Hydrophilic polymers.
Effects on the structure of the water solvent.
Similarities and peculiarities.

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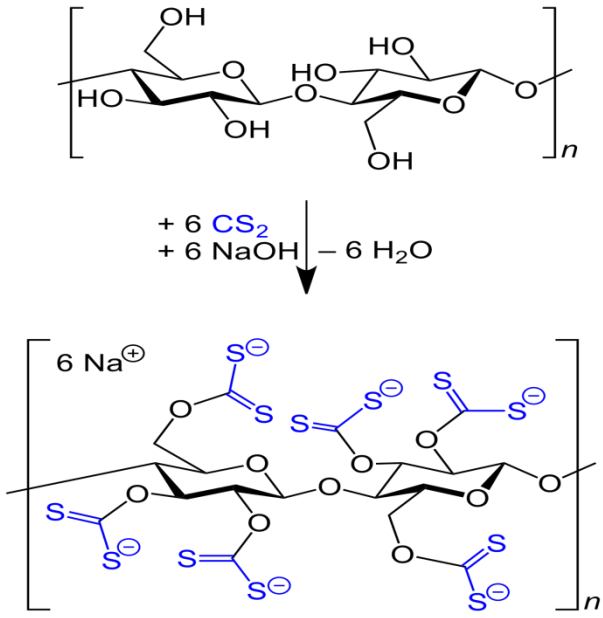
The chemical-physical study of a series of hydrophilic, natural and synthetic polymers continues. The polymers were subjected to the iterative procedure of subsequent hydrations and dehydration in the external environment. The working hypothesis assumes that clumps of EZ, the exclusion zone discovered by G.Pollack, are accumulated within the liquid phase. The increase in the concentration of clumps produces systematic and significant variations of many chemical-physical parameters.
The physical and chemical parameters investigated are:
Electrical conductivity, pH, density, mixing heat with acids and bases, conductivity meter titrations, pH metric and calorimetric, UV absorbance, Circular Dichroism spectra, Fluorescence light emission spectra, Fluorescence microscopy, Optical, Electronic and Atomic Force Microscopy, freeze-drying ,Thermo Gravimetric and Elementary analysis.
All the chemical and physical methods used indicate very significant variations with respect to the milliQ water used for the iterative procedure.
The chemical-physical nature of the liquid obtained is profoundly different from the starting liquid.
In previous years, iterative treatments were described using Nafion (seven published articles).
Last year the iterative procedure described concerned the natural cotton. The chemical composition of the cotton wool is pure cellulose (subject to publication in the Journal of Molecular Liquids).
This year we will present the results obtained using a derivative of cellulose, Cellophane. The chemical difference of the cellophane with respect to the starting cellulose is illustrated by the following formulas:



Basically the hydrogen of the cellulose OH groups have been replaced with the CS_2 Na group. The cellulose backbone has not been altered.
However, it is a derivative of cellulose. A new hydrophilic polymer, also insoluble like cellulose, has been obtained. The iterative procedure of subsequent hydrations and dehydration of the polymer leads to many similarities with respect to what happens with the cotton wool. The electrical

conductivity increases with each step of the procedure. Similarity with cotton wool, extreme difference compared to Nafion. Each hydrophilic polymer leaves a different trace in the water liquid. The water exhibits extreme versatility compared to the perturbing polymer.
In this last year we started to study the chemical composition of the liquids obtained and of the solids derived from them by freeze-drying. There is no doubt that these solids and liquids contain organic carbon! The working hypothesis we have proposed for these results is that the aggregates that are formed in the liquid phase, perform a catalytic action for the production of organic and biological compounds starting from the carbon dioxide of the external environment.
The most striking differences occur both in the liquids and in the solids obtained after the lyophilization process.
Cellulose: obtaining a dusty solid
Cellophane: impossibility of obtaining a dusty solid. Obtaining a gel.
Thermo gravimeters (TGA):
Cellulose: obtaining two plateaus with weight loss of around 300 ° C and 1000 ° C
Cellophane: obtaining a single plateau with total weight loss of around 300 ° C
Similarities and peculiarities.
The first gravimetric analysis highlights and confirms the results of the elementary analyzes for the presence of organic carbon!