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Question: When the catalyst was at 0.1 mg/mL and the substrate concentr...

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When the catalyst was at 0.1 mg/mL and the substrate concentration 16 μM , the initial rate of absorbance change was 0.006 absorbance units per second. The measured product has a molar extinction coefficient of $6220 \text{ M}^{-1}\cdot\text{cm}^{-1}$, and the path length is the width of a cuvette; 1 cm.

Using the information above, can you rearrange the Beer-Lambert equation to convert the absorbance change of rate into a rate of product formation and select the correct value below? Click the **VIEW THEORY** button for a reminder of the equation.

- a) $0.8 \text{ M}^{-1}\cdot\text{s}^{-1}$
- b) $1.2 \mu\text{M}^{-1}\cdot\text{s}^{-1}$
- c) $1.2 \text{ M}^{-1}\cdot\text{s}^{-1}$
- d) $0.8 \mu\text{M}^{-1}\cdot\text{s}^{-1}$

VIEW THEORY

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Expert Answer



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In this case, we can use the Lambert-Beer law:

$$A = C * E * b$$

Now, we can replace the values:

$$0.006 \text{ s}^{-1} = C * 6220 \text{ M}^{-1}\text{s}^{-1} * 1 \text{ cm}$$

$$C = \frac{0.006 \text{ s}^{-1}}{6220 \text{ M}^{-1}\text{cm}^{-1} * 1 \text{ cm}}$$

$$C = 8.8 \times 10^{-7} \text{ M/s}$$

Finally, we can do the conversion from M to μM :

$$8.8 \times 10^{-7} \text{ M/s} \frac{1 \times 10^6 \mu\text{M}}{1 \text{ M}} = 0.8 \mu\text{M/s}$$

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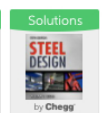
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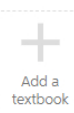
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Balance the following redox reaction in basic solution.
 $\text{N}_2\text{H}_4(\text{aq}) + \text{Cu}^{2+}(\text{aq}) \rightarrow \text{N}_2(\text{g}) + \text{Cu}^+(\text{aq})$

See answer

1. Consider a galvanic cell consisting of the Cr^{3+}/Cr ($E^\circ = ?0.74 \text{ V}$) and the Ag^+/Ag ($E^\circ = +0.80 \text{ V}$) systems in the half-cells. a. Write the equation for the reaction that occurs at the anode; b. Write the equation for the

See answer

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Q: When the catalyst was at 0.1 mg/mL and the substrate concentration 16 MM, the initial rate of absorbance change was 0.005 absorbance units per second. The measured product has a molar extinction coefficient of $6220 \text{ M}^{-1}\cdot\text{cm}^{-1}$, and the path length is the width of a cuvette; 1 cm. Using the information above, can you identify which values are important and rearrange the Beer-Lambert...

A: [See answer](#)  100% (4 ratings)

Q: When the catalyst was at 0.2 mg/mL and the substrate concentration 13 μM , the initial rate of absorbance change was 0.01 absorbance units per second. The measured product has a molar extinction coefficient of 3110 $\text{M}^{-1}\text{cm}^{-1}$, and the path length is the width of a cuvette: 1 cm. Using the information above, can you identify which values are important and rearrange the Beer-Lambert...

A: [See answer](#)

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