Comment on acp-2022-446
Anonymous Referee #1

Referee comment on "Atmospheric breakdown chemistry of the new “green” solvent 2,2,5,5-tetramethyloxolane via gas-phase reactions with OH and Cl radicals" by Caterina Mapelli et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2022-446-RC1, 2022

This paper reports the results of a careful experimental and computational study of the kinetics of the reactions of hydroxyl radicals and chlorine atoms with a new solvent, 2,2,5,5-tetramethyloxolane. The results are presented in a clear and logical fashion and I recommend publication essentially as is.

I have only one suggestion for improvement which is to remove the claim of "green" for the subject molecule in the title (which sounds a little unscientific) and to add a quantitative justification for the conclusion in the abstract that TMO is a "less problematic" VOC than toluene. Jenkin et al. (Atmos. Environ., 163, 128, 2017) have provided a method to estimate the photochemical ozone creation potential (POCP) from molecular structure and k(OH). This method could be used to estimate the POCP for TMO which could then be compared to that for toluene (and other solvents).