

Partial Solution/hint to HW #8.

5.2.

$$j_L = nF D^{\text{eff}} \frac{C_R^0}{\delta} \quad (5.10)$$

① D^{eff} typically increase with T .

SOFC $\sim 800^\circ\text{C}$

PEM $\sim 80^\circ\text{C}$

D^{eff} is much larger for SOFC.

j_L (sofc) is much larger.

② $C_R^0 \sim C_R^*$ SOFC has no problem of flooding and the resulted fuel starvation.

5.3.

$$j_L = nF D^{\text{eff}} \frac{C_R^0}{\delta}$$

Three ways : ① D^{eff} high T . less restrictive catalytic layer.

② C_R^0 better flow channel design.
flooding free operation

③ δ thinner electrode diffusion layer with the same catalytic activity.