$$Q{+}DH \xrightarrow{h\nu,\, k_H} QH^{\bullet}{+}\, D^{\bullet}$$

FULL SYSTEM

Activation: $Q \underset{k_{-l}}{\overset{h\nu,\, k_l}{\rightleftharpoons}} {}^3Q$

$\mathbf{k_l}$	= 1e8 - 1e10	c^{-1}
$\mathbf{k_{-l}}$	= 1e5 - 1e6	c^{-1}

Quenching:

$$ {}^3Q{+}\, DH \longrightarrow [{}^3Q,DH] \underset{k_{-qE}}{\overset{k_{qE}}{\rightleftharpoons}} [Q^{\bullet-}, DH^{\bullet+}]_s \xrightarrow{k_{H+}} [QH^{\bullet}, D^{\bullet}]_s \xrightarrow{k_{diff}} QH^{\bullet}{+}\, D^{\bullet} $$

$$ [Q^{\bullet-}, DH^{\bullet+}]_s \xrightarrow{k_{diff}} Q_s^{\bullet-} + DH_s^{\bullet+} $$

$\mathbf{k_{qE}}$	= 1e8 - 1e10	$M^{-1}c^{-1}$
$\mathbf{k_{-qE}}$	= 1e7 - 1e9	c^{-1}
$\mathbf{k_{H+}}$	= 1e8 - 1e10	c^{-1}
$\mathbf{k_{diff}}$	= 1e8 - 1e9	c^{-1}

$$ {}^3Q{+}\, QHH \xrightarrow{k_{qH}} 2QH^{\bullet} \underset{k_{oxQ}}{\overset{k_{redQ}}{\rightleftharpoons}} Q{+}\, QHH $$

$\mathbf{k_{qH}}$	= 1e5 - 1e9	$M^{-1}c^{-1}$
$\mathbf{k_{oxQ}}$	= 1	$M^{-1}c^{-1}$
$\mathbf{k_{redQ}}$	= 1e9	$M^{-1}c^{-1}$

$$ {}^3Q{+}\, QHD \xrightarrow{k_{qQD}} QH^{\bullet}{+}\, QD^{\bullet} $$

$\mathbf{k_{qQD}}$	= ?	$M^{-1}c^{-1}$

$$ {}^3Q \xrightarrow{k_{qPh}} \text{prod} $$

$\mathbf{k_{qPh}}$	= 1e9 (1e-5)	c^{-1}

Other:

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

$\mathbf{k_D}$	= ?(1)	$M^{-1}c^{-1}$
$\mathbf{k_{-D}}$	= (0.05)	c^{-1}

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

$\mathbf{k_r}$	= ?(1e9)	$M^{-1}c^{-1}$
$\mathbf{k_p}$	= 1e-5 - 1e-3	c^{-1}

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

$\mathbf{k_{rD}}$	= ? (1e9)	$M^{-1}c^{-1}$

SIMPLE SYSTEM

Activation: $Q \underset{k_{-l}}{\overset{h\nu,\, k_l}{\rightleftharpoons}} {}^3Q$ $\quad \mathbf{k_l} = 1e8 - 1e10 \quad c^{-1}$; $\mathbf{k_{-l}} = 1e5 - 1e6 \quad c^{-1}$

Quenching:

$${}^3Q + DH \xrightarrow{k_{H+}} QH^\bullet + D^\bullet \qquad \mathbf{k_{H+}} = 1e8 - 1e10 \quad M^{-1}c^{-1}$$

$${}^3Q + QHH \xrightarrow{k_{qH}} 2QH^\bullet \xrightarrow{k_{redQ}} Q + QHH \qquad \mathbf{k_{qH}} = 1e5 - 1e9 \quad M^{-1}c^{-1}; \ \mathbf{k_{redQ}} = 1e9 \quad M^{-1}c^{-1}$$

Other:

$$QH^\bullet + D^\bullet \xrightarrow{k_r} QHD \qquad \mathbf{k_r} = ?(1e9) \quad c^{-1}$$

$$2D^\bullet \xrightarrow{k_{rD}} \text{N-prod} \qquad \mathbf{k_{rD}} = ?\ (1e9) \quad c^{-1}$$