

$\xleftarrow{S} \xrightarrow{S}$

$$c_m = c_m^\infty$$

$$c_\theta = c_\theta^\infty$$

$$\frac{\partial c_m}{\partial t} = D_m \nabla^2 c_m$$

metal bulk equation

$$\frac{\partial c_\theta}{\partial t} = D_\theta \nabla^2 c_\theta$$

catalyst bulk equation

$\delta$

deposition rate

$$v = \frac{i\Omega}{nF} \quad i = i_0 \frac{c_m^i}{c_m^\infty} \exp\left(\frac{-\alpha F}{RT} \eta\right)$$

$$i_0 = b_0 + b_1 \theta$$

catalyst boundary condition

$$-D_m \vec{n} \cdot \nabla c_m = \frac{v}{\Omega}$$

$W$

$$-D_\theta \vec{n} \cdot \nabla c_\theta = \Gamma k c_\theta (1 - \theta_a)$$

$$\frac{d\theta}{dt} = \kappa v \theta + k c_\theta (1 - \theta)$$

$$k = k_0 + k_3 \eta^3$$

catalyst surfactant equation

$D$

metal boundary condition