

LI-5800A Total Alkalinity Titrator

Specifications

- **Mode:** automated open cell Gran titration
- **Precision:** better than $\pm 0.1\%$ or $\pm 2 \mu\text{M}$ for seawater
- **Typical sample volume:** 20 – 25 mL per analysis
- **Time-consumption:** 7 – 10 minutes
- **Working environment:** shipboard or land-based laboratory

Description

The LI-5800A Total Alkalinity Titrator (formerly Apollo AS-ALK3) consists of two high precision digital pumps for precise delivery of reagent and sample solutions (Tecan, Switzerland), a research quality pH meter (Thermo Scientific Orion, USA), and combination glass pH electrode (Thermo Scientific Orion, USA). A laptop PC is also included as part of the data acquisition unit.

An earlier model, AS-ALK2 Total Alkalinity Titrator, has been tested in the past two decades in a variety of aquatic conditions such as in river and lake waters, coastal and open ocean waters, sediment porewater, and groundwater. This system is unique in that it automates the Gran (linear) titration method with high precision ($\pm 0.1\%$). Further, it is built and tested for shipboard use. To ensure high quality data, a water bath should be used to help maintain a constant temperature throughout the titration analysis.

The current model, LI-5800A, delivers a better precision by including pumps with more steps for the same distance traveled. It also improves on the reliability of the software program.

Results

On February 18, 2022, the same coastal seawater was repeatedly tested (10 measurements) at a sample volume of 20 mL. Seawater was collected at the Indian River Inlet, southern Delaware, USA. The coefficient of variation for all test measurements was 0.08%. Therefore, results better than $\pm 0.1\%$ are possible if multiple analyses for the same water sample are performed under stable room temperature conditions.



Figure 1. Front view of the LI-5800A Total Alkalinity Titrator.

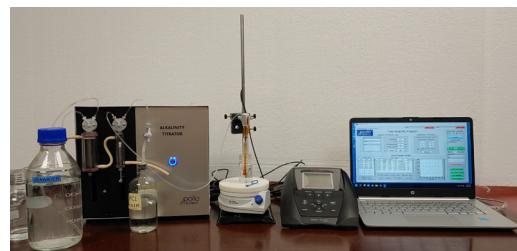


Figure 2. Total alkalinity test bench.

Additional Information

Alkalinity Titrator Test Report		
ALK Titrator Model: LI-5800A	Serial Number: 2202	
Sample Type: Seawater	Sample Volume: 20 mL	
Electrode S/N: W-ZS1-15894		
#	Date	TA [$\mu\text{mol/L}$]
#1-1	Feb-18	2000.3
#1-2	Feb-18	2001.5
#1-3	Feb-18	2002.6
#1-4	Feb-18	1998.6
#1-5	Feb-18	2000.4
#1-6	Feb-18	1999.3
#1-7	Feb-18	2000.8
#1-8	Feb-18	2000.8
#1-9	Feb-18	1998.3
#1-10	Feb-18	1997.9
	AVG	2000.1
	SD	1.50
	RSD	0.08%

Table 1. Repeated total alkalinity measurements of the same coastal seawater.