

Supporting Information

Surface Structure of Solutions of Polyvinyl Alcohol in Water

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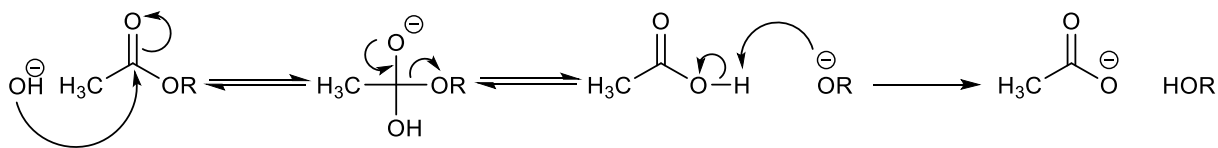


Figure S1: Schematic mechanism of the base hydrolysis of the ester groups of PVA (R = PVA backbone). The hydroxide nucleophile attacks the electrophilic carbon of the ester carbonyl C=O, breaks the π bond and creates a tetrahedral intermediate. The intermediate collapses and reforms the carbonyl which results in the loss of the alkoxide group and the formation of the carboxylic acid. Acid/base reaction where the alkoxide functions as a base and deprotonates the carboxylic acid. (R = PVA backbone).

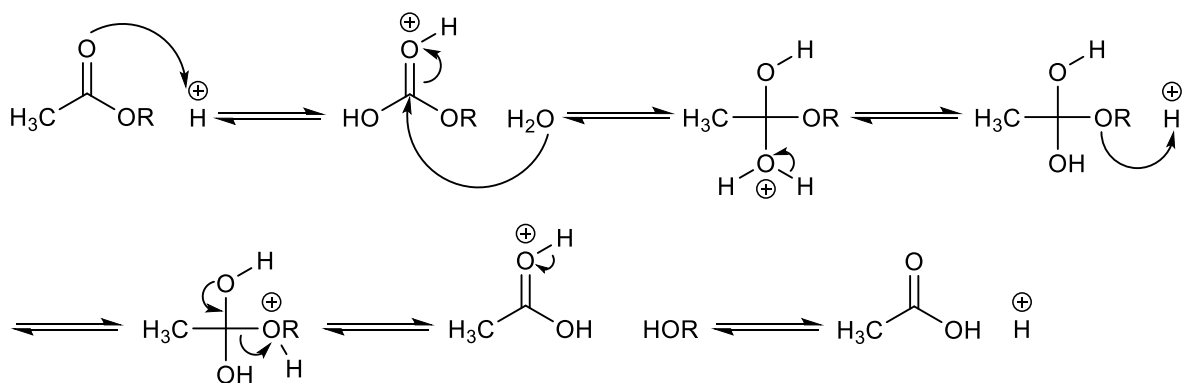


Figure S2: Schematic mechanism of the acid catalysed hydrolysis of the ester groups of PVA.
(R=PVA backbone).

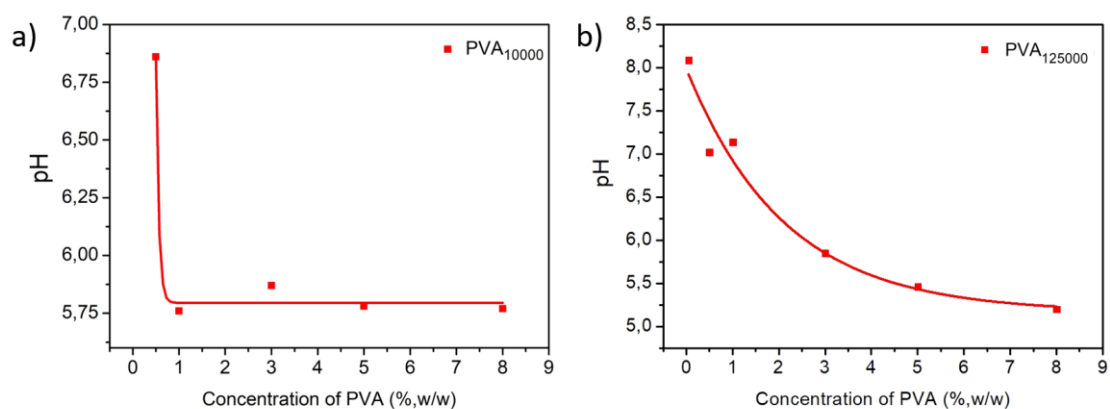


Figure S3: Variation of pH values of PVA₁₀₀₀₀ and PVA₁₂₅₀₀₀ with concentration. Measurements were performed in pure water and at room temperature. Solid lines represent guides to the eye.

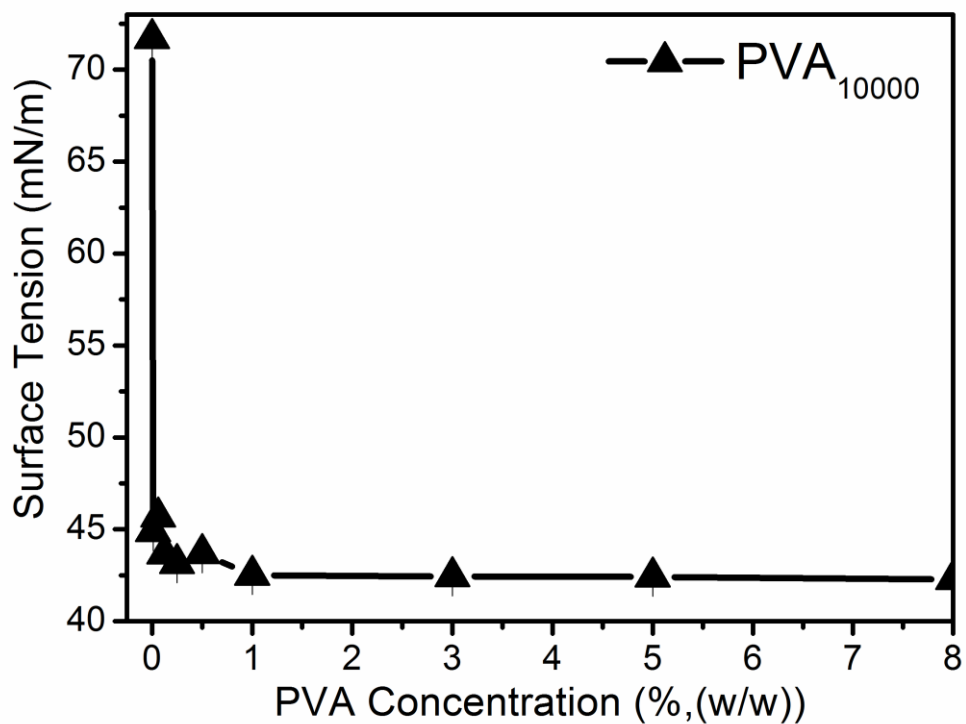


Figure S4: Variation of Surface Tension values of PVA, M_w_{10000} with concentration. Measurements were performed in water and at room temperature. The solid line represents a guide to the eye.

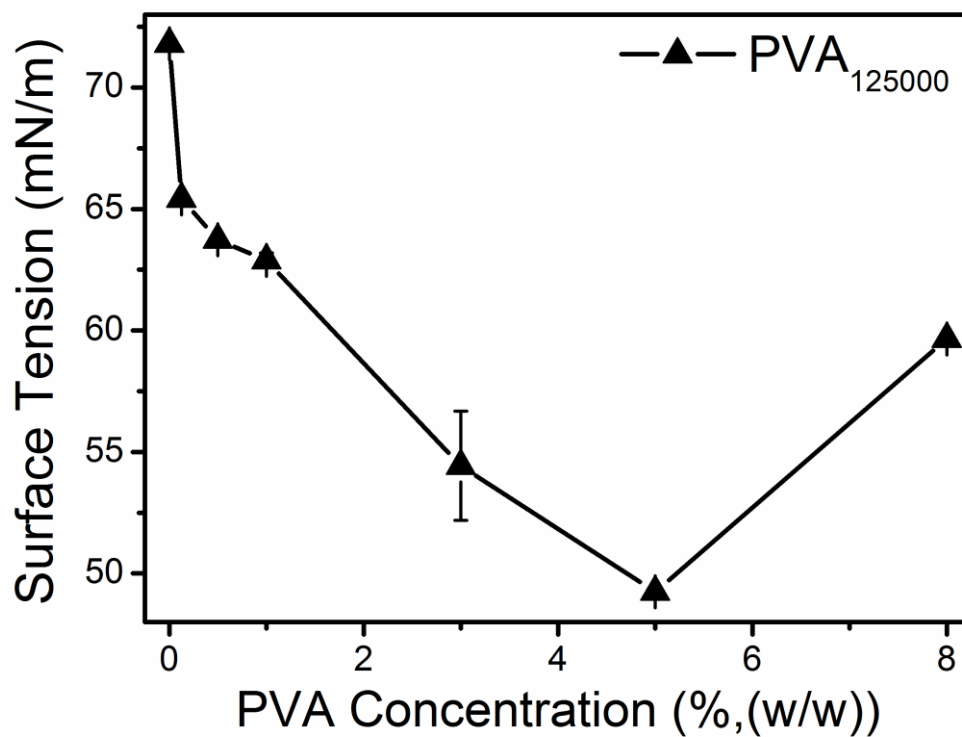


Figure S5: Variation of Surface Tension values of PVA, MW₁₂₅₀₀₀ with concentration. Measurements were performed in pure water and at room temperature. The solid line represents a guide to the eye.

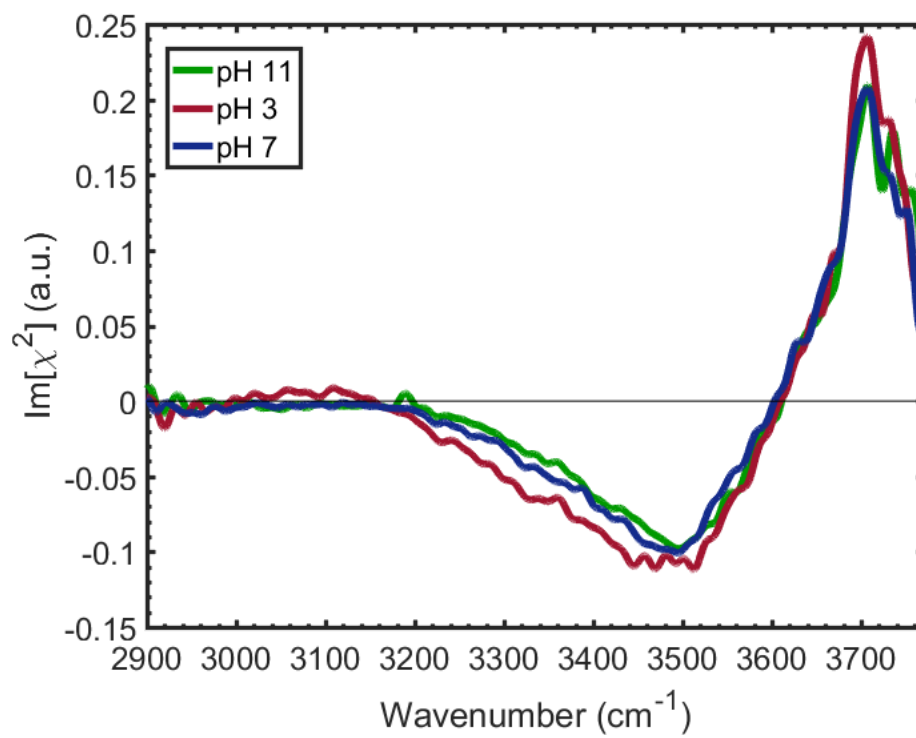


Figure S6: Imaginary $[\chi(2)]$ spectra of pure water at different pH values.