$$\begin{array}{c} \textbf{Activation:} \\ Q & \overline{\frac{h\nu,\,k_l}{k_{-l}}} \quad Q^* \end{array}$$

$$k_l = 1e8 - 1e10$$

$$k_{-l} = 1e5 - 1e6$$

Quenching -
$$Q$$
:

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

$$k_{qE} = 1e8 - 1e10$$

$$k_{-qE} = 1e7 - 1e9$$

$$k_H = 1e8 - 1e10$$

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

$$k_{qH} = 1\mathrm{e}5$$
 - $1\mathrm{e}9$

$$k_{oxQ} = 1$$

$$k_{redQ} = 1e9$$

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

$$k_{qQD} = ? (2)$$

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

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

Quenching - Q:

$$Q + D^{\bullet} \xrightarrow{k_D} QD^{\bullet}$$

$$k_D = ?(1)$$

$$k_{-D} = (0.05)$$

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

$$k_r = ?(1e9)$$

$$k_p = 1e-5 - 1e-3$$

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

$$k_{rD} = ? (1e9)$$