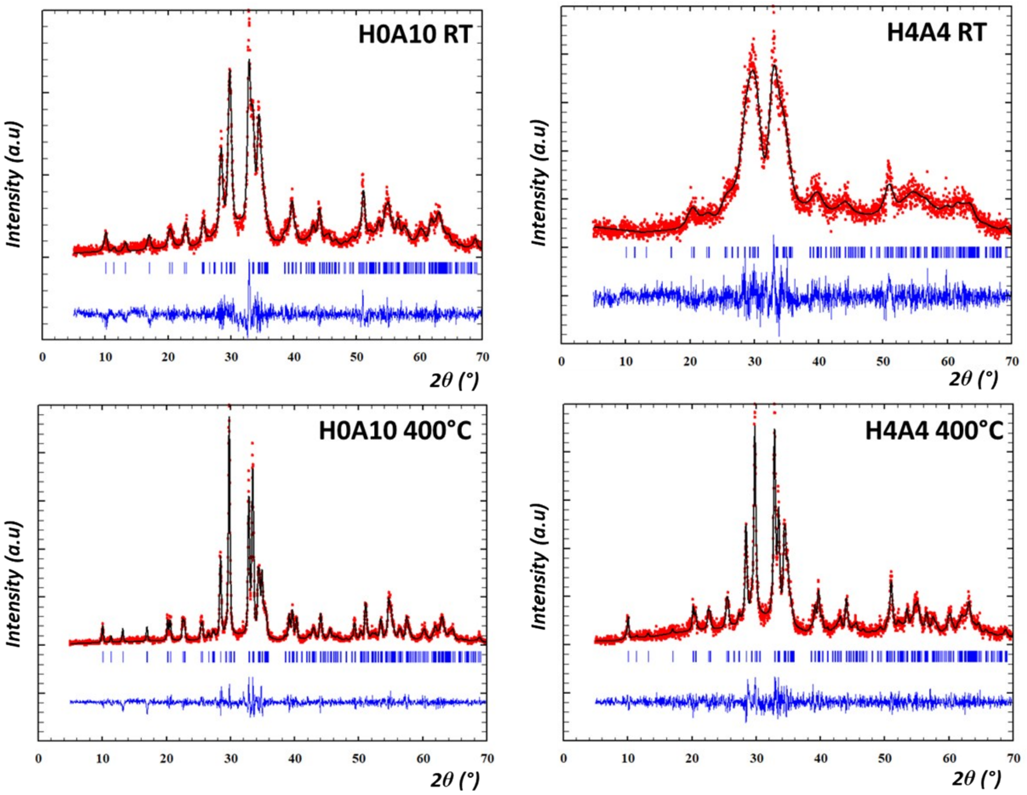


Figure S1.- Detail of the final fits for full profile pattern matching analyses of room temperature xerogels, and after heating them at 400ºC.

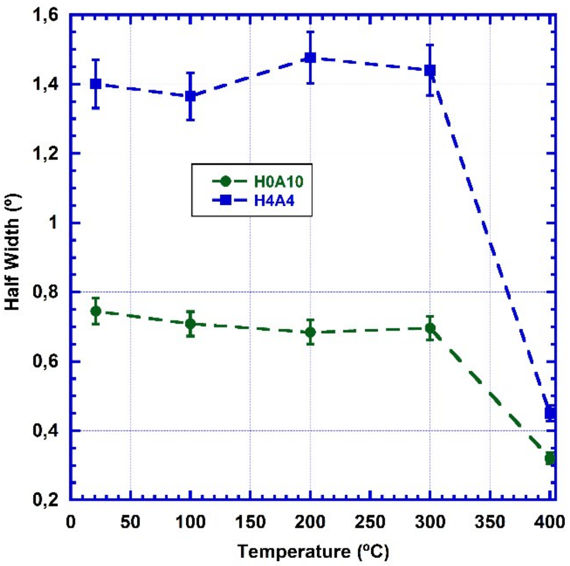


Figure S2.- Evolution of the Half width with the heat treatments of the samples. Half width parameter value has been obtained from profile analyses of the XRD patterns.

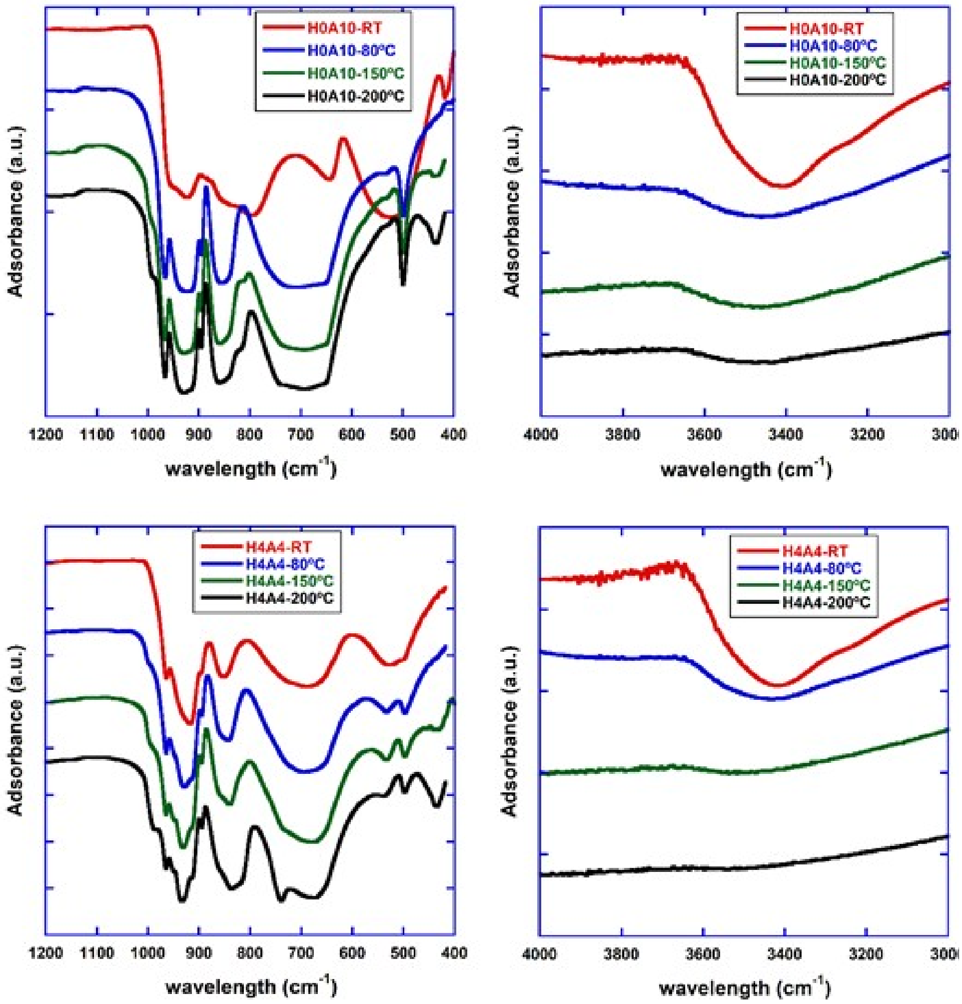


Figure S3.- Detailed IR spectra for as-synthesized H0A10 and H4A4 samples and after a two hours thermal annealing at 80ºC, 150ºC and 200ºC.

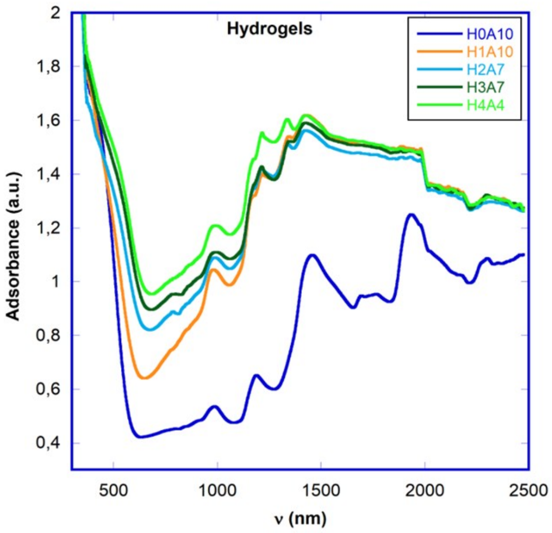


Figure S4.- UV-Vis of the SVO hydrogels and composite SVO@VO hydrogels

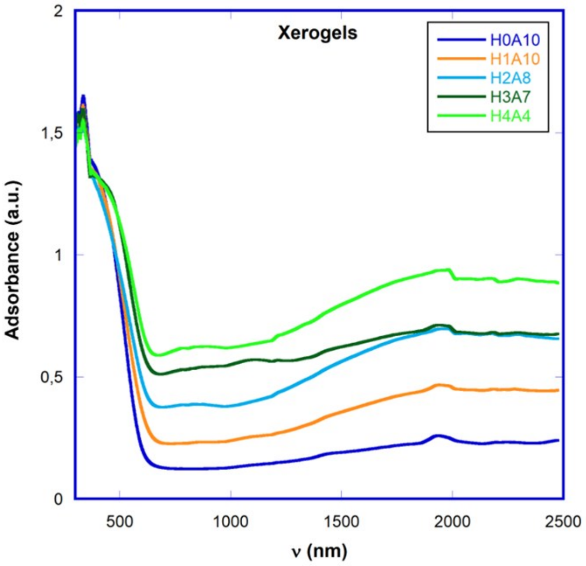
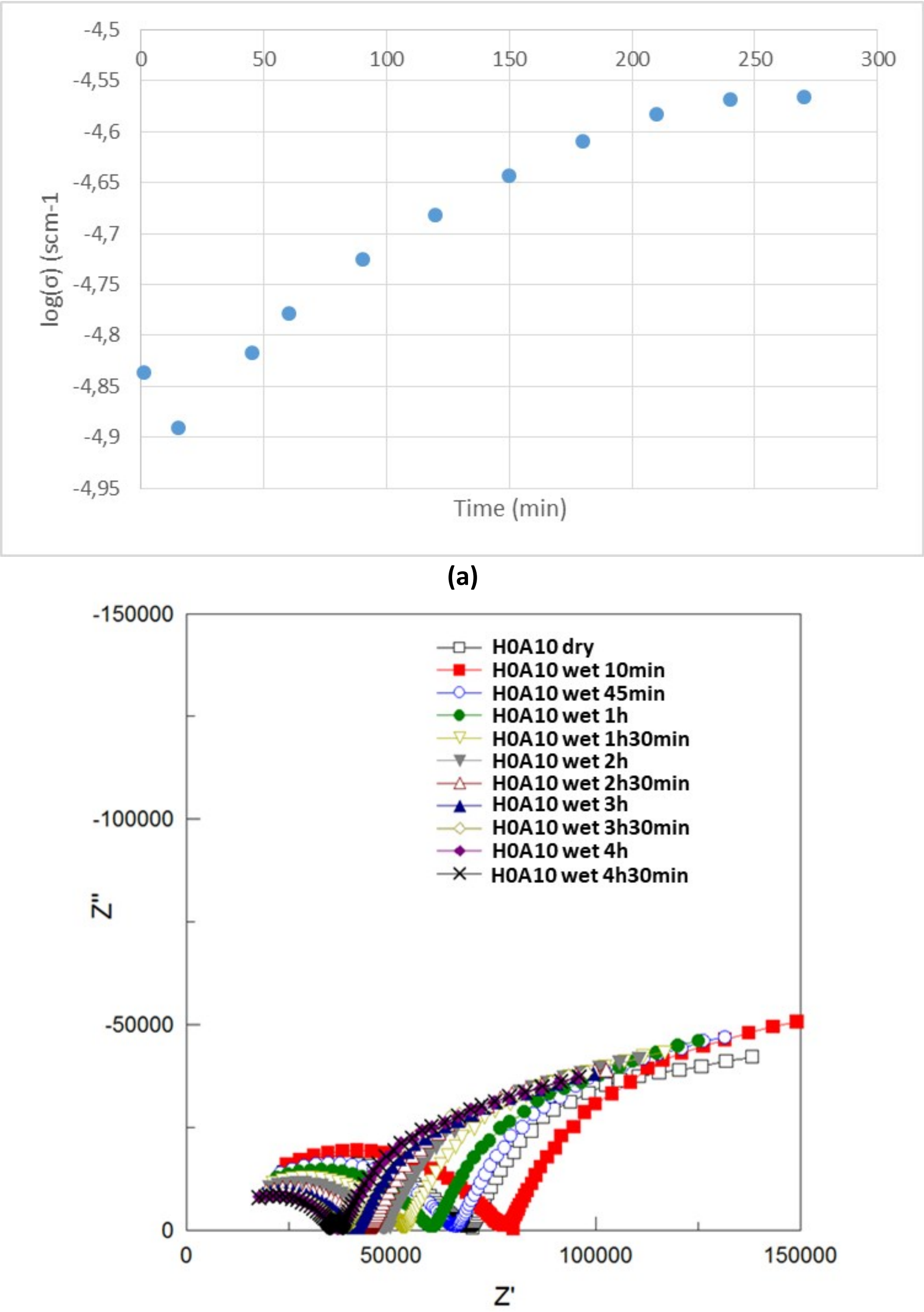


Figure S5.- UV-Vis of the SVO xerogels and composite SVO@VO xerogels.

Figure S.6.- (a) conductivity variation with time exposure to a water vapor atmosphere.
(b) complex plane Nyquist plot variation with time exposure to a water vapor atmosphere.



**(a)**

**(b)**