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Current Distribution in a Single Cell of PEMFC

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Understanding of current and temperature distributions along with variation of gas composition in the cell of PEMFC is crucial for designing the cell components such as flow field plate and membrane-electrode assembly. Current distribution in the single cell was experimentally measured by using especially designed single cell which was composed of 81 compartments. Each compartment was electronically insulating from neighboring compartments. Current distributions were measured by using Hall effect sensors that were connected to the corresponding compartments. Influences of flooding and stoichiometry variation of feed gas were discussed in terms of the rate of electrochemical reaction, from the measured distributions of local currents in a segmented single cell.