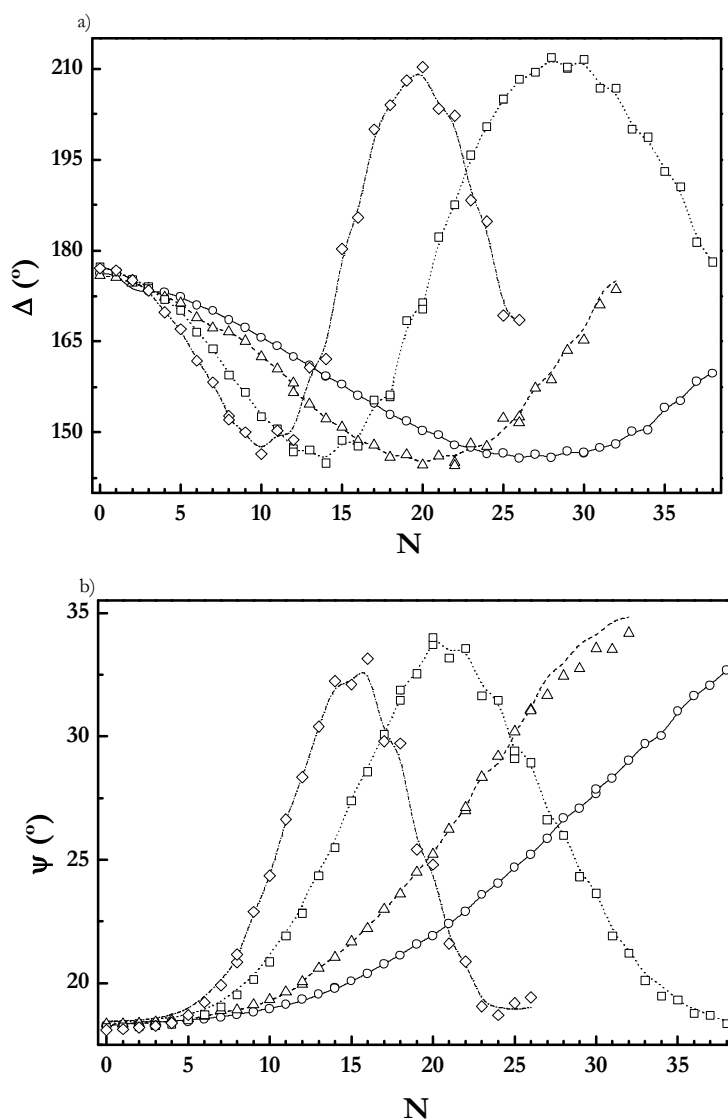


## SUPPORTING INFORMATION

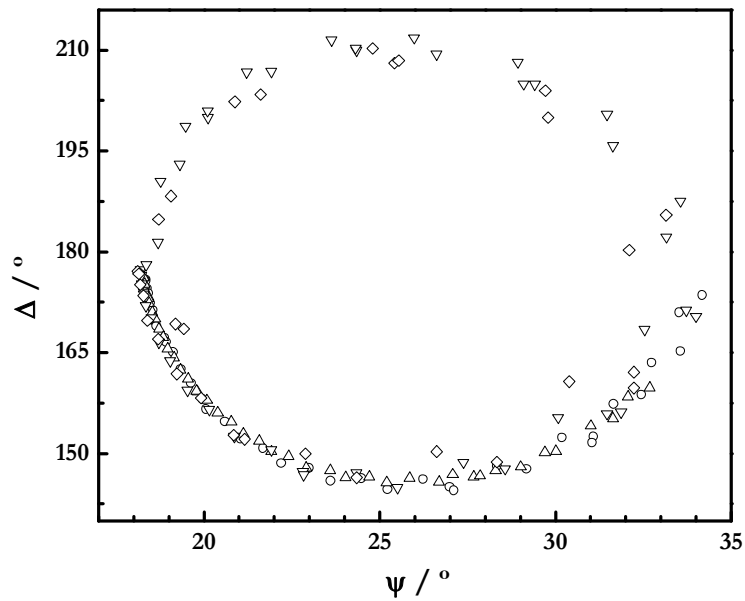
# Salt-induced changes in the growth of polyelectrolyte layers of poly(diallyl-dimethylammonium chloride) and poly(4-styrene sulfonate of sodium)

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### 1. Ellipsometric results



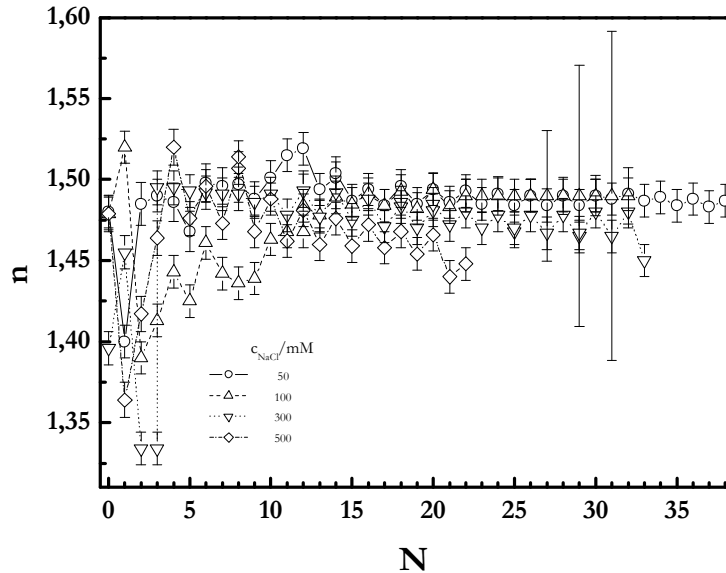
**Fig. 1S** Evolution of the ellipsometric angles with the layer number for multilayers of PDADMAC and PSS built with different NaCl concentration a) Shift on  $\Delta$ . b) Shift on  $\Psi$ . The symbols are referred to the experimental results (different symbol for each NaCl concentration,  $\circ$  50 mM,  $\Delta$  100 mM,  $\square$  300 mM and  $\diamond$  500mM) and the lines over the experimental lines are the modeled datas, in some layers appear symbol corresponding to two measures that correspond two the measure after layer formation and after a night of immersion in solvent in the same condition that one used in the multilayer building.



**Fig. 2S** Evolution of the  $\Delta$ - $\Psi$  trajectories for multilayers of PDADMAC and PSS built with different NaCl concentration. The symbols are referred to the experimental results (different symbol for each NaCl concentration,  $\circ$  50 mM,  $\Delta$  100 mM,  $\nabla$  300 mM and  $\diamond$  500mM)

## 2. Refractive index

During the experiments of ellipsometry, we can obtain the thickness but we can obtain of our analysis the refraction index of the layer adsorbed as we summarized in [Figure 3S](#).



**Fig. 3S** Refraction index of the multilayer of (PDADMAC+PSS) $_n$  build with different NaCl concentration.

We observed a behavior that is similar that the behavior in the water content of the multilayer, in the first layer we can observe an increasing of the refraction index until a plateau, this lower refraction index is related with less quantity of polymer adsorbed that is in concordance with the results that we can find for the slow starting in the multilayer growth, after this period of increasing the plateau zone is related with the homogeneous growth of the multilayer, and in the zone of homogeneous growth the refraction index is similar than the pure

polymer. During the growth, we have a mixture in the layer of polymer and associated water and as a function of the different content we had a shift in the refraction index

Other observable fact is that the salt induces a reduction in de refraction index of the multilayer and this as we explain before is related with a higher content of water.

We can observe an odd-even effect in the refraction index that it is related with the water releasing during the multilayer formation, this oscillatory behavior of the refraction index is related with the existence of two trajectories in the results of ellipsometry.