

Alicia Ludden, Biology

Year in School: Freshman

Hometown: Saint Charles, MO

Faculty Mentor: Dr. Carol Deakyne, Chemistry

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Resonance energy in methyl acetate and its valence-isoelectronic analogs containing sulfur and selenium

A convenient definition of resonance energy is the deviation from thermoneutrality of the reaction: $\text{CH}_3\text{C}(\text{X})\text{CH}_3 + \text{CH}_3\text{YCH}_3 + \text{CH}_3\text{C}(\text{X})\text{YCH}_3 + \text{C}_2\text{H}_6$, where X and Y are O, S, and Se. The results of G2 and G3 calculations will be discussed and compared with the almost non-existent experimental literature. This study is of relevance to acetylcholine and its heavier chalcogen derivatives: $\text{CH}_3\text{C}(\text{X})\text{YCH}_3 + \text{CH}_3\text{C}(\text{O})\text{O}(\text{CH}_2)_2\text{N}(\text{CH}_3)_3 + \text{CH}_3\text{C}(\text{X})\text{Y}(\text{CH}_2)_2\text{N}(\text{CH}_3)_3 + \text{CH}_3\text{C}(\text{O})\text{OCH}_3$.