

Answer on the Question #66826, Chemistry / General chemistry

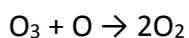
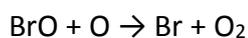
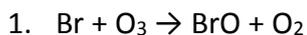
The decomposition of ozone in the stratosphere can occur by the following two step mechanism:

Step 1 $\text{Br} + \text{O}_3 \rightarrow \text{BrO} + \text{O}_2$ slow

Step 2 $\text{BrO} + \text{O} \rightarrow \text{Br} + \text{O}_2$ fast

1. Write equation of overall reaction
2. Which species is an intermediate in this mechanism?
3. Species that is catalyst
4. Write the rate law for the overall reaction

Solution:



2. BrO is an intermediate in the decomposition of ozone
3. The Br atom is a catalyst in these reactions
4. The rate law for the overall reaction:

$$\frac{d[\text{O}_3]}{dt} = -k[\text{O}_3][\text{O}]$$

$$r = -k[\text{O}_3][\text{O}]$$