Durability Issues and Status of PBI-Based Fuel Cells - DTU Orbit (08/11/2017)

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This chapter briefly reviews durability and stability issues with key materials and components for HT-PEMFCs, including the polymer membrane, the doping acid, the electrocatalyst, the catalyst support and bipolar plates. Degradation mechanisms and their dependence on fuel cell operating conditions are summarized as well. To date, lifetimes of this type of fuel cells of up to 18,000 h with degradation rates of around 5 μV/h at temperatures of 150–160 °C have been demonstrated using hydrogen and air under constant moderate load. However, the degradation rate increases by a factor 10 when the cell is exposed to start-up–shutdown or load cycling.

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