Activation:

$$Q \underset{k_{-l}}{\overset{h\nu,\, k_l}{\rightleftharpoons}} Q^*$$

k_l = 1e8 - 1e10
k_{-l} = 1e5 - 1e6

Quenching - Q^*:

$$Q^* + DH \underset{k_{-qE}}{\overset{k_{qE}}{\rightleftharpoons}} [Q^{\bullet -}, DH^{\bullet +}]_s \xrightarrow{k_H} QH^{\bullet} + D^{\bullet}$$

k_{qE} = 1e8 - 1e10
k_{-qE} = 1e7 - 1e9
k_H = 1e8 - 1e10

$$Q^* + QHH \xrightarrow{k_{qH}} 2QH^{\bullet} \underset{k_{oxQ}}{\overset{k_{redQ}}{\rightleftharpoons}} Q + QHH$$

k_{qH} = 1e5 - 1e9
k_{oxQ} =1
k_{redQ} = 1e9

$$Q^* + QHD \xrightarrow{k_{qQD}} QH^{\bullet} + QD^{\bullet}$$

k_{qQD} = ? (2)

$$Q^* \xrightarrow{k_{qPh}} \text{prod}$$

k_{qPh} = 1e9 (1e-5)

Quenching - Q:

$$Q + D^{\bullet} \underset{k_{-D}}{\overset{k_D}{\rightleftharpoons}} QD^{\bullet}$$

Other:

$$QH^{\bullet} + D^{\bullet} \xrightarrow{k_r} QHD \xrightarrow{k_p} QHH + \text{N-prod}$$

k_r = ?(1e9)
k_p = 1e-5 - 1e-3

$$2D^{\bullet} \xrightarrow{k_{rD}} \text{N-prod}$$

k_{rD} = ? (1e9)