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APPENDIX A

Percent efficiency of hydrogen peroxide

From the proposed mechanism of the copper-catalyzed oxidation of cyclohexane using H_2O_2 as an oxidant, it was found that hydrogen peroxide played two different roles. First, it interacted with copper catalyst to produce high valence oxidation state Cu (formulated as $\text{Cu}^{\text{IV}}=\text{O}$). Second, it consisted in being a precursor of dioxygen that inserted into the carbon-copper bond. Therefore, two equivalents of hydrogen peroxide were required for one equivalent of oxidized products produced.

$$\% \text{ efficiency of } \text{H}_2\text{O}_2 = \frac{2 \times \text{total amount of product (mmol)} \times 100}{\text{H}_2\text{O}_2 \text{ (mmol)}}$$

VITA

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