Homogenization of Solid Oxide Fuel Cell

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8. März 2023

Content

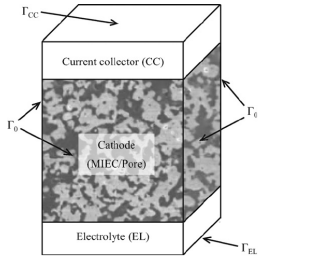
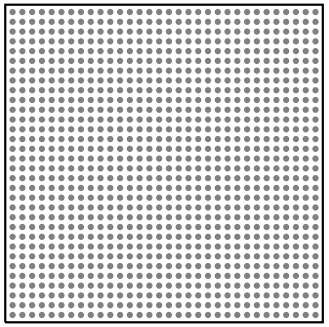
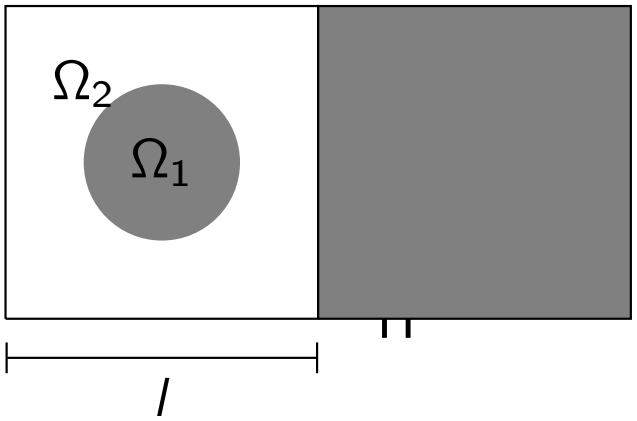


Fig. 3. Schematic definition of the boundary surfaces for the application of boundary conditions (14), (2b) and (11c).



$$\begin{aligned} \nabla \cdot (D_V \nabla u) &= f && \text{in}\Omega \\ D_V \nabla u \cdot \nu &= k(u - \bar{u}) && \text{on}\Gamma \\ u = 0, \quad u &= 1 && \text{on}\partial\Omega_D \\ \nabla u \cdot \nu &= 0 && \text{on}\partial\Omega_N \end{aligned}$$


Ω_2
Ω_1
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Homogenization

- Solve cell problem
- Compute effective diffusion tensor
- Solve macroscopic/homogenized problem

- Considering and implementation second material
- Comparison of the microscopic and the macroscopic/homogenized solution
- Extend to the 3D model