

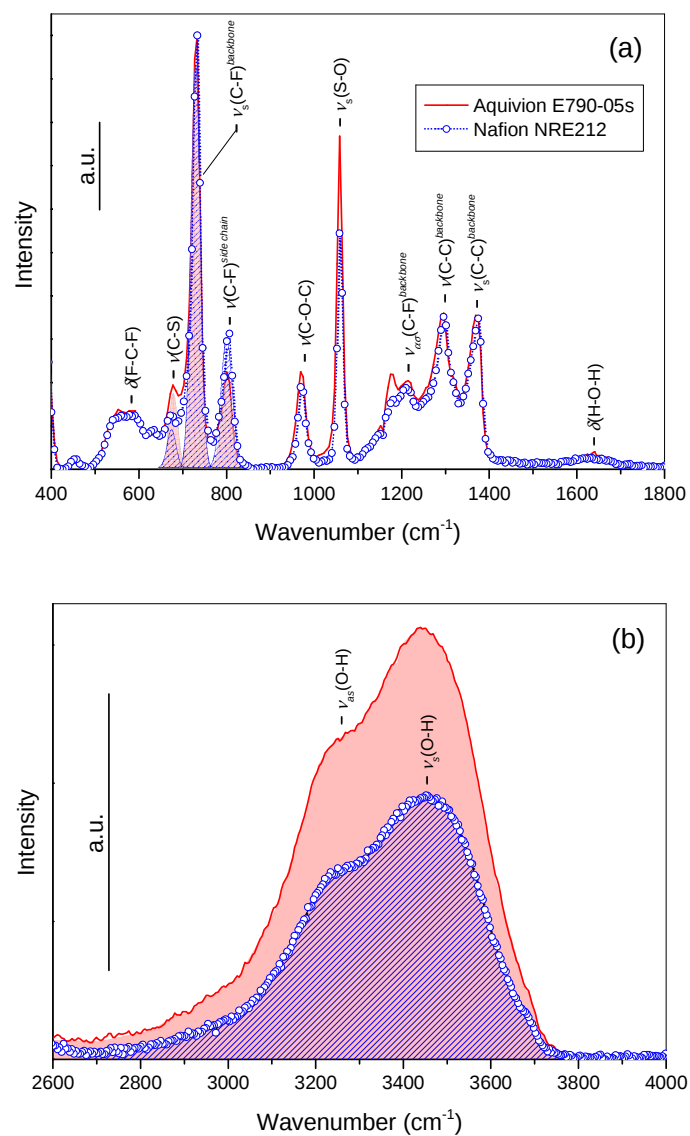


Fig. S1 Raman spectra of Nafion[®] NRE 212 and Aquivion[™] E790-05s membranes soaked in water: (a) wavenumber range of bands arising from vibrations of molecular groups belonging to the polymer phase and (b) to sorbed water. Spectral attributions are according Peng *et al.*⁴² Intensities are normalized on the most intense $\nu_s(\text{C-F})$ band at 735 cm^{-1} . The integrated signals of water and fluorinated matrix used to assess the membrane water volume fraction are indicated.

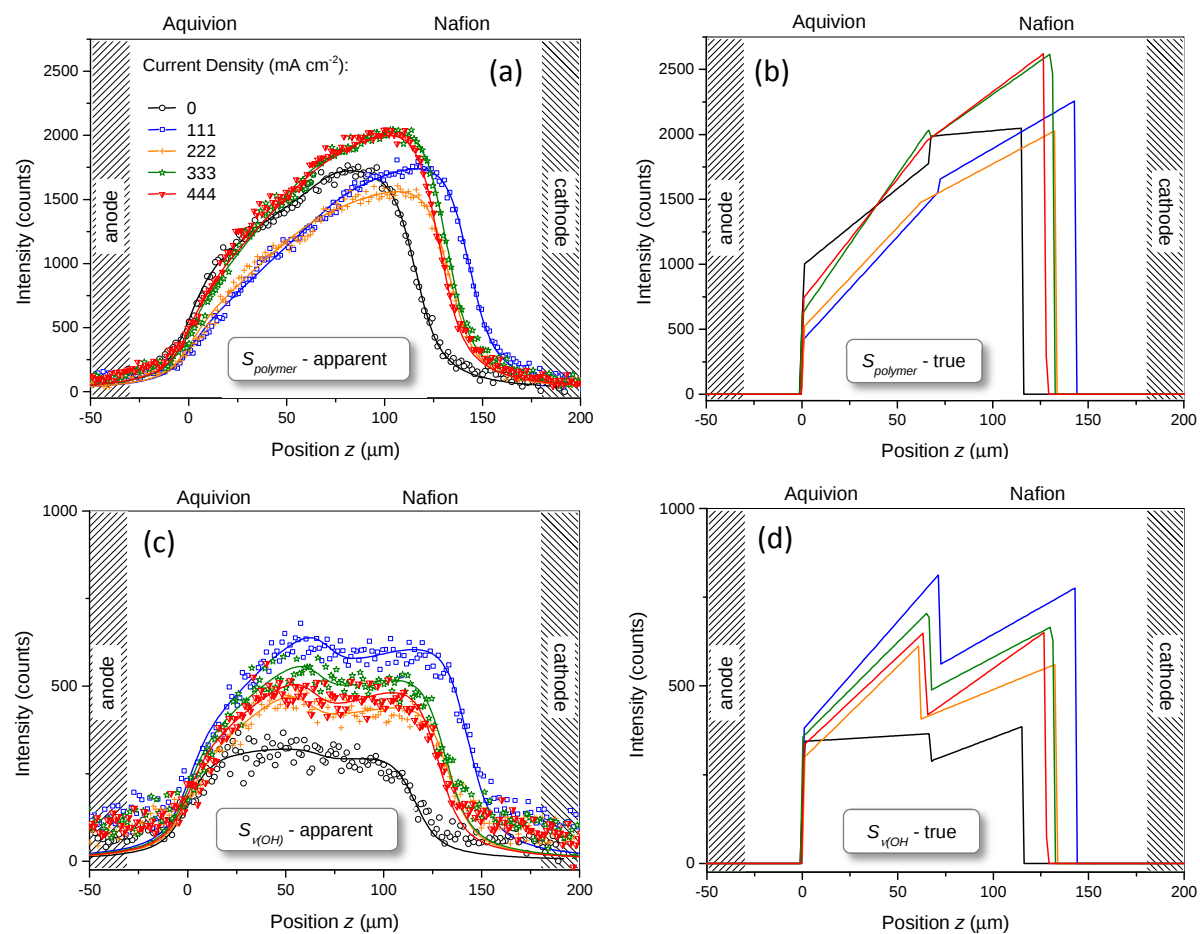


Fig. S2 Apparent (symbols, left side) and true (right side) Raman intensity profiles obtained across the (A)Aquivion/Nafion(C) assembly at different current densities : (a,b) polymer and (c,d) water signals. Solid lines in graphs at the left side are the convolution functions between the true intensity profiles and the instrumental spreading function.

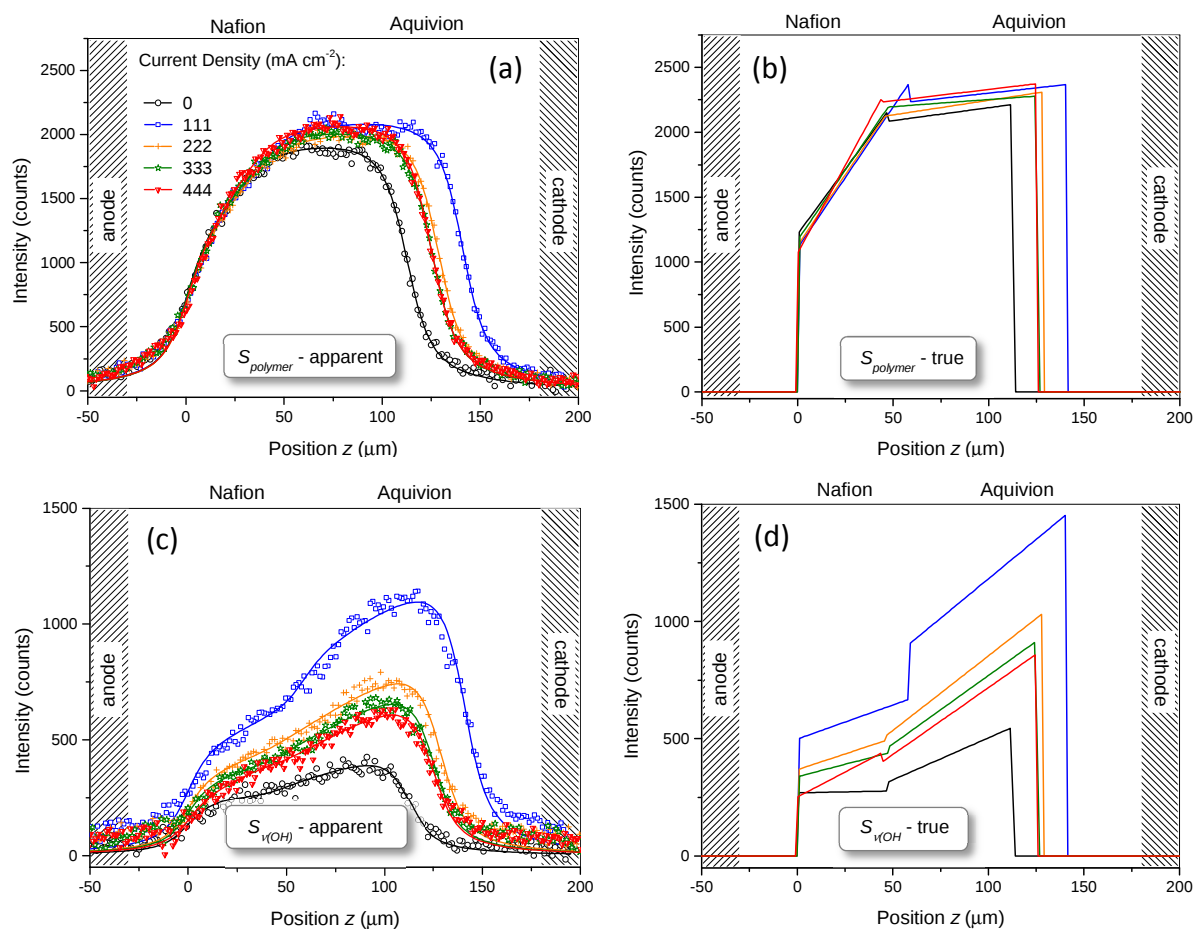


Fig. S3 Apparent (symbols, left side) and true (right side) Raman intensity profiles obtained across the (A)Nafion/Aquivion(C) assembly at different current densities : (a,b) polymer and (c,d) water signals. Solid lines in graphs at the left side are the convolution functions between the true intensity profiles and the instrumental spreading function.