สารบัญเรื่อง

สารบัญภาพ

สารบัญตาราง

Nomenclature

A_v	specific active area (m^2/m^3)
c	Concentration of gas (mol/m^3)
C_p	Specific heat capacity (J/kgK)
D	Diffusivity of gas (m^2/s)
E_a	Activation energy (82000 J/mol)
E_{an}	Activation energy of the exchange current density (140 kJ/mol)
$E_{act,a}$	Activation energy of the exchange current density
R	Gas constant (8.314 J/molK)
F	Faraday constant (96487 C/mol)
i	Anode current density (A/m^2)
$i_{o,an}$	Exchange current density at anode (A/m^2)
k	Thermal conductivity (W/mK)
k_o	Pre-exponential factor (0.04274 mol/m^2 Pa s)
k_p	Permeability (m^2)
k_{wgs}	velocity constant of water-gas shift reaction (forward) (3.2×10^{-7} mol/m^3Pa^2s)
K_{eq}	Equilibrium constant
M	Molecular mass of the component (g/mol)
p	Pressure (N/m^2)
p_{ref}	Reference pressure (1.0133e5 Pa)
Q	Heat source term (W/m^3)
$\bar{r}$	Average radias of the pore (m)
R	Gas constant (8.314 J/molK) or Rate of reaction (mol/m^3s)
S	Mass source term (mol/m^2s)
T	Temperature (K)
u	Fluid velocity in x and y directions, respectively (m/s)
v	Operating voltage (V)
y_i	Mole fraction

Greek symbols

β	Charge transfer coefficient (-)
ε	Porosity (-)
ϕ	overpotential (V)
η	Activation loss (V)
μ	Dynamic viscosity (kg/ms)
ρ	Density (kg/m^3)
σ	Effective conductivity (S/m)
τ	Tortuosity

ΔH_r	Enthalpy of formation of reforming reaction (kJ/mol)
ΔH_s	Enthalpy of formation of shift reaction (-41.1 kJ/mol)
ΔH_{ox}	Enthalpy of oxidation reaction (J/mol)

Subscripts

a	Anode
c	Cathode
e	Electrolyte
eff	Effective
g	Gas
i	Gas species
ox	Oxidation reaction
r	Reforming reaction
s	Solid of shift reaction