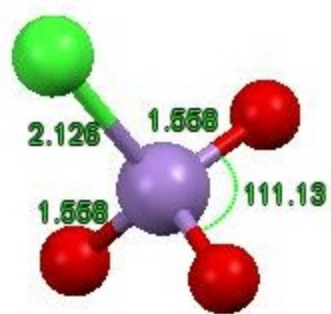
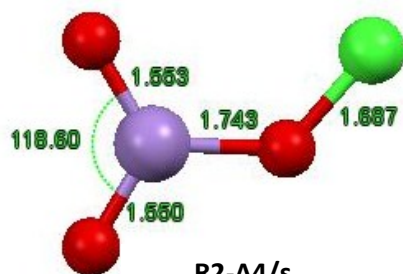


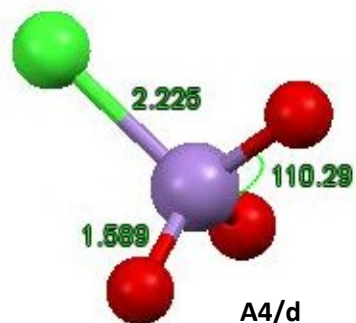
**Fig S1:** Optimized geometrical parameters of the reaction of  $\text{MnO}_4^-$  with Ethylene. Bond distances and angles in Å and degrees.



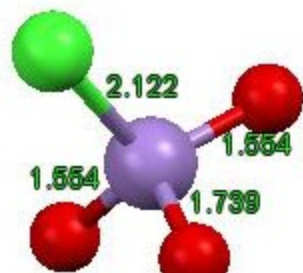
R1-A4/s



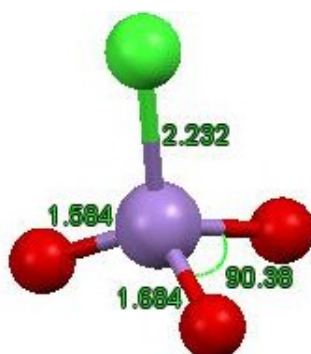
R2-A4/s



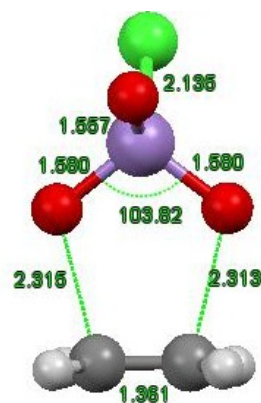
A4/d



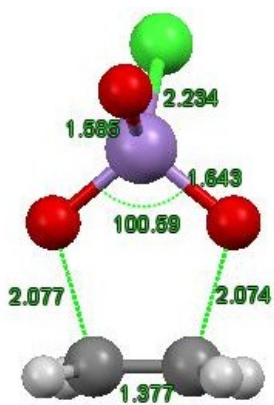
A4/t



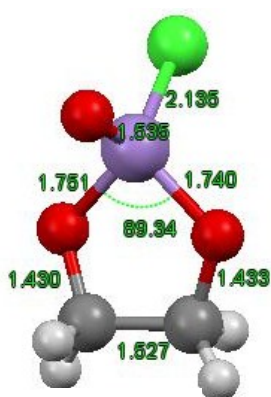
A4/q



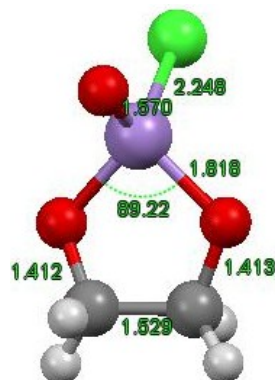
TS-[A4-A5]/s



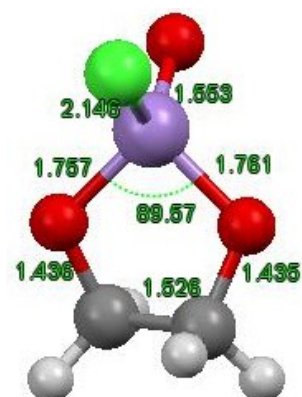
TS-[A4-A5]/d



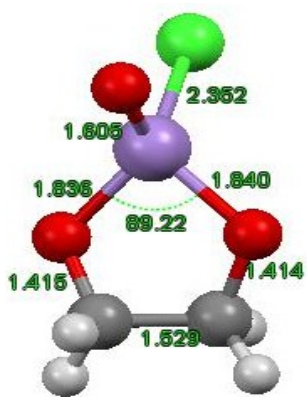
A5/s



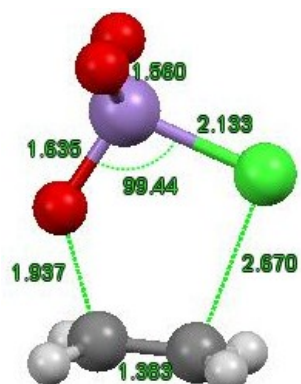
A5/d



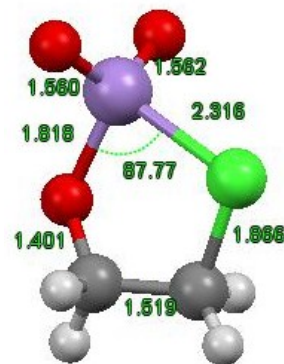
A5/t



A5/q

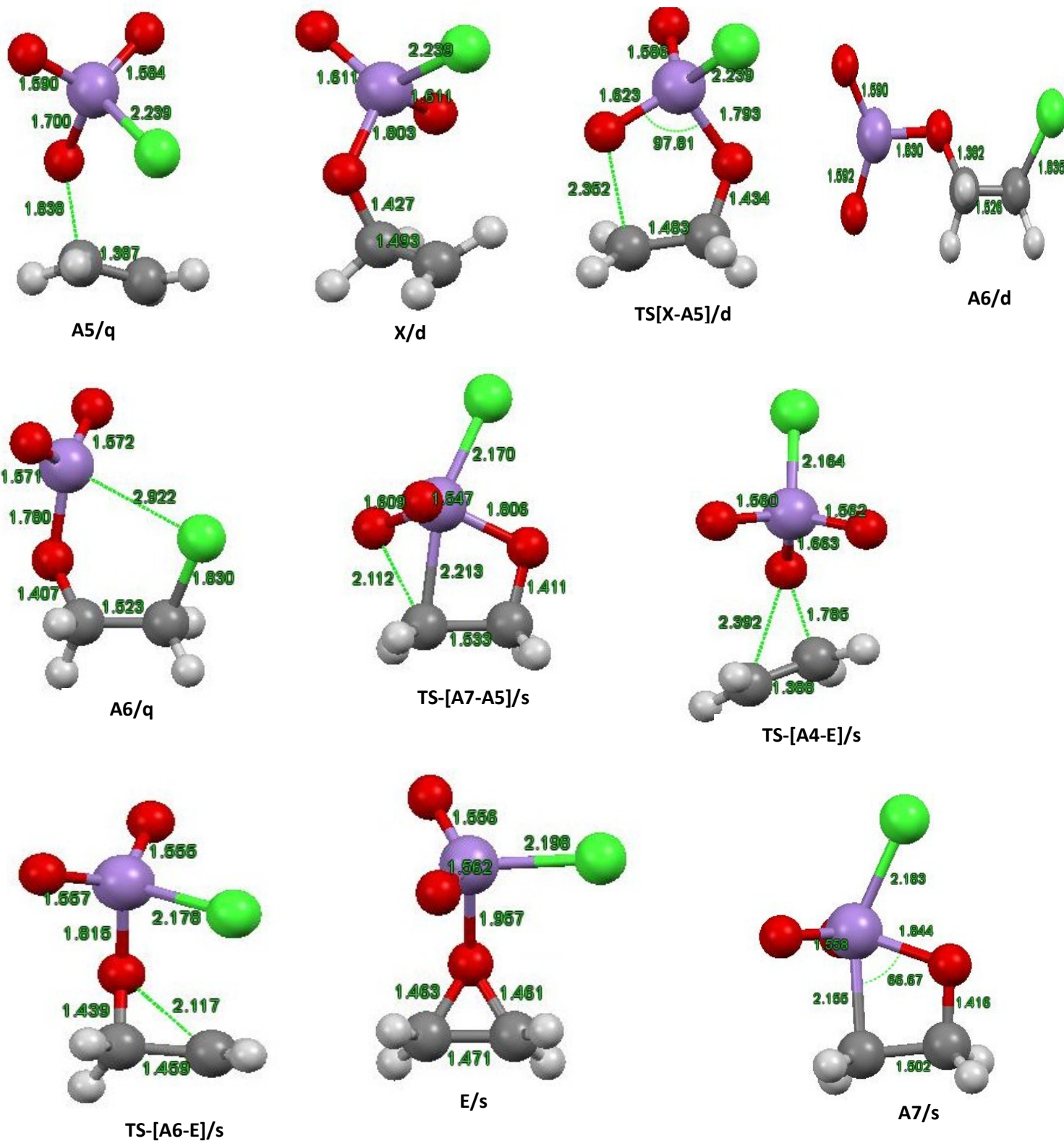


TS-[A4-A6]/s

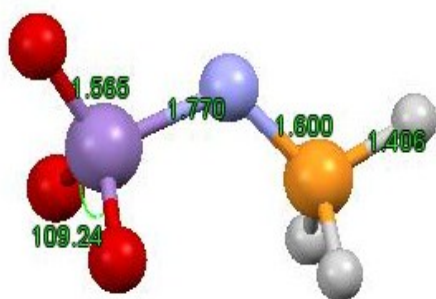


A6/s

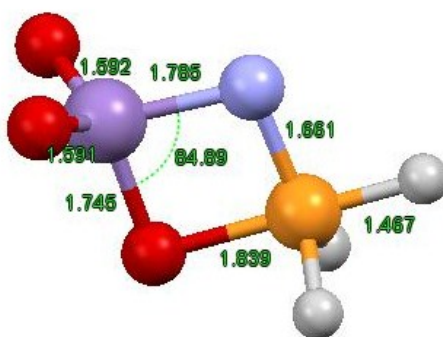




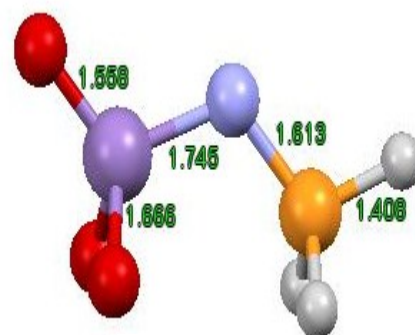
**Fig S2:** Optimized geometrical parameters of the reaction of  $\text{MnO}_3\text{Cl}$  with Ethylene. Bond distances and angles in Å and degrees.



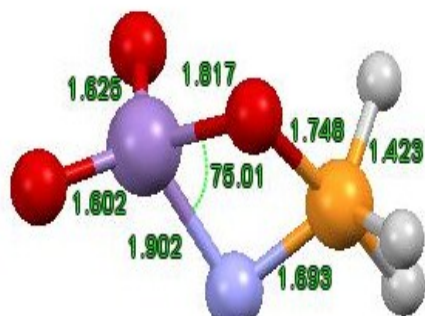
A8/s



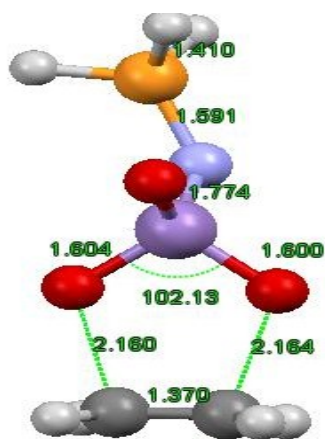
A8/d



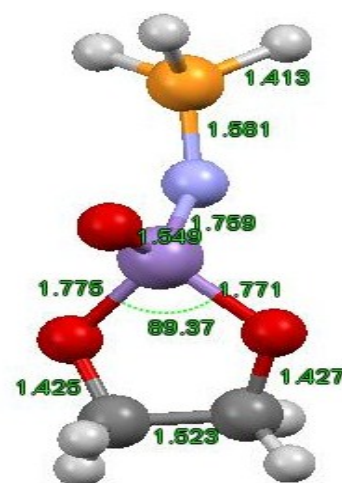
A8/t



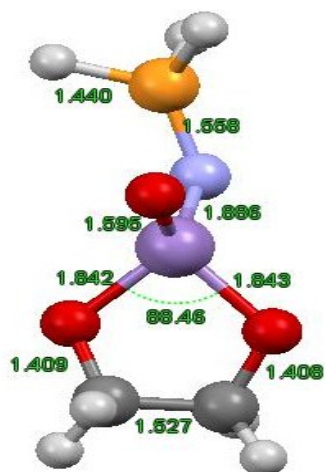
A8/q



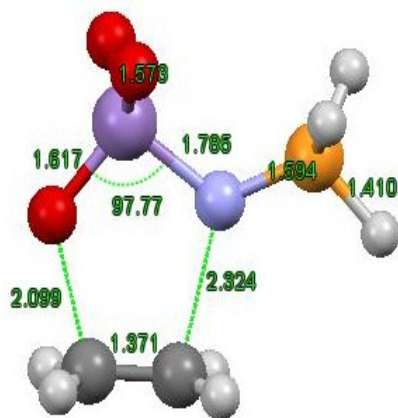
TS-[A8-A9]/s



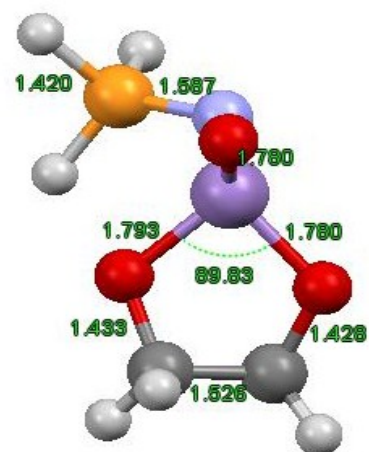
A9/s



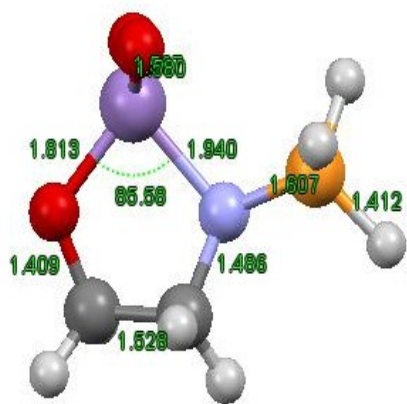
A9/d



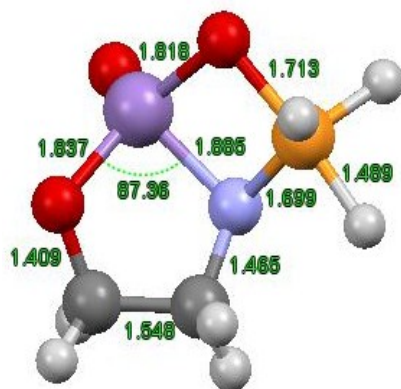
TS-[A8-A10]/s



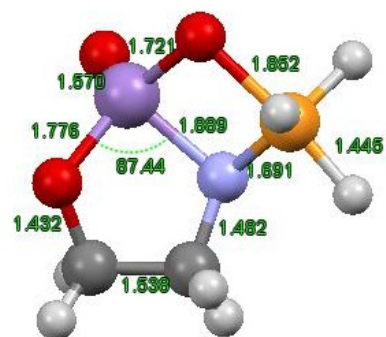
A9/t



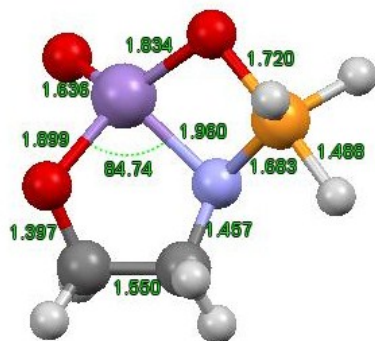
A10/s



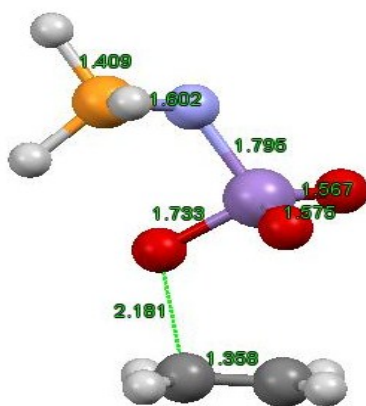
A10/d



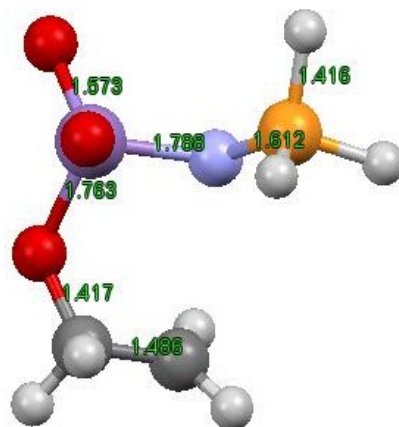
A10/t



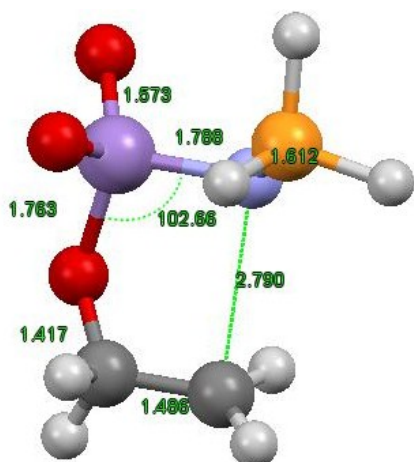
A10/q



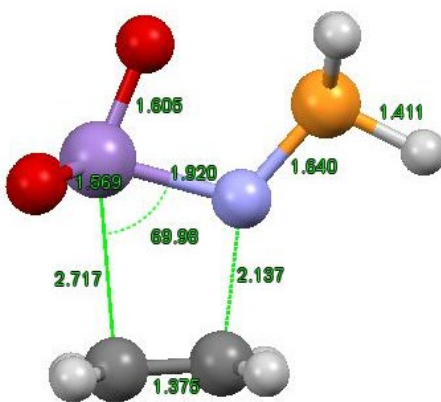
TS-[A8-X]/t



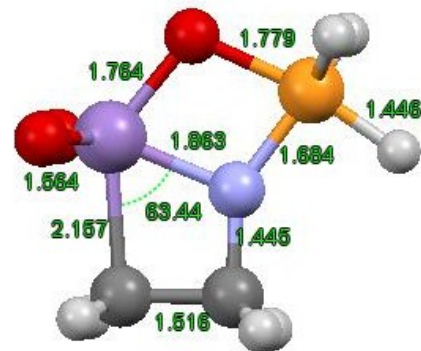
X/t



TS-[X-A10]/t

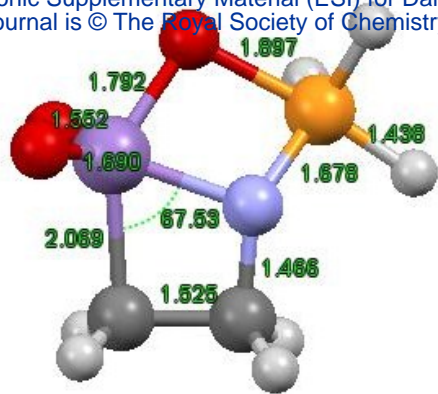


TS-[A8-A11]/s

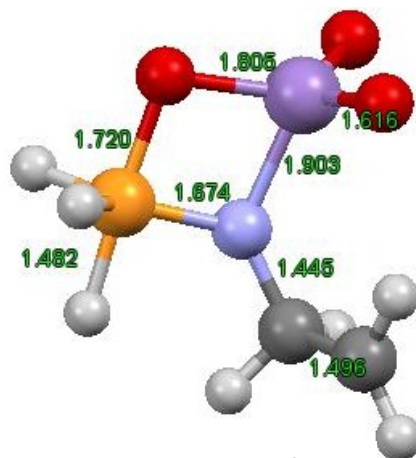


A11/s

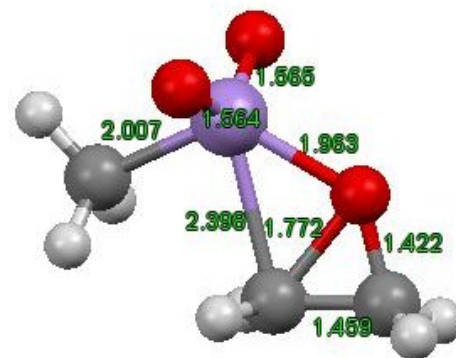




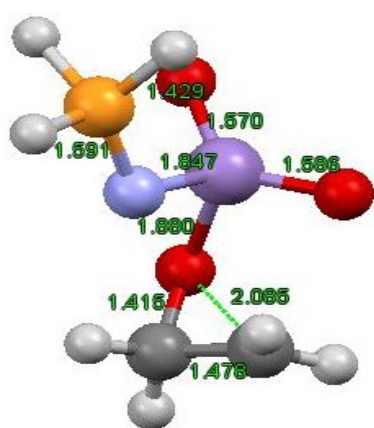
A11/t



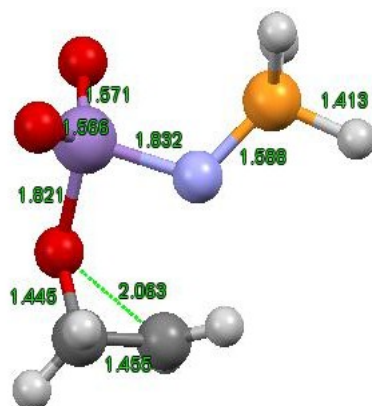
A11/q



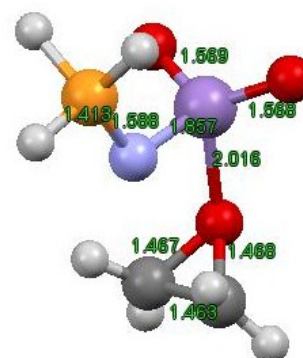
TS-[A12-E]/s



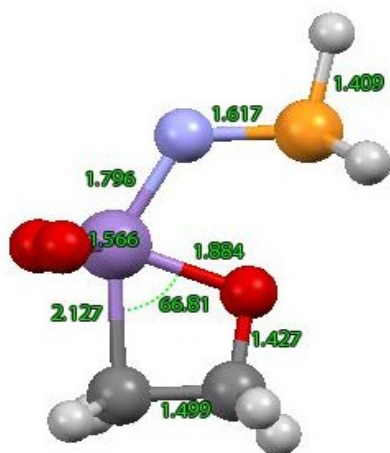
TS-[A9-E]/s



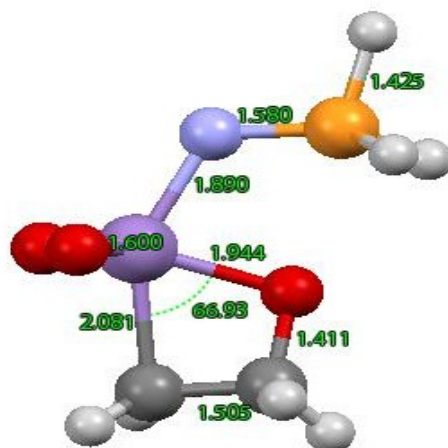
TS-[A10-E]/s



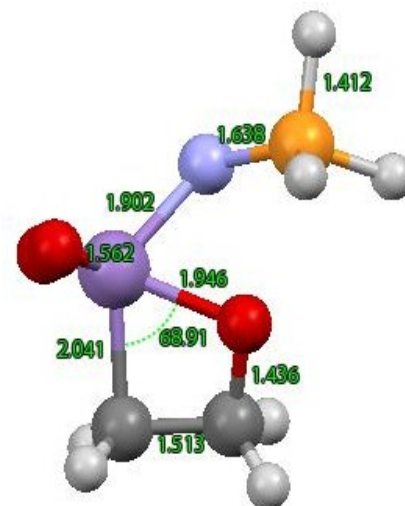
E/s



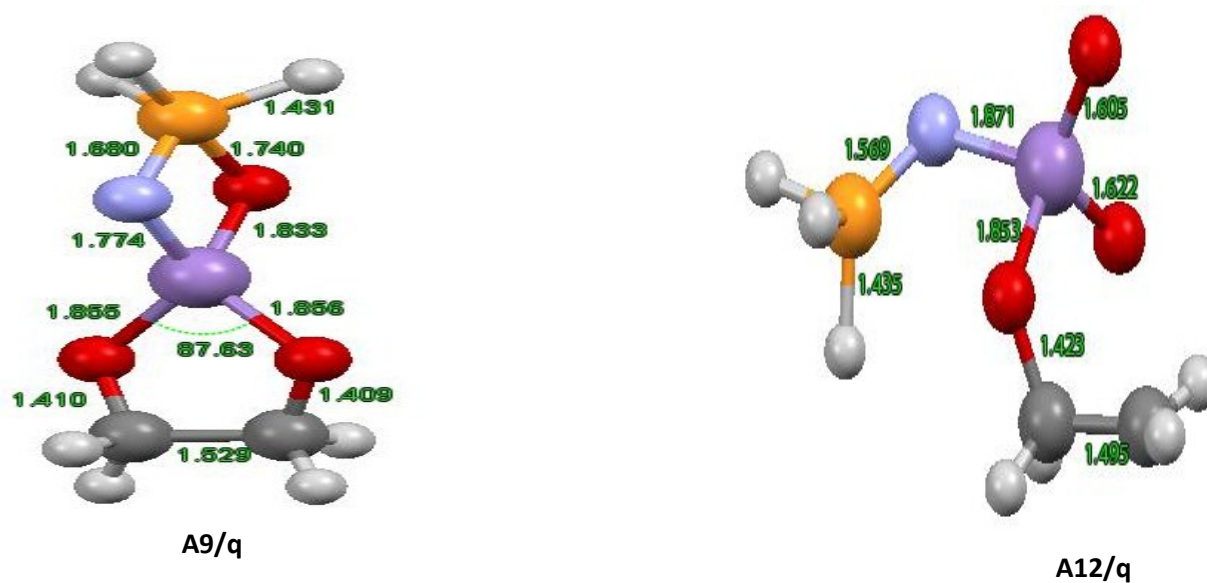
A12/s



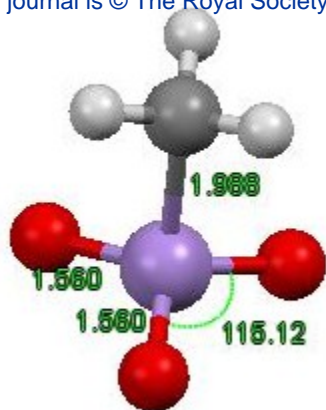
A12/d



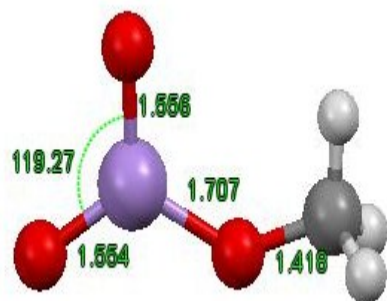
A12/t



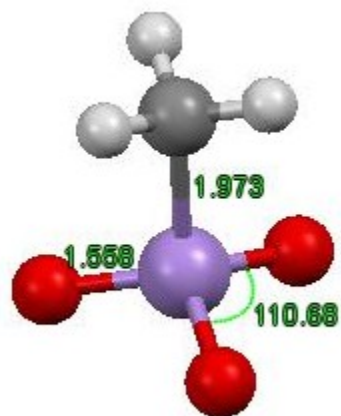
**Fig S3:** Optimized geometrical parameters of the reaction of  $\text{MnO}_3(\text{NPH}_3)$  with Ethylene. Bond distances and angles in Å and degrees.



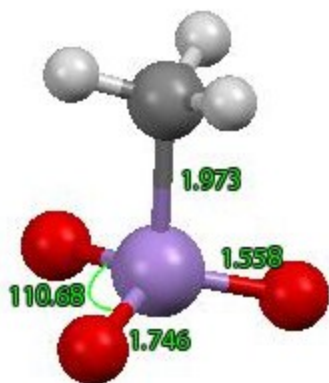
R1- A13/s



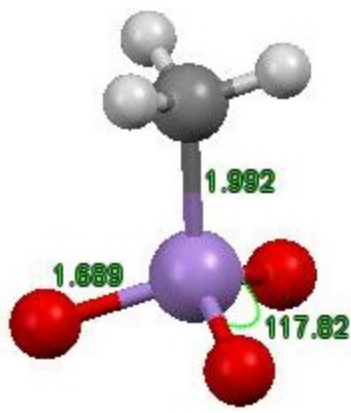
R2- A13/s



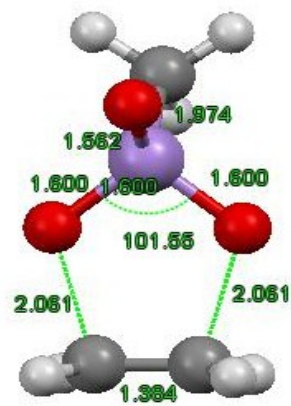
A13/d



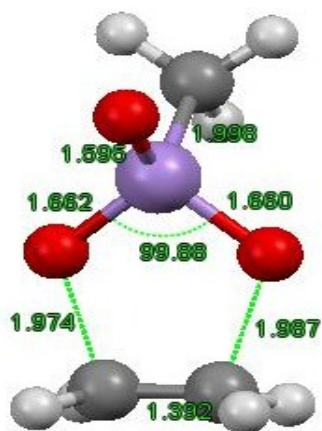
A13/t



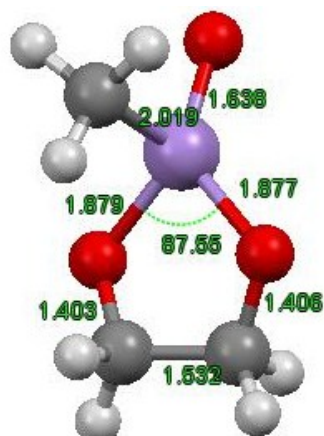
A13/q



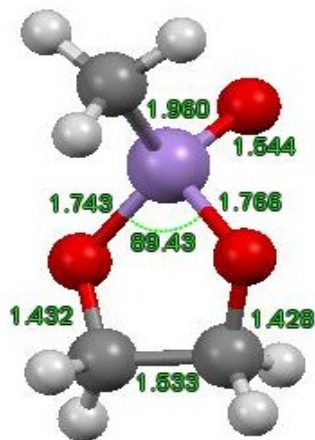
TS-[A13-A14]/s



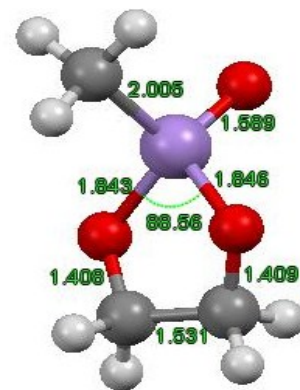
TS-[A13-A14]/d



A14/s

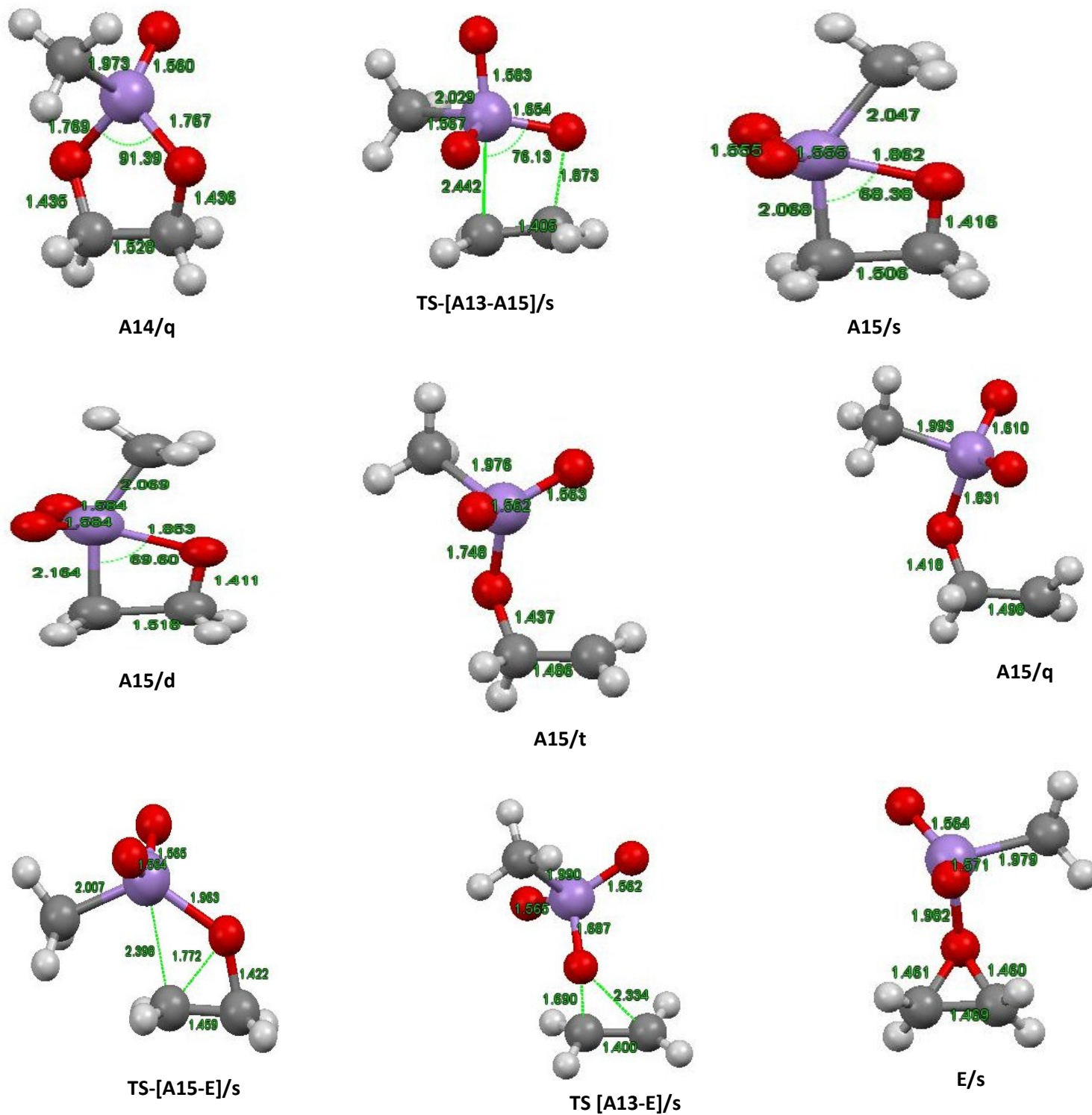


A14/d

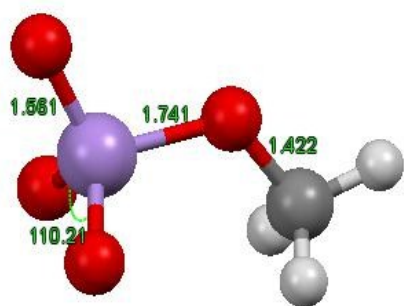


A14/t

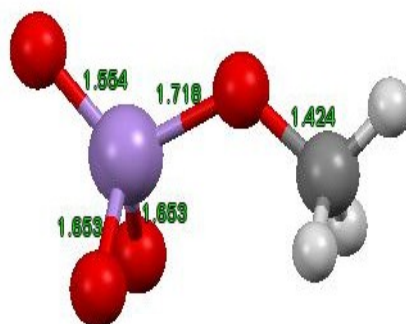




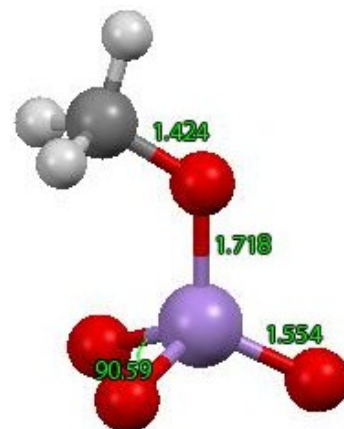
**Fig S4:** Optimized geometrical parameters of the reaction of  $\text{MnO}_3(\text{CH}_3)$  with Ethylene. Bond distances and angles in Å and degrees.



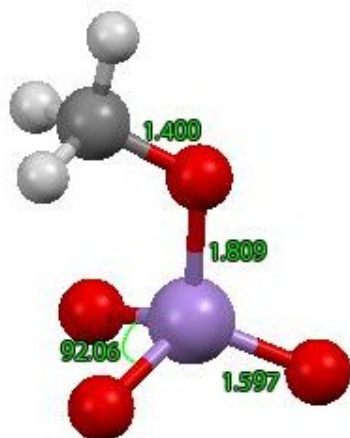
A16/s



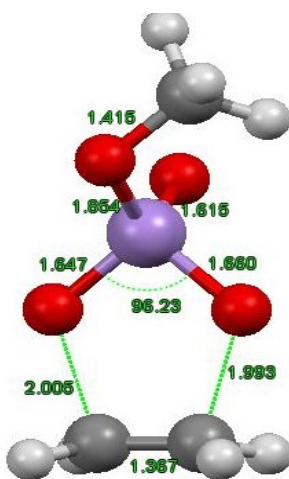
A16/d



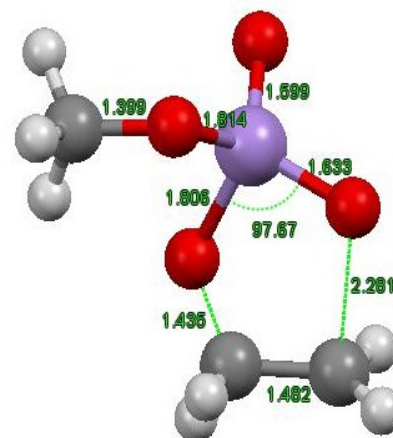
A16/t



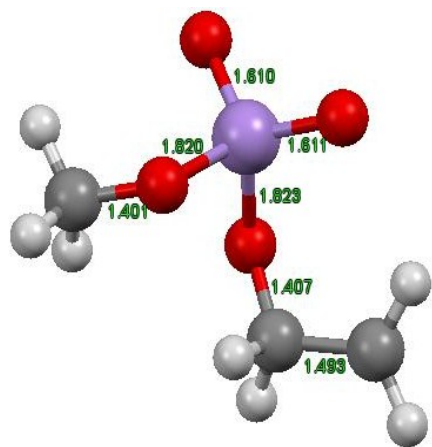
A16/q



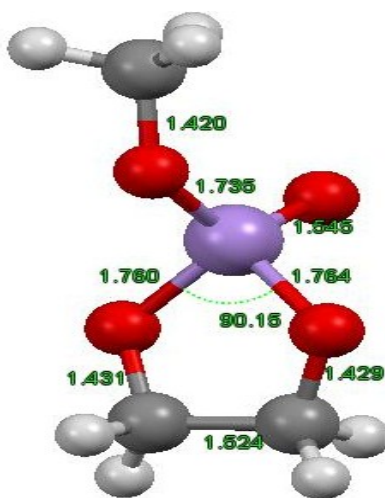
TS-[A16-A17]/s



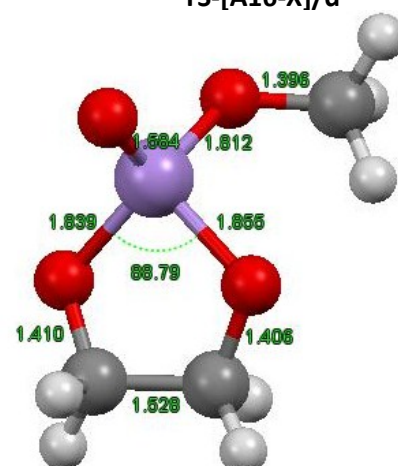
TS-[A16-X]/d



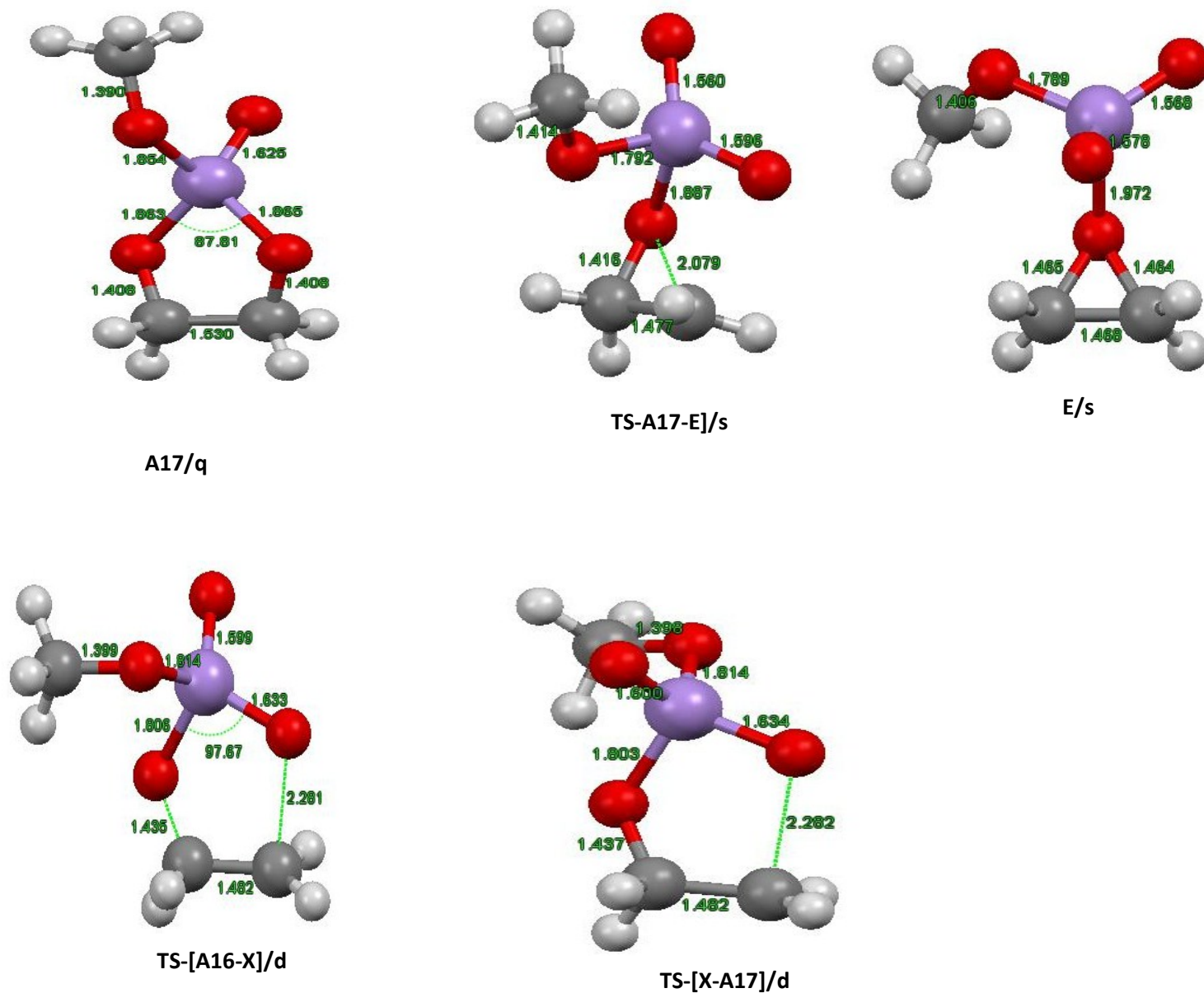
X/d



A17/s

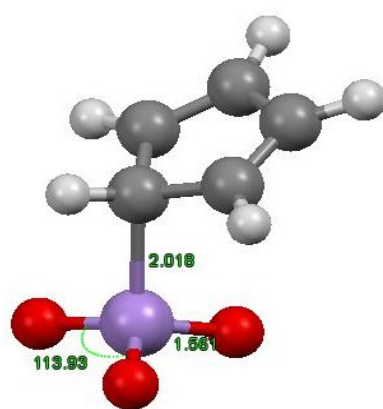


A17/t

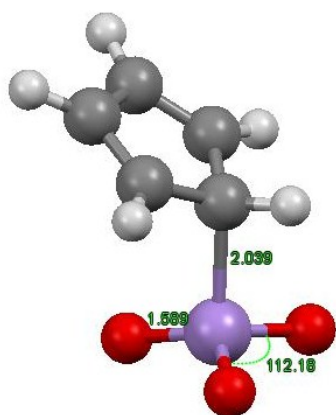


**Fig S5:** Optimized geometrical parameters of the reaction of  $\text{MnO}_3(\text{OCH}_3)$  with Ethylene. Bond distances and angles in Å and degree

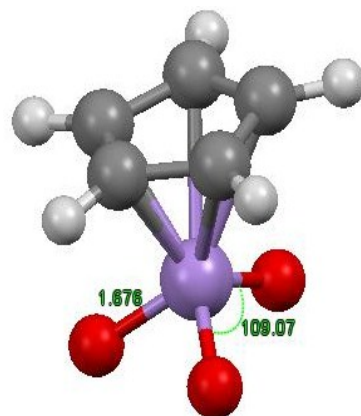




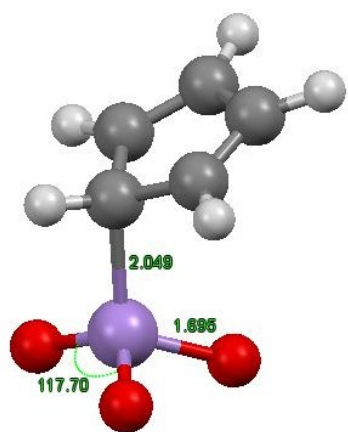
A18/s



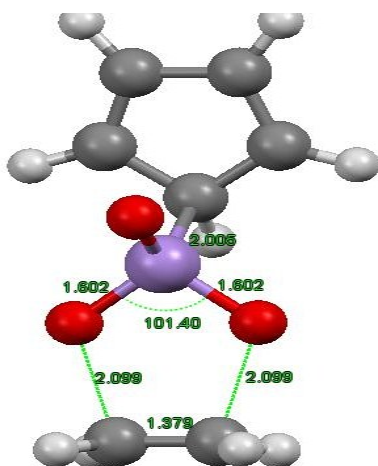
A18/d



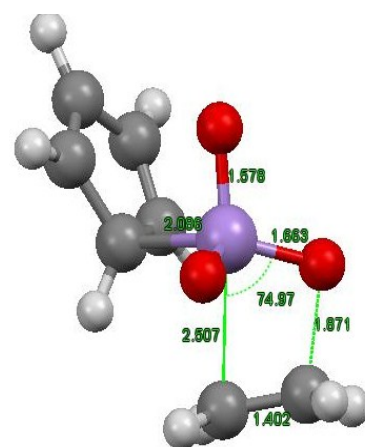
A18/t



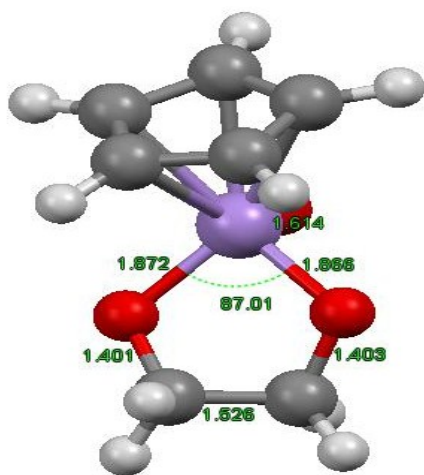
A18/q



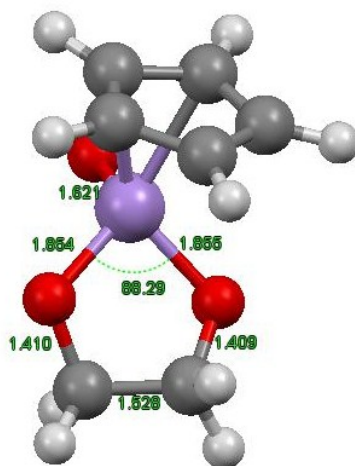
TS-[A18-A19]/s



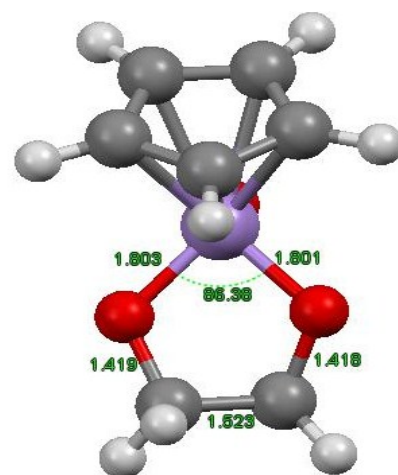
TS-[A18-A20]/s



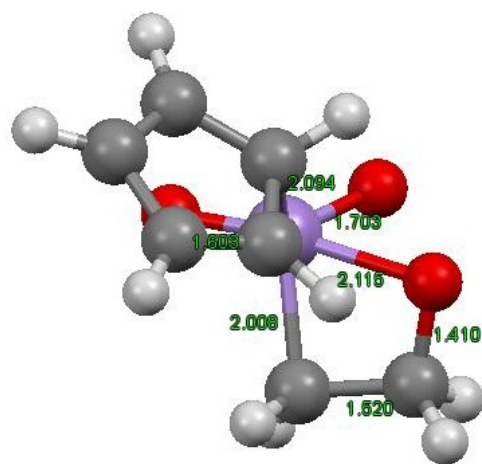
A19/s



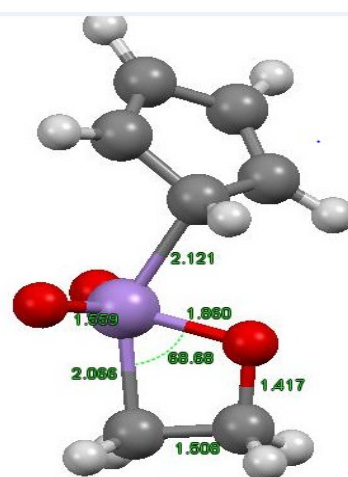
A19/d



A19/q



A20/s



A20/q

**Fig S6:** Optimized geometrical parameters of the reaction of  $\text{MnO}_3(\text{Cp})$  with Ethylene. Bond distances and angles in Å and degrees.