Perfluoropolyethers as hydrophobizing agents for Fuel Cells Gas Diffusion Layer

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The PFPE functionalization of carbon black was also applied in catalyst layer, decreasing the electrochemical degradation of the material. PFPE chains were covalently linked to carbon black and carbon cloth in order to obtain superhydrophobic carbonaceous functional materials. The PFPE-functionalized materials provided better performances than PTFE-hydrophobized standards, thanks to an improved water management.

Conclusions

PFPE chains were covalently linked to carbon black and carbon cloth in order to obtain superhydrophobic carbonaceous functional materials. The PFPE-modified carbon-based materials were tested as a Gas Diffusion Layers (GDL) in a PEMFC. Polarization curves and impedance spectroscopy showed that PFPE-functionalized materials provided better performances than PTFE-hydrophobized standards, thanks to an improved water management. The PFPE functionalization of carbon black was also applied in in catalyst layer, decreasing the electrochemical degradation of the material.