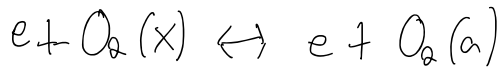
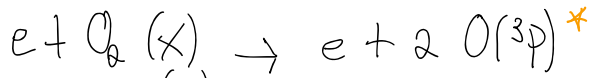


Species: $O_2(X)$, $O_2(a)$, $O(^3P)$

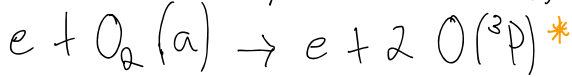
Case 1



$$k_{\text{forward}} = 6 \times 10^{-16}; k_{\text{back}} = 1.3 \times 10^{-15}$$



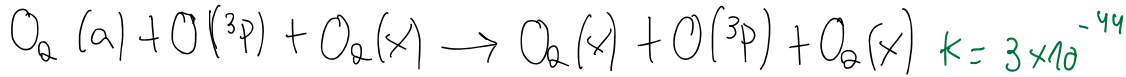
$$k = 9.6 \times 10^{-16}$$



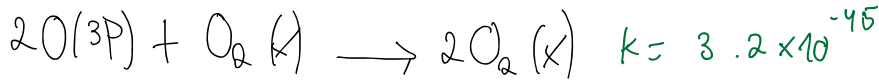
$$k = 2.2 \times 10^{-15}$$



$$k = 7 \times 10^{-22}$$



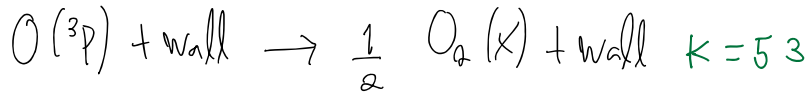
$$k = 3 \times 10^{-44}$$



$$k = 3.2 \times 10^{-45}$$



$$k = 5.2$$



$$k = 5.3$$

Conditions:

$$\text{gas pressure} = 1 \text{ Torr} = 133.332 \text{ Pa}$$

$$\text{gas temperature} = 377 \text{ K}$$

$$\text{electron density} = 4.6 \times 10^{15} \text{ m}^{-3}$$