

Senior Project first model2.mph - COMSOL Multiphysics

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Model Builder

- Senior Project first model2.mph (root)
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 - Definitions
 - Membrane
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 - Cathode Electrode
 - Boundary System 1 (sys 1)
 - View 1
 - Geometry 1
 - Materials
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 - Phosphoric Acid (matB)
 - Gold (mat9)
 - Electroanalysis (elan)
 - Transport Properties 1
 - No Flux 1
 - Initial Values 1
 - Concentration 1
 - Electrode Surface 1
 - Electrode Surface 2
 - Mesh 1
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 - Step 1: Cyclic Voltammetry
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 - Results
 - Data Sets
 - Derived Values
 - Tables
 - Cyclic Voltammograms (elan)
 - Electrode Potential (elan)
 - Average Current Density (elan)
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Settings

No Flux 1

Label: No Flux 1

Boundary Selection

Selection: All boundaries

Active: 1, 2, 3, 4, 5, 6

Override and Contribution

Equation

Show equation assuming: Cyclic Voltammetry, Cyclic Voltammetry

$-n \cdot N = 0$

Graphics

Messages Progress Log Table

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Settings

Concentration 1

Label: Concentration 1

Boundary Selection

Selection: Manual

Active: 13, 16, 18, 20, 22, 24

Override and Contribution

Equation

Show equation assuming: Cyclic Voltammetry, Cyclic Voltammetry

$C_i = c_{i,p}$

Concentration

- Species c1
- $c_{0,c1}$ c_{bulk} mol/m³
- Species c2
- $c_{0,c2}$ $c_{bulk,p}$ mol/m³

Graphics

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Settings

Electrode Surface

Label: Electrode Surface 1

- Boundary Selection
- Override and Contribution
- Equation
 - Show equation assuming: Cyclic Voltammetry, Cyclic Voltammetry
 - Equation: $i_{\text{total}} = \sum_{j=1}^N i_{j,\text{sc}} + i_{\text{dl}}$
 - Equation: $\cdot n \cdot N_i = R_{\text{ox},i} + R_{\text{red},i} = \sum_{j=1}^N R_{j,i}$
- Model Input
- Dissolving-Depositing Species
- Film Resistance
- Harmonic Perturbation
- Boundary Condition
 - Boundary condition: Cyclic voltammetry
 - Linear sweep rate: V
 - Start potential: Start potential [V]
 - Number of cycles:
 - Vertex potential 1: [V]
 - Vertex potential 2: [V]
 - End potential: End potential [V]

Graphics

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