



Non-Stoichiometric polyelectrolyte multilayers and complex films as tunable polymer membranes and coatings

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Using two polyelectrolytes that are cationic poly(diallyldimethylammonium chloride) (PDADMAC) and anionic poly(sodium 4-styrene sulfonate) (PSS) films having thickness ranging over 5 order of magnitudes from 5 nanometer to 50,000 nanometers can be prepared. To achieve this, two different fabrication methods are used that are the so called layer-by-layer deposition and the polymer complex co-precipitation. Interestingly the diffusion properties of these membrane can be tuned by controlling the molecular stoichiometry of the $[P^+]:[P^-]$. In this presentation, different applications of this tunable diffusion used in the synthesis of metallic nanoparticle, conducting polymer, and electro-chemical sensor will be presented.

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