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Section 01

TA: Supriya

Colorimetric Determination of Phosphate in Seawater

	Spectrophotometric Det of Phosphate	MAX	PTS
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Abstract:

From the experiment, the average concentration of phosphate in sea water was 1.75×10^{-5}M and .542045 mgP / L. The absorbance after correcting for seawater one was .178 and for seawater two it was .331. The average of both was .2545.

Introduction:

The purpose of the lab was to determine the amount of Phosphate that was present in the sample of seawater that was given. This lab also required the preparation of standards that are used to help consider what the final amount was most like after conducting the experiment.

Results and Discussion:

Phosphate standard: .2216g / 94.9714g/mol /1L = .0023M

.0023M x .05L = M2 x 1L = .000115M

Standard Calculations:

A: 0M of Phosphate

B: .0005 L x .000115M = M2 x .01L = 5.8×10^{-6}M

C: .001L x .000115M = M2 x .01L = 1.2×10^{-5}M

D: .002L x .000115M = M2 x .01L = 2.3×10^{-5}M

E: .003L x .000115M = M2 x .01L = 3.5×10^{-5}M

F: .004L x .000115M = M2 x .01L = 4.6×10^{-5}M

Molar Absorptivity:

A: Can't be calculated

B: Molar Abs: .097 / (1cm x 5.8×10^{-6}M) = 16724.14

C: Molar Abs: .174 / (1cm x 1.2×10^{-5}M) = 14500

D: Molar Abs: .356 / (1cm x 2.3×10^{-5}M) = 15478.26

E: Molar Abs: .54 / (1cm x 3.5×10^{-5}M) = 15428.57

F: Molar Abs: .643 / (1cm x 4.6×10^{-5}M) = 13978.26

Average Molar Absorptivity:

Sum of B to F / 5 = 15221.85

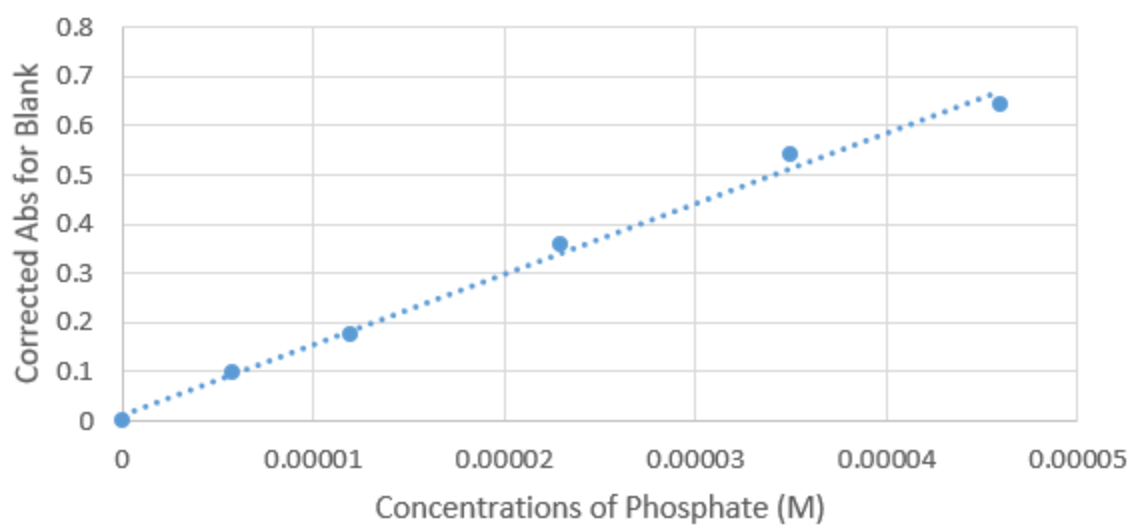| Part I				
Test Tube	ABS	Corrected Abs for Blank	Concentrations	
A	0.003	0	0	
B	0.1	0.097	5.80E-06	
C	0.177	0.174	1.20E-05	
D	0.359	0.356	2.30E-05	
E	0.543	0.54	3.50E-05	
F	0.646	0.643	4.60E-05	
Concentration of phosphate standard:				
0.000115 M				
	Coefficients	*Standard Error*		
Intercept	0	#N/A		
X Variable 1	14493.53782	450.9001008		

Corrected Abs for Blank vs Concentrations of Phosphate (M)

Figure 1: Plot of best fit along with Corrected Abs for Blank vs Concentrations of Phosphate in Molarity standards.

Part III				
Sample	ABS	Corrected Abs for Blank	Concentrations (M)	Concentrations (mg P / L)
Procedural Blank	0.025	0		
Seawater 1	0.203	0.178	1.20E-05	3.72E-01
Seawater 2	0.356	0.331	2.30E-05	7.12E-01
Average:		0.2545	0.0000175	0.542045

Lab Question 1: The level of care should not be necessary in preparing a procedural blank because it is just a sample that is used to be gauged upon after reading absorbance in the other samples.

Lab Question 2: The precipitate is Na3PO4.

Lab Question 3: So that when the volume splatters to the other side, it can catch it and not affect the concentrations of a different sample.