Figure SI

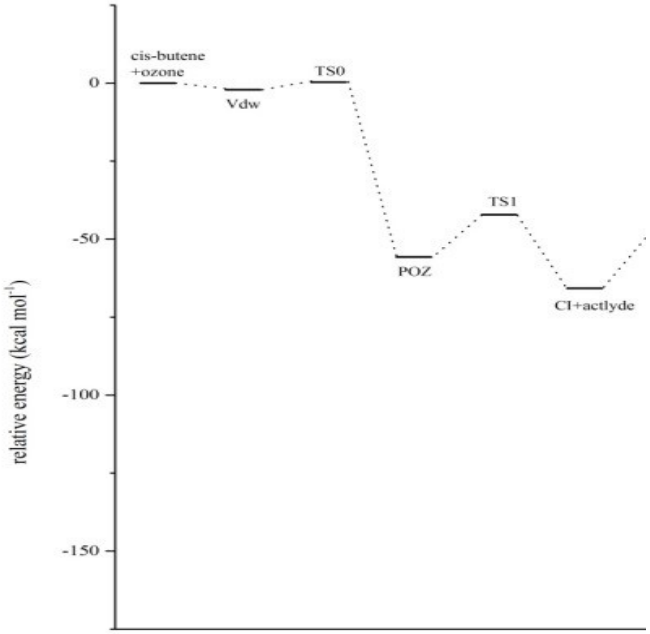

Figure S1. The potential energy surface (PES) of cis-2-butene ozonolysis.

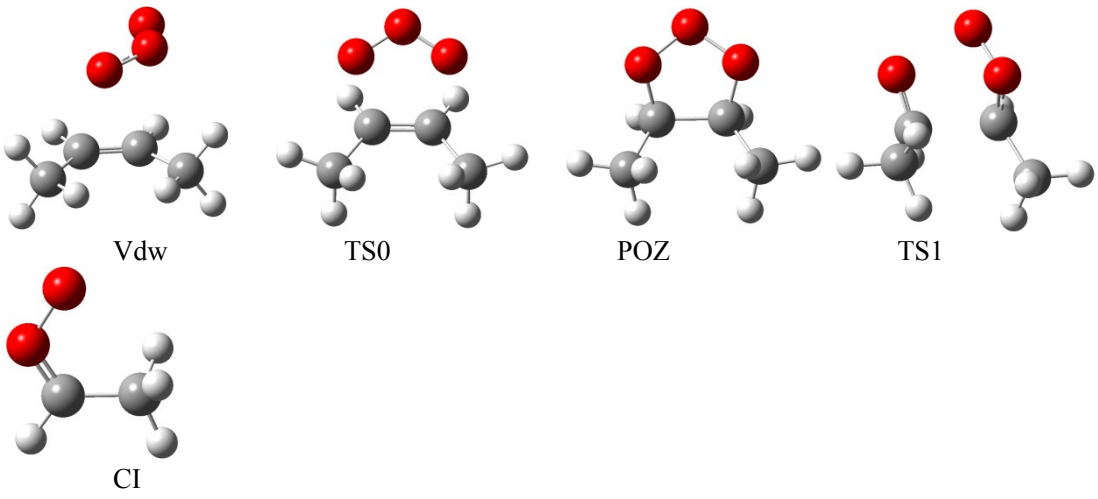

Figure S2. The optimized molecular structures of the involved substances in the ozonolysis of *cis*-2-butene.

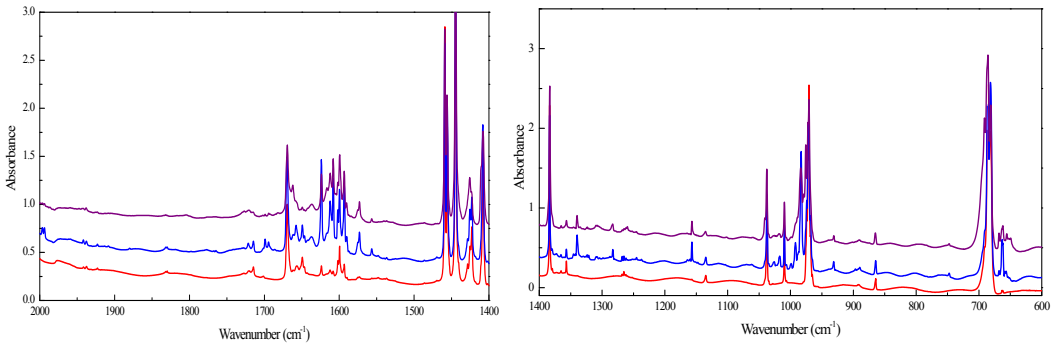

Figure S3. Infrared spectra of the co-deposition of the samples of Ar/*cis*-2-butene=200 and Ar/$^{18}O_3$ =200. The blue line (middle) indicates initial deposition at 14 K and the purple line (top) represents the spectrum after annealing to 35 K, compared to a blank spectrum of Ar/*cis*-2-butene=200 (red, bottom).

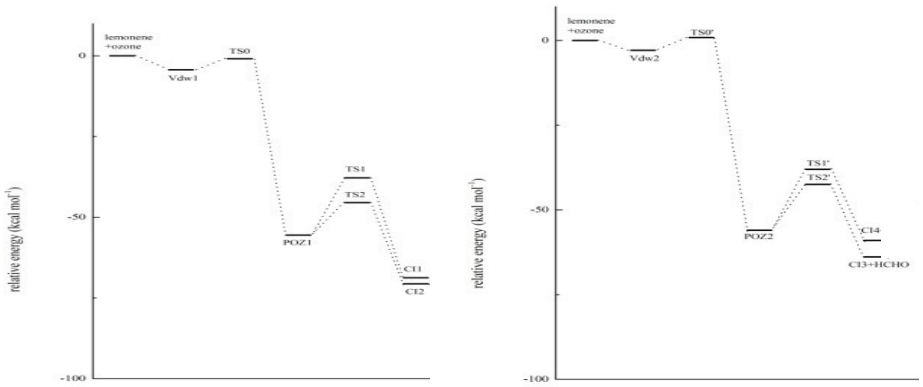

Figure S4. The potential energy surface (PES) limonene ozonolysis. Left: ozone interacts with the C=C double bond within the carbon ring of the limonene molecule. Right: ozone interacts with with the C=C double bond within the side chain of the limonene molecule.

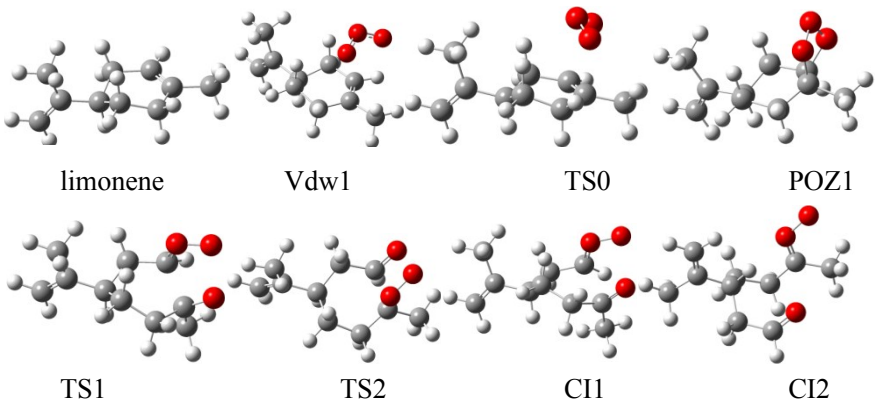

Figure S5. The optimized molecular structures of the involved substances in the ozonolysis of limonene (ozone interacts with the C=C double bond within the carbon ring of the limonene molecule)

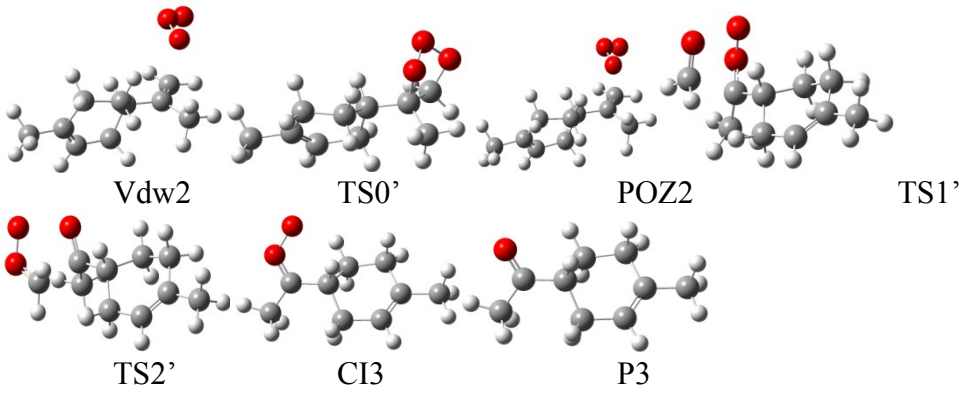

Figure S6. The optimized molecular structures of the involved substances in the ozonolysis of limonene (ozone interacts with the C=C double bond within the side chain of the limonene molecule).

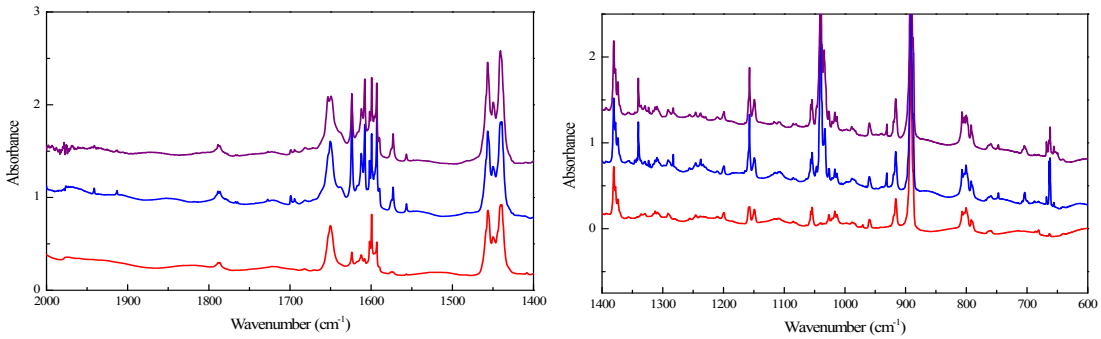

Figure S7. Infrared spectra of the co-deposition of the samples of Ar/limonene=200 and Ar/$^{18}O_3$ =200. The blue line (middle) indicates initial deposition at 14 K and the purple line (top) represents the spectrum after annealing to 35 K, compared to a blank spectrum of Ar/limonene =200 (red, bottom).