Electronic Supplementary Information for:

Use of new cross-linking method to obtain semi-IPN membranes with phosphonic acid groups for a PEMFC application

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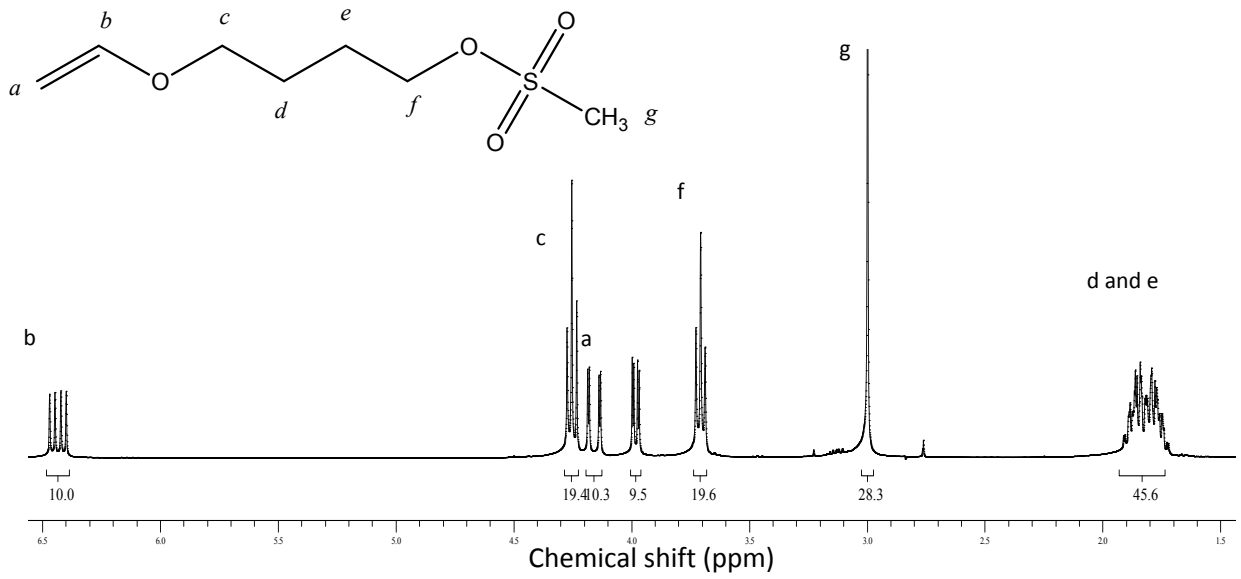

Figure S1 : ^{1}H NMR spectrum of BVEMs (realized in $CDCl_3$)

In Figure S*1*, after purification, the presence of the signal centered at 3ppm representative of the -CH_3 group (g) of the mesylate function can be observed. In addition, we observe a light shielding of the signal representative of the -C**H_2**- group (f) (from 3.8 to 3.7) in α position of the mesylate group due to the delocalization of the electron cloud of oxygen.

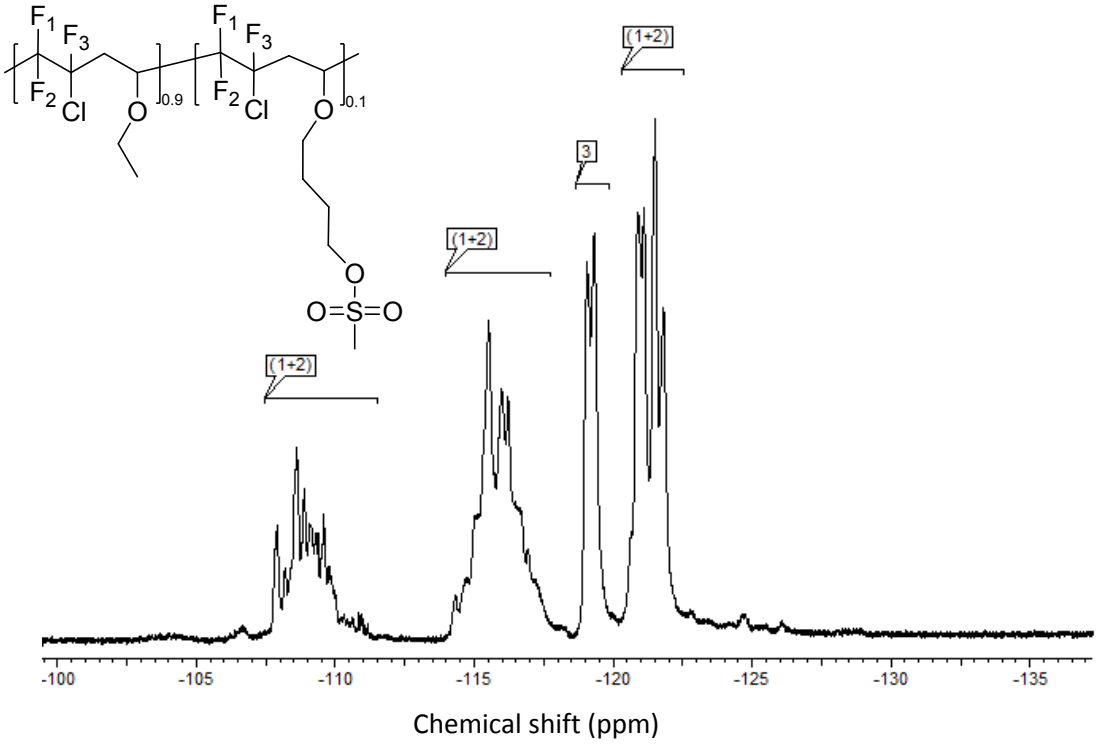

Figure S2: ^{19}F NMR Spectrum of poly[(CTFE-*alt*-EVE)$_{0.9}$-*co*-(CTFE-*alt*-VBMS)$_{0.1}$] in $CDCl_3$

The ^{19}F NMR (Figure S2) spectrum confirm the waiting structure. Indeed, we can observe the presence of the four signals significant of the fluorine atom of the main polymer chain. Concerning the -C**F**$_2$- groups, the large signals range between -108 to -112, -115 to -119, and -120.7 to -123ppm and for the -C**F**Cl- the signal is centered at -120ppm.