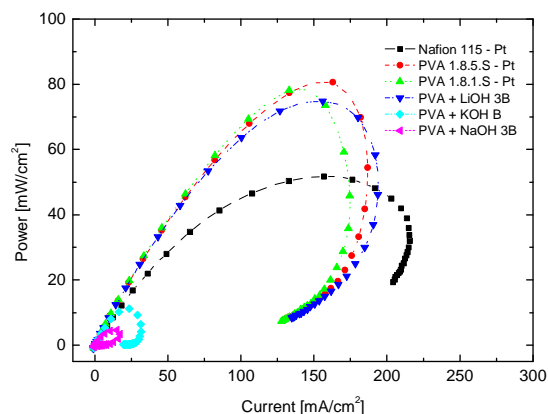
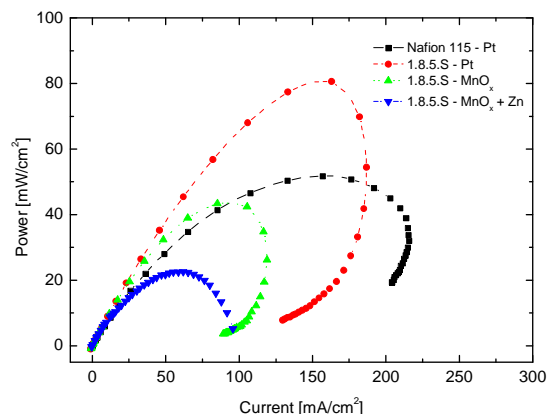


Alkaline membranes based on poly(vinylalcohol) for PEM fuel cells

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Technická 10, 62800 Brno, Czech RepublicIt was prepared samples of polyvinylalcohol (PVA)
membrane by two ways:*PVA membranes without hydroxide*PVA (Mowiol 15-99) was dissolved in hot water. A small
amount of potassium dichromate water solution was
added to PVA solution. Difference between membranes is
in amount of potassium dichromate (Table 1). Membranes
were crosslinked in UV box after drying (aprox.
10 minutes) [1]Table 1. Composition of PVA membranes without
hydroxide

Sample	PVA 10wt% [g]	K ₂ Cr ₂ O ₇ [g]	H ₂ O [g]
1.8.1 S	12	1,8	0
1.8.5 S	12	0,6	1,2

*PVA membranes with hydroxide*10 wt% PVA watersolution was mixed with 10 wt%
water solution of potassium, lithium or sodium hydroxide.
Ratio of this mixture was 60:40 wt. It was added 5 wt%
glycerine. After 24 hours of mixing 1 wt% BORAX
sloution was added. Membranes were crosslinked in UV
box after drying.Electrodes for MEA structure PEMFC were prepared by
spraying of “ink” on the carbon paper Quintech TP060.
The ink was homogenized by sonication from the
prepared catalysts [2]. As a Pt catalyst was used HiSPEC
3000. Amount of Pt was 0,5 mg/cm². Manganese dioxide
based electrocatalysts were prepared by a chemical
reaction of potassium permanganate at the carbon black
Chezacarb A. One sample was doped by the satlt of Zn
and one sample was undopped [3]. Amount of MnO_x
electrocatalyst was 2 mg/cm².Fig. 1: Power characteristics of PEMFC with different
type of PVA based membranes. Pt catalysts 0,5 mg/cm²
was used for both electrodesFig. 2: Power characteristics of PEMFC with PVA
based membranes and 2 mg/cm²manganese dioxide
positive electrodes with and without dopant. Pt catalysts
0,5 mg/cm² was used for negative electrodes**Acknowledgements**This work was realised in CEITEC - Central European
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