mass %	mol kg ⁻¹	
1-ethoxy-2-methoxyethane;	°5 ^H 12 ⁰ 2;	[5137-45-1]	0.04	1.6 x 10 ⁻³	
1-methoxypentane;	°6 ^H 14 ⁰ ;	[628-80-8]	0.07	2.8×10^{-3}	
1,3-dioxolane;	^C 3 ^H 6 ⁰ 2;	[646-06-0]	0.8	3.2×10^{-2}	
1,4-dioxane;	с ₄ н ₈ 0 ₂ ;	[123-91-1]	0.1	4.0 x 10 ⁻²	
⁸ Molalitics aslaulated by the	aompilanc				
Molalities carculated by the	compilers.				
Nature of the solid phases r	not specified.				
	AUXILIAR	Y INFORMATION			
METHOD / APPARATUS / PROCEDURE:	ere isother-	SOURCE AND P	URITY OF MAT	ERIALS:	
mally agitated at 25°C or at	room tempera-	method of Ta	aylor and Ca	rter (1).	
found for the solubility was mental error limits.	within experi-	No other in:	formation gi	ven.	
Nd was determined by complexe	ometric titra-				
No other details given.					
		ESTIMATED ER	ROR:		
		Nothing spec	ified.		
		REFERENCES: 1. Taylor, N J. Inorg.	REFERENCES: 1. Taylor, M.D.; Carter, C.P. 1. Twong Nucl Chem 1062 24 287		
		1			

		_	
COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8] (2) Alkyl ethers	ORIGINA Kirmse Z. Che	L MEASUREMENT: , E.M.; Dress m. <u>1975</u> , 15,	S: ler, H. 239-40.
VARIABLES: Room Temperature (293-298 K)	PREPARE T. Mio	D BY: duski and M.	Salomon
EXPERIMENTAL VALUES:			
solvent		sol mass %	ubility ^a mol kg ⁻¹
1-methoxyheptane; C.H. 0; [629-3	32-3]	0.4 ^b	0.016
l-methoxynonane; C ₁₀ H ₂₂ 0; [7289-	-51-2]	0.02 ^c	8×10^{-4}
^a Molalities calculated by the compilers.			
^b Solid phase NdCl ₃ : $C_8H_{18}O$ found to be 1: > 2	2.		
^C Solid phase not specified.			
AUXILIARY	INFORMAT	ION	
The solute-solvent mixtures were isother- mally agitated (at room temperature) until equilibrium was attained. The anhydrous reagents were handled in a dry box contain- ing P_40_{10} . Nd was determined by complexo- metric titration using Xylenol Orange indi- cator. The reported solubilities are mean values based on four determinations.	Nothing	AND FURILI OF	MATERIALS;
	ESTIMAT	ED ERROR:	
	Notning	; speciried.	
	REFEREN	CES:	·

COMPONENTS:	ORIGINAL MEASUREMENTS:
(1) Neodymium chloride; NdCl ₃ ;	Rossmanith, K.; Auer-Welsbach, C.
[10024-93-8]	Hanath Cham 1965 06 602 5
(2) Tetrahydrofuran; $C_{L}H_{g}O;$ [109-99-9]	Monatsh. Chem. <u>1985</u> , 78, 602-5.
4 0	
VARIABLES:	PREPARED BY:
Room temperature: T/K about 293	T. Mioduski
EXPERIMENTAL VALUES:	
The solubility of NdCl ₃ in tetrahydrofuran at reported as	room temperature (about 20 ⁰ C) was
1.16 g/100 ml solution (0.04	6 mol dm ⁻³ , compiler).
1,10 B, 200 ml 00101100 (000	, mor am , compress,
	INFORMATION
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS: Sources and purities not specified.
was equilibrated in an extractor for 60-80	NdCl ₃ prepared by reaction of the oxide at
hours at room temperature. Neodymium was de-	high temperatures with an excess of NH ₄ Cl
titration with EDTA using Xylenol Orange	rent of dry nitrogen, and then in vacuum
indicator. For the solid phase analysis,	to remove unreacted NH ₄ C1.
the solvent was determined by difference.	Tetrahydrofuran was distilled from LiAlH.
Anhydrous substances were handled in a dry	4 · 1
box through which was passed a current of	
ary and ovy free areagent	
Analysis of the solid phase yielded	ESTIMATED ERROR:
a Mac13.041180 12010 01 1.1.99.	Nothing specified.
	REFERENCES:
1	
1	[]
	1

COMPONENT			OPICINAL MEASUREMENTS .	
(1) Noc); lumtum ablastdat	NdCl.	Korovin, S.S. Galaktionow	a 0.V ·
[10024-93-8]			Lebedeva, E.N.; Voronskaya	, G.N.
(2) Tributylphosphate; C ₁₂ H ₂₇ O ₄ P; [126-73-8]			Zh. Neorg. Khím. <u>1975</u> , 20, Inorg. Chem. (Engl. Transl. 508-11.	908-14; Russ. J. .) <u>1975</u> , 20,
VARIABLES	:	<u></u>	PREPARED BY:	
One temperature			T. Mioduski and M. Salomon	
EXPERIMENT	TAL VALUES:	,,,,,,, _		
		Composition of sat	urated solution	
mass %	mol/kg sln	g dm ⁻³ mold	m ⁻³ mol kg ⁻¹ (compiler)	density/g cm ⁻³
31.8	1.27	408.0 1.	63 1.86	1.28
		The solid ph	ase is NdCl ₃ .	
		AUXILIARY	INFORMATION	
METHOD/API	PARATUS / PROCEDURE		SOURCE AND PURITY OF MATERIA	ALS:
Satd slns	prepared isother	rmally with magnetic	Anhydrous NdCl ₃ prepd by c	hlorination of
The sln w	as centrifuged an	nd an aliquot for	purity of materials not gi	ven. Nd was
analysis f with aq NI	taken and added t H ₃ . The pptd Pro	to methanol and pptd (OH) ₃ was washed	analyzed gravimetrically, Volhard's method. Tributy	and Cl by lphosphate (TBP)
repeatedly	y and heated to t	the oxide for	was purified "by the stand	ard method." No
analysed	(no details giver	a) for phosphorous	additional details given.	
and only a tions were	anhydr PrCl3 was e performed in a	found. All opera- dry box through		
which a st	tream of argon wa	as passed.		
The major	objective of thi	s work was to es-	ESTIMATED ERROR:	
TBP and Pi	rCl3 in solution.	Additional	No estimates possible.	
studies wi spectra, v	ith unsaturated s viscosity, molar	solutions (IR conductivities) are		
discussed	in the source pa	per.	REFERENCES:	
			 Korshunov, B.G.; Drobot yarov, V.V.; Shevtsova, 	, D.V.; Bukhti- Z.N. Zh. Neorg.
			Khim. <u>1964</u> , 9, 1427.	-
			 Novikov, G.I., Tolmache Khim. <u>1965</u>, 38, 1160. 	va, V.D. Zh. Prikl

COMBONENTS -			ODICIN		
(1) Neodymium chlori	de: NdC1.:		Kirms	AL MEASUREMENTS	i:
[10024-93-8]					
(2) Alkyl amines		1971, 200-6.			
(-,,			,		
VARIABLES:			PREPAR	ED BY:	
T/K = 298			T. Mi	oduski and M. S	Salomon
EXPERIMENTAL VALUES:					
				solubi	11t+v ^a
solvent				mass %	$mo1 \ kg^{-1}$
1-propanamine;	с ₃ н ₉ N;	[107-10)-8]	25.7	1.380
2-propanamine;	1so-C ₃ H ₉ N;	[75-31-	-0]	0.1	0.004
2-propen-1-amine ^b ;	^с 3 ^н 7 ^N ;	[107-11	-9]	0.05	0.002
^a Molalities calculate	d by the compil	lers.			
b					
author kindly identi	fied the solver	nt as ally	vent as vlamine	$^{C_{3}}_{3}^{n_{5}}_{5}^{n_{2}}$, and (ipon request the
-		-			
·····					
		AUXILIARY	INFORM	ATION	
METHOD/APPARATUS/PROCE	DURE:	11070	SOURCI	E AND PURITY OF	MATERIALS:
probably similar to p	revious works (of the	work	by the author t	the anhydrous salt was
author which are comp	iled throughout	this	proba	bly prepared by	y the method of Taylor
vorume.				aller (1).	
Nature of solid phase	s not specified	i.			
			ESTIM	ATED ERROR:	
			Nothi	ng specified.	
(
			REFER	ENCES:	
			1. Ta	ylor, M.D.; Can	cter, C.P.
			J.	Inorg. Nucl. (Chem. <u>1962</u> , 24, 387.
			ł		

201/D 01/D 1/D 0	OBICINAL MEASUREMENTS.			
COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8]	Mikheev, N.B.; Kamenskaya, A.N.; Konovalova, N.A.; Zhilina, T.A.			
(2) Hexamethylphosphorotriamide; C ₆ H ₁₈ N ₃ OP; [680-31-9]	Zh. Neorg. Khím. <u>1977</u> , 22, 1761–6; Russ, J. Inorg. Chem. (Engl. Transl.) <u>1977</u> , 22, 955–8.			
VARIABLES:	PREPARED BY:			
Room temperature: $T/K = 298 \pm 3$	T. Mioduski			
EXPERIMENTAL VALUES:				
The solubility of the anhydrous salt at 25 \pm :	3°C was given as			
0.119 ± ($0.005 \text{ mol } dm^{-3}$			
Starting with the solvate NdCl3((CH_)_N)_PO	, the solubility at 25 \pm 3°C ^a was given as			
0.125 + ($0.001 \text{ mol } dm^{-3}$			
$23 \pm 3^{\circ}$ C. This is probably a typographical error as the text clearly states that all measurements were carried out at room temperature (25 ± 3°C).				
AUXILIARY	INFORMATION			
METHOD/APPARATUS/PROCEDURE:	SOURCE AND PURITY OF MATERIALS:			
Isothermal method used. Salt and solvent were placed in a test-tube in a dry box, and the tube agitated at room temperature $(25 \pm 3^{\circ}C)$ until equilibrium was reached. Aliquots were withdrawn periodically and analysed for the metal content. Rare earth concentration was determined by complexometric titration,	Anhyd NdCl ₃ prepd similarly to that in (1) by subliming NH ₄ Cl from a mixt of NdCl ₃ and 6 moles of NN ₄ Cl in a stream of inert gas at 200-400°C (NdOCl content less than 3%). The solvent was purified as in (2). NdCl ₃ . $3C_6H_{16}N_3$ OP prepd by dissolving the hydrate in $C_6H_{16}N_3$ OP and heating to 140-145°			
and by the radiometric method using the isotope Tm-170 ($t_1 = 169$ d). Authors state that results for both methods agreed. Al- though not clearly stated, it appears that equilibrium was reached in several weeks to	C for 5 m. The solvate was pptd by addition of abs ether, washing 7 times with ether, and drying over P_2O_5 in a stream of dry nitrogen. Yield was about 90 %.			
several months. Solid phase samples washed three times with benzene or ether and dried on a steam bath in an argon atmosphere. The solid phase was analysed and found to be NdCl3C.HN_OP.	ESTIMATED ERROR: Soly: precision ± 0.001 mol dm ⁻³ at a 95 % level of confidence (authors). Temp: precision ± 3 K.			
The solvate was analysed for metal content by complexometric titrn, for chloride by the Volhard method, and the solvent was obtained by difference. IR spectra confirmed the absence of water. Structural studies of the solvate also carried out by X-ray analysis.	 REFERENCES: 1. Taylor, M.D.; Carter, C.P. J. Inorg. Nucl. Chem. <u>1962</u>, 24, 387. 2. Fomicheva, M.G.; Kessler, Yu.M.; Zabusova, S.E.; Alpatova, N.M. Elektrokhimiya <u>1975</u>, 11, 163. 			

182	2 Neodymium Chloride				
COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024 93-8] (2) Gallium chloride; GaCl ₃ ; [13450-90-3] (3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]			ORIGINAL MEASUREMENTS: Batyaev, I.M.; Solov'ev, M.A. Zh. Neorg. Khim. <u>1976</u> , 21, 2556-7; Russ. J. Inorg. Chem. {Engl. Transl.} <u>1976</u> , 21, 1406. Zh. Fiz. Khim. <u>1979</u> , 53, 1588-90; Russ. J. Phys. Chem. {Engl. Transl.} <u>1979</u> , 53, 897-9.		
VARIABLES:			PREPARED BY:		
Conc	centration of GaC	1 ₃ at 298 K	T. Mioduski and M.	Salomon	
EXPEI	RIMENTAL VALUES:			- <u> </u>	
	GaCl ₃ /NdCl ₃ molar ratio	GaCl ₃ concentration mmol dm ⁻³	NdCl ₃ solubility mmol dm ⁻³	equiv conductivity S cm ² equiv ⁻¹	
	1:22.4	1.0	23	4.6	
	1:17.8	2.3	39	3.9	
	1:11.9	3.0	36	5.6	
	1:10.0	4.1	41	5.2	
	1:7.6	5.5	42	5.1	
	1:7.5	6.1	46	4.8	
	1:5.9	7.1	42	5.4	
	1:6.3	8.1	51	4.6	
	1:5.6	9.1	51	5.7	
	1:5.3	10.1	54	5.8	
		AUXILIARY	INFORMATION		
METHOD/APPARATUS/PROCEDURE: Anhydrous GaCl ₃ and NdCl ₃ were added to POCl ₃ in an argon filled dry box. The specified amounts of GaCl ₃ were dissolved first in POCl ₃ . Solubilities were deter -		SOURCE AND PURITY OF MATERIALS: Anhydrous NdCl ₃ and GaCl ₃ were prepared as described in (1). POCl ₃ was dehydrated with P ₂ O ₅ and distil-			
mine No o	d at 25°C. ther information	given.	led twice under vacuum.		
COMM	ENTS AND/OR ADDI	TIONAL DATA:	dry box.		
The solu conc	authors state the bility of NdCl ₃ r entration is due	at the increase in the upon increasing GaCl ₃ to complex formation.	ESTIMATED ERROR:		

Nothing specified.

REFERENCES:

REFERENCES: 1. Puzankova, N.L.; Slastenova, N.M.; Solov'ev, M.A.; Batyaev, I.M. Sintez i Issledovanie Nizkotemperaturnykh Khloridnykh Matrits. XXVI Herzen Lecture. Scientific Papers. 1973.

COMPONENTS: (1) Neodymium chloride; NdCl ₃ ; [10024-93-8]	ORIGINAL MEASUREMENTS: Batyaev, I.M.; Solov'ev, M.A.
(2) Gallium chloride; GaCl ₃ ; [13450-89-0]	Zh. Fiz. Khim. <u>1979</u> , 53, 1588-90; Russ. J. Phys. Chem. (Engl. Transl.) <u>1979</u> , 53, 897-9. Zh. Neoro, Khim <u>1976</u> , 21
(3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]	2556-7; Russ. J. Inorg. Chem. (Engl. Transl) 1976, 21, 1406.
VARIABLES:	PREPARED BY:
Concentration of GaCl ₃	T Minducki and M Solomon
Temp not specified, but probably 298 K	1. HOUSEL and R. Salomon
EXPERIMENTAL VALUES:	
GaCl ₃ concentration	NdCl ₃ solubility
mol dm ⁻³	mol dm ⁻³
О	0.01
1.0	22
2.3	39
3.0	36
4.1	41
5.5	42
6.1	46
7.1	42
9.1	51
9.1	51
10.1	54
for these complexes are given below.	
AUXILIARY	INFORMATION
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -GaCl ₃ systems were synthe-	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as
method at 120°C as described in (1). No	described in (3).
that after treating the solutions at 120°C	POCI ₃ was purified by the usual method.
for about 2 h, they were then isothermally equilibrated at 25°C (see the compilations	
of references 1 and 2 in this volume.)	
For the equilibria	
$NdCl_2 + vGaCl_2 = NdCl_3 \cdot vGaCl_3$	
the following stepwise formation constants constants, Rv. were given;	ESTIMATED ERROR:
$\beta_1 = (2.7 \pm 0.1) \times 10^6$	Nothing specified.
$\beta_2 = (3.6 \pm 0.2) \times 10^9$	PEPEDENCIES .
$\beta_3 = (3.8 \pm 0.2) \times 10^8$	1. Lyubimov, E.I.; Batyaev, I.M. Zh. Prikl.
$\beta_4 = (3.6 \pm 0.2) \times 10^{14}$	Khim. <u>1972</u> , 45, 1176.
	 Batyaev, I.M.; Solov'ev, M.A. Izu. Akad. Nauk SSSR, Neorg. Mater. <u>1977</u>, 13, 104.
	 Slastenova, N.M.; Batyaev, I.M.; Bel'kova, N.L.; Kuz'menko, A.S.; Ryabov, E.N. 7h. Pribl. Khim. 1975. 48. 1953.

Neodymium Chloride

COMPONENTS :		ORIGINAL MEASUREMENTS:			
(1) N [Neodymium chloride; NdCl ₃ ; [10024-93-8]		Lyubimov, E.I.; Batyaev, I.M.		
(2) T [Tetrachlorostannate; SnCl ₄ ; [7646-78-8]		Zh. Prikl. Khim	. <u>1972</u> , 45, 11	176-8.
(3) P [hosphorus oxychloride; PO 10025-87-3]	C1 ₃ ;			
VARIABL	ES:		PREPARED BY:		
SnC14	concentration		T. Mioduski		
T/K =	293 and 333		·		
EXPERIM	ENTAL VALUES:				}
SnC	SnCl ₄ :POCl ₃ ratio SnCl ₄ concn		solubility of $Nd_2O_3/mol dm^{-3a}$		
	(by volume)	mol dm^{-3}	20°C	20°C ^{°C}	60°C
	0	0	0.007		0.003
	1:250	0.035	0.11	0.093	0.092
	1.50	0.085	0.2/	0.23	0.20
	1:00	0.1/	0.30	0.30	0.26
	1:25	0.33	0.26	0.20	0.31
	1:15	0.59	0.15	0.13	0.22
	1:10	0.78	0.11	0.10	0.22
	1:5	1.4			0.20
	1:1.5	3.0			0.19
-	1:1	4.6			0.090
	4:1	6.8	4	0.010	0.010
1	pure SnCl ₄	8.5	2×10^{-4}		
^a This is also the solubility of NdCl ₃ since t chloride according to		he oxide is quant	itatively con	werted to the	
		Nd ₂ 0 ₃ + 6P0	$C1_3 = 2NdC1_3 + 3H$	203 ^{C1} 4	
Assum: four (ing P ₂ 0 ₃ Cl ₄ to be soluble, component mixture.	the equilibr	ated solutions wo	ould then cons	titute a
^b Preheated at 120 ^o C for 2 hours.		^d No pretreatment	:.		
^C Preheated at 60 [°] C (time not specified).					
		AUXILIARY	INFORMATION		
METHOD	APPARATUS /PROCEDURE :		SOURCE AND PURIT	Y OF MATERIALS	· · · · · · · · · · · · · · · · · · ·
Isother	rmal method used. POCl ₃ +	- SnCl ₄ ne in a dry	Nd ₂ 0 ₃ of "the fi 950°C for 2 hour	lrst sort" was	ignited at
box. 1	The SnCl ₄ content was very	fied by	1		
chemica	al analysis for Sn. This	solution and	"Pure" grade SnC	214 and POC13	were dehydrated
Nd203 v	were placed in sealed ampo	oules, heated	with P205 and di	stilled under	vacuum.
to 1200	^o C for 2 hours to increase	the rate of			
solutio	on, and then rotated in an	air thermo-			
stat at	t 20°C for 2 hours. Witho	out preheating			
equili	brium was established afte	er 200 hours.			
Preheat	ting to 120°C lowered the	equilibra-			
tion ti	ime at 20°C to 2 hours.	•			
Nd	determined by colorimetri	a analyzata			
and in	some appear by the ovalate	method	ESTIMATED ERPOR-		
The republic the the test of test	ported solubilities are me on 3-5 parallel determinat	an values	Soly: authors state the "coefficient of variance" to be less than 7%		
The sol	lubility of NdCl, in pure	POC1, is	Temp: precision	presumably ±	0.2K (compiler).
small, solubil	but in the presence of Sr lity increases due to comm	Cl ₄ the	REFERENCES:		
211	101 + 20001 - N4 (0-01)				ļ
ZNC	$10+3 \pm 3500+4 \pm Na_2(SnC16)$	3			
					1
			1		

COMPONENTS :		ORIG	ORIGINAL MEASUREMENTS:		
 (1) Neodymium chloride; NdCl₃; [10024-93-8] 		Batyaev, I.M.; Solov'ev, M.A.			
(2) Tetrachlorostannate; SnCl ₄ ; [7646-78-8]		Izv. Akad. Nauk SSSR, Neorg. Mater. <u>1977</u> , 13, 104–8.			
(3) Phosphorous oxychloride; Pf [10025-87-3]	0C1 ₃ ;				
VARIABLES :		PREP	ARED BY:		
Spc1 concentration					
T/K = 293		T. 1	lioduski and M. S	alomon	
EXPERIMENTAL VALUES:		L			
SnCl./POCl	SnCl, concu	n	SnCl/NdCl	solubility of NdCl	
4 5 volime ratio	$10^{2} c_{-}^{4} / mo1$	1m ⁻³	mol ratio	$10^{3} \text{ c/mol} \text{ dm}^{-3}$	
VOLUME LIGELO	10 02/201		mor ratro	10 01, mor um	
0.25:29.7	5.0		10:1	5.0	
0.50:29.5	10.0		19.2:1	5.2	
1.0:29.0	15.0		27.7:1	5.4	
1.25:28.7	20.0		35.7:1	5.6	
1.50:28.5	25.0		43.9:1	5.7	
1.75:28.2	30.0		50.91:1	5.9	
2.0:28.0	35.0		5/.4:1	6.1	
2.25:27.7	40.0		63.5:1	6.3	
2.50:27.5	45.0		69.2:1	6.5	
2.75:27.2	50.0		74.6:1 70.7-1	6./	
3.0:27.0	55.0		/9./:1	0.9	
the SnCl ₄ concentration from 0.05-0.55 mol dm ⁻³ is attributed to outer sphere coordina- tion of SnCl ₄ by POCl ₃ . Stability constants, β_i , for the reactions NdCl ₃ + nPOCl ₃ = NdCl ₃ .nPOCl ₃ were calculated for i = 1-4.					
	AUXILIARY	INFOR	MATION		
METHOD APPARATUS / PROCEDURE :		SOILP	CE AND PURITY OF	MATERIALS :	
Isothermal method used. Solvent tures were sealed in glass ampou- rotated in an air thermostat at h. The ampoules were then rotat mostat at 20°C for 24 h. After was reached, aliquots were withd argon atmosphere and evaporated The dry residues were hydrolyzed lyzed products filtered, and Nd spectrophotometrically. The sol analyzed at pH 3 (phormic buffer 0.05% arsenazo III solution. A curve was used for these analyse COMMENTS AND/OR ADDITIONAL DATA: Conflicting data exist between t paper and earlier work (1). In paper the solubility of NdCl ₃ in is given as 10^{-5} mol dm ⁻³ compar 7 x 10^{-3} mol dm ⁻³ reported in (1 the enhancement of the solubilit attributed to the formation of N	-solute mix- iles and 120°C for 24 ed in a ther- equilibrium lrawn in a dry in vacuum. I, the hydro- determined .utions were collibration s. 	ESTI Noth REFE 1. L Z (o	MATED ERROR: ing specified. RENCES: yubimov, E.I.; Ba h. Prikl. Khim. <u>1</u> see previous page f this paper).	atyaev, I.M. 1972, 45, 1176. a for the compilation	
attributed to coordination of Sn	C14 by POC13.				

COMPONENTS:	ORIGINAL MEASUREMENTS:			
(1) Neodymium chloride; NdCl3; [10024-93-8]	Batyaev, I.M.; Solov'ev, M.A.			
<pre>(2) Tetrachlorostannate; SnCl₄; [7646-78-8]</pre>	Zh. Fiz. Khim. <u>1979</u> , 53, 1588-90; Russ. J. Phys. Chem. (Engl. Transl.) <u>1979</u> , 53. 897-9.			
(3) Phosphorus oxychloride; POCl ₃ ; [10025-87-3]				
VARIABLES:	PREPARED BY:			
Concentration of $SnCl_4$	T. Mioduski and M. Salomon			
Temp not specified, but probably 298 K				
EXPERIMENTAL VALUES:				
$SnCl_4$ concentration	NdCl ₃ solubility			
mol dm ⁻³	mol dm^{-3}			
0	0.01			
50	5.0			
100	5.2			
150	5.4			
200	5.6			
250	5.7			
300	5.9			
350	6.1			
400	6.3			
450	6.5			
500	6.7			
Authors state that the increase in the solubility of $NdCl_3$ with increasing concentration is due to the formation of $NdCl_3(POCl_3)_x(SnCl_4)_y$ complexes. Stepwise formation constants for these complexes are given below.				
AUXILIARY INFORMATION				
METHOD/APPARATUS/PROCEDURE: The NdCl ₃ -POCl ₃ -SnCl ₄ systems were synthe- sized in sealed tubes by the solvolthermal method at 120°C as described in (1). No	SOURCE AND PURITY OF MATERIALS: Anhydrous metal chlorides were prepared as described in (3).			
other details given. The compilers assume that after treating the solutions at 120°C for about 2 h, they were then isothermally equilibrated at 25°C as in (2): see the compilations of references 1 and 2 in this volume COMMENTS AND/OR ADDITIONAL DATA: For the equilibria	POCl ₃ and SnCl ₄ were purified by the usual methods.			
$NdCl_{2} + vSpCl_{2} = NdCl_{2} vSpCl_{2}$				
the following stepwise formation constants	ESTIMATED ERROR:			
constants, β_y , were given:	Nothing specified.			
$p_1 = (1.5 \pm 0.1) \times 10^4$				
$P_2 = (3.8 \pm 0.2) \times 10^{\circ}$	L. Lyubimov, E.I.; Batyaev, I.M. Zh. Prikl.			
$P_3 = (3.6 \pm 0.2) \times 10^5$ $\beta_3 = (1.2 \pm 0.1) \times 10^8$	Khim. <u>1972</u> , 45, 1176. 2 Batyaay I.M. Solov'ay M.A. 7h Neara			
4 - (1.2 ± 0.1) x 10	Khim. <u>1976</u> , 21, 2556.			
	 Slastenova, N.M.; Batyaev, I.M.; Bel'kova, N.L.; Kuz'menko, A.S.; Ryabov, E.N. Zh. Prikl. Khim. 1975, 48, 1953. 			

COMPONENTS:	ORIGINAL MEASUREMENTS:			
 Neodymium chloride; NdCl3; 	Batyaev, I.M.; Solov'ev, M.A.			
[10024-93-8]	7h Fi- Khim 1070 F7 1500 00			
(2) Zinc chloride; ZnCl ₂ ;	2 <i>n</i> . <i>F</i> .2. <i>Knum</i> . <u>1979</u> , 55, 1588-90;			
[7846-85-7]	53. 897-9.			
(3) Phosphorus oxychloride: POCla;				
[10025-87-3]				
VARIABLES:	PREPARED BY:			
Concentration of ZnCl2	T Micduski and M Salaman			
Temp not specified, but probably 298 K	1. HIGUSKI and H. Salomon			
EXPERIMENTAL VALUES:				
ZnCl ₂ concentration	Naci3 solubility			
$mo1 dm^{-3}$	$mo1 dm^{-3}$			
0	0.01			
17	2.0			
16	1.9			
14	1 8			
17	1.0			
13	1.7			
12	1.6			
12	1.5			
11	1.4			
10	1.2			
10	1.3			
9	1.2			
9	1.1			
is due to the formation of NdCl ₃ (POCl ₃) _x (ZnCl ₂) _y complexes. Stepwise formation constants for these complexes are given below.				
AUXILIARY	INFORMATION			
METHOD / APPARATUS / PROCEDURE :	SOURCE AND PURITY OF MATERIALS:			
The NdCl3-POCl3-ZnCl2 systems were synthe-	Anhydrous metal chlorides were prepared as			
sized in sealed tubes by the solvothermal	described in (3).			
method at 120°C as described in (1). No				
other details given. The compilers assume	POCI3 was purified by the usual method.			
for about 2 h, they were then isothermally				
equilibrated at 25°C as in (2): see the				
compilations of references 1 and 2 in this	1			
volume.				
COMMENTS and/OR ADDITIONAL DATA:	1			
For the equilibria				
$NdC1_{-} + y7nC1_{-} - NdC1_{-}y7nC1_{-}$	ESTIMATED EDDOD.			
	COLIMATED ERKUK:			
the following stepwise formation constants	Nothing specified.			
constants, p, were given:				
$\beta_1 = (6.7 \pm 0.3) \times 10^4$				
$\beta_{1} = (2.5 \pm 0.1) \times 10^{5}$	REFERENCES:			
$2 = (2.5 \pm 0.1) \times 10^{5}$	1. Lyubimov, E.I.; Batyaev, I.M. Zh. Prikl.			
$r_3 = (7.4 \pm 0.3) \times 10^{7}$	NRUM. <u>1972</u> , 45, 1176.			
$p_4 = (5.4 \pm 0.2) \times 10^9$	 Batyaev, I.M.; Solov'ev, M.A. Zh. Neorg. Khim. <u>1976</u>, 21, 2556. 			
	3. Slastenova, N.M.; Batyaev, I.M.; Bel'kova,			
	N.L.; Kuz'menko, A.S.; Ryabov, E.N. Zh. Prikl. Khim. 1975, 48, 1953.			