

Thermal conductivity in different PEMFC components and corresponding internal temperature gradients

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10-15 years ago the polymer electrolyte membrane fuel cell (PEMFC) was by most researchers considered isothermal. This can be understood in the light that many of the components are thinner than a hair fibre (30-500 micro meter) and hardly any information about component thermal conductivity was available. Over the last decade the knowledge about different PEMFC component through- and in-plane thermal conductivity has been established for different compaction pressures, PTFE content dependency, and levels of water content. Today, most fuel cell numerical models account for thermal gradients as well as other transport phenomena. The talk will summarise the last 10 years of published literature on thermal conductivity of PEMFC materials and give leads to the current boundary of knowledge in the field. In addition, some of the impacts on thermal gradients that these data impose in a thermal model of a PEMFC will be shown.