

Burning of fossil fuels to power vehicles causes emissions of carbon dioxide and in consequence the global warming which, in turn, causes melting of glaciers, extinction of species and various other negative consequences. The only way to decrease the harmful emissions is a transition to emission-free energy sources such as fuel cells. A promising type of such fuel cells are hydrogen fueled proton exchange membrane fuel cells (PEMFCs). One of the main obstacles hindering their widespread commercialization is the production cost and poor durability of catalyst/support assemblies. The present thesis focuses on the possibility to use candle soot (CS) as an efficient and low-cost catalyst support and compares the power characteristics of the fuel cell utilising the candle soot support with the one utilizing a commercial catalyst support. The results show that Pt/CS assemblies exhibit comparable or even better power densities than Pt / commercial catalyst support, which makes candle soot a promising type of the support for PEMFCs catalyst.