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| Journal Name: | [**Chemical Science International Journal**](https://journalcsij.com/index.php/CSIJ) |
| Manuscript Number: | **Ms\_CSIJ\_141604** |
| Title of the Manuscript: | **Unveiling the Atmospheric Oxidation of E2CAA initiated by Cl Radical: DFT Study** |
| Type of the Article | **Original Research Article** |

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| PART 1: Comments | | |
|  | Reviewer’s comment **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | **Author’s Feedback** (It is mandatory that authors should write his/her feedback here) |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | This research is important to the scientific community as it provides a detailed understanding of the interaction mechanism between ethyl 2-chloroacetoacetate and chlorine radicals in the atmosphere, contributing to the improvement of atmospheric oxidation models. It also offers accurate estimations of the atmospheric lifetime of the compound, enhancing our understanding of its environmental impact. | We are thankful to the learned reviewer for his/her valuable comments. |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | Yes, the title is suitable for the research. | No correction is needed. |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. |  **Add a brief mention of the significance of the study's findings** – This could include how the results contribute to environmental chemistry or atmospheric modeling.   **Specify the practical implications** – A short mention of the potential environmental or industrial impacts of understanding the degradation process of E2CAA in the atmosphere could add value. | Necessary correction is made in revised manuscript as per reviewer’s suggestion. The results obtained in this manuscript will be helpful to determine the radiative efficiency and global warming potential of E2CAA molecule. |
| Is the manuscript scientifically, correct? Please write here. | 1. **Introduction**:    * Add an explanation about the impact of volatile organic compounds on the environment in general, focusing on reactions with chlorine radicals.    * Update references to include recent studies. 2. **Computational Methodology**:    * Clarify the choice of the DFT method (M06-2X) and compare it with other methods like B3LYP. 3. **Results and Discussion**:    * Add an explanation about the environmental impact of these reactions and air quality.    * Link the results to climate change and pollution in industrial areas. 4. **Conclusions**:    * Add recommendations for future studies on the interaction of the compound with other radicals such as OH and NO3. | Necessary correction is made in revised manuscript as per reviewer’s suggestion. The theoretical study on E2CAA with other radicals like OH, NO3 and fate of alkoxy radical are under pipe line. |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | Yes, the references are sufficient and recent. However, additional references related to recent environmental studies on the reactions of volatile organic compounds (VOCs) with chlorine radicals in the atmosphere could further enhance the comprehensiveness of the research. | Necessary correction is made in revised manuscript as per reviewer’s suggestion. |
| Is the language/English quality of the article suitable for scholarly communications? | The language is good. |  |
| Optional/General comments |  |  |

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| **PART 2:** | | |
|  | **Reviewer’s comment** | **Author’s comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Are there ethical issues in this manuscript?** | *(If yes, Kindly please write down the ethical issues here in details)* | No ethical issues has been reported in this manuscript. |