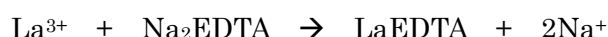


AQUACOUNTER Application Sheet	COM series	DATA No. G8	1st edition
Metal	Quantification of lanthanum (La³⁺)		

1. Measurement outline

Lanthanum ion (La³⁺) is a trivalent metal ion and it reacts quantitatively with EDTA. The favorable pH range in which it can be titrated with EDTA is weak acid, and this section introduces an example of titration near pH5.3.



2. Reagents and Electrodes

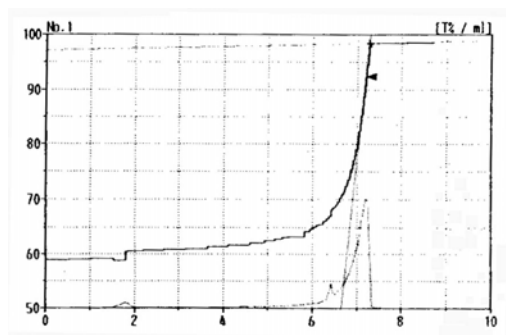
(1) Reagents	Titrant	0.01mol/L EDTA titrant
	Buffer	5mL pH5.3 acetic acid buffer for 1 measurement Ammonia water or diluted hydrochloric acid (for adjustment)
	Additives	0.1g ascorbic acid
	Indicator	1.5mL XO indicator (0.05% aqueous solution) for 1 measurement (Red purple → yellow)
(2) Electrodes	Photometric probe with 530 nm filter	

3. Measurement conditions example (for COM-1600M w/ Photometric unit)

Master File No.1	
Condition file: 1	
Method	B Cross
Amp No.	2
Buret No.	1
Meas Unit	T%
S-Timer	10 sec
CP	0 mL
DP	6.80 mL
End Sens	1000
Over mL	1 mL
Max Vol	20 mL
Mode No.	20
Unit	ppm
Blank	0
Factor	Titer of the titrant
Molarity	0.01
K	138.9055
Formula	(D-B)×K×F×M×1000 /S

Mode No.20	
Pre Int	0 sec
Del K	9
Del Sens	0 mV
Int Time	3 sec
Int Sens	3 mV
Brt Speed	2
Pulse	20

4. Measurement example



Measurement results on La^{3+}

Sample No.	Sample volume (mL)	Titration value (mL)	Concentration (ppm)
1	10	7.274	1010
2	10	7.284	1012
Avg.			1011 ppm

5. Outline

The chelate stability constant for lanthanum is large under alkaline conditions, and the pH in the acidic range at which titration is possible is pH5 at lowest. While this section conducted titration in acidic range due to the reasons of coexisting ions, it is desired that titration be conducted at pH7 – 9 in general.

Key words

Chelate titration, lanthanum, XO indicator

Hitachi High-Technologies Corporation

Head Office 1-24-14, Nishishinbashi, Minato-Ku, Tokyo 105-8717, Japan

Tel : 81-3-3504-7239 Fax : 81-3-3835-7302

<http://www.hitachi-hitech.com>

Hiranuma Sangyo Co., Ltd.

1739, Motoyoshidacho, Mito-City, Ibaraki 310-0836, Japan

Tel : 81-29-247-6411 Fax : 81-29-247-6942

<http://www.hiranuma.com>