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Diels-Alder reaction

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Aromatic Compounds and Aromaticity
Why does A show an absorption at 330 nm whereas B does not? Why does A show an absorption at 330 nm whereas B does not?

Which transition, A or B, is more probable? (i.e. the intensity of absorption)

What are the orbitals involved in these transitions?

Absorptions are characterized by two properties. One is the wavelength of the maximum absorption (color).

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Which compound, A or B, would absorb the longest wavelength of light?

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Which compound, A or B, would absorb the longest wavelength of light?

crotonaldehyde

colorless

crotonaldehyde

orange

transition probability = molar absorptivity (ε) = absorption (A) absorption (A)
concentration (C) x length (l) concentration (C) x length (l)

ε = 11,540

ε = 26

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Two excited states are possible. Which of these is lower in energy?

Why is the triplet state ($T_1$) lower in energy than the singlet state ($S_1$)?

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What is the major product of the following reaction?

What is the mechanism for its formation?
What is the second product?

\[ CH_2=CH_2 + H-Br \rightarrow CH_2=CHBr \rightarrow CH_2=CH-Br \rightarrow ? \]

A: Br, B: Br, C: Br, D: Br, E: Br

80\% 20\%

How is it formed?

\[ CH_2=CH_2 + H-Br \rightarrow CH_2=CHBr \rightarrow CH_2=CH-Br \rightarrow ? \]

A: Br, B: Br, C: Br, D: Br, E: Br

80\% 20\%

Heating the minor product of the addition reaction results in a small amount of the major product.

Heating the major or minor products of the reaction results in the same reaction mixture! Why?

Which compound is more stable? Why?

A: Br 80\% 20\%
B: Br

If A is more stable why is it not the major product of the reaction?

A: Br 80\% 20\%
B: Br

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B: Br

If A is more stable why is it not the major product of the reaction?
Is the activation energy for the formation of 2 greater (A) or less (B) than the formation of 1?

What is the major product (A or B) if the reaction is performed at 40°?