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Title: Silver-Loading in Uncrosslinked Hydrogen-bonded LBL Films: Structure Change and Improved Stability

Supplementary Information

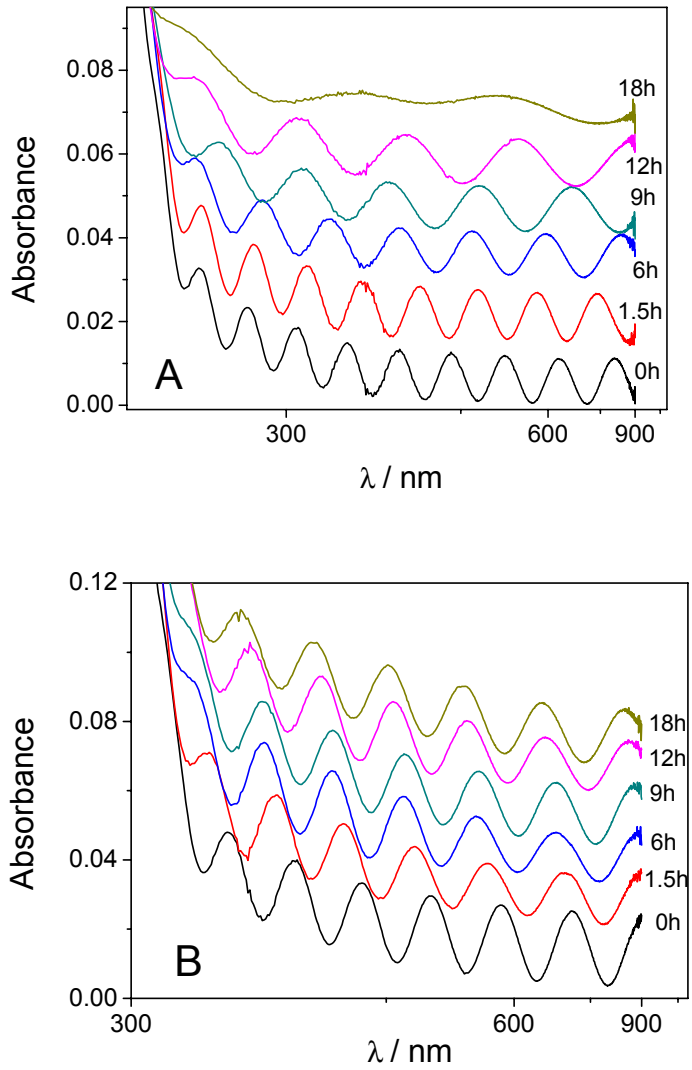

Fig. S1. A: UV-vis spectra of a $(PVPON/PAA)_{15}$ film after immersion in water for various time periods; B: UV-vis spectra of a $(PVPON/PAA)_{15}$–Ag film after immersion in water for various time periods. (The plots are shifted along vertical axis for clarity of presentation in both A and B.)

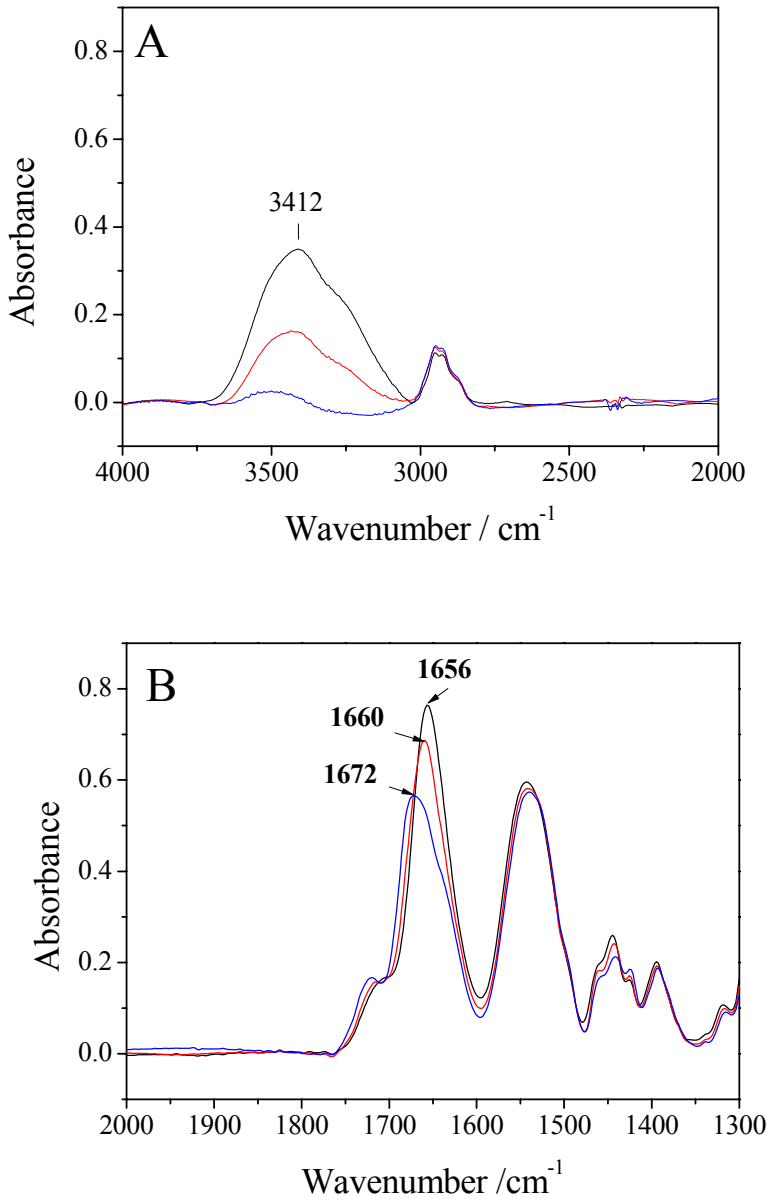

Fig. S2 FTIR spectra of a silver-loaded $(PVPON/PAA)_{28}$ film stored under ambient conditions (T = 27°C, relative humidity (RH) = 61%) (black line), the same film after stored in a desiccator (RH inside = 12%) for 12 h (red line), and the same film was further heated in an oven at 150°C for 2 h (blue line). A: the hydroxyl stretching region. B: the carbonyl stretching region. The decreased intensity of the peak around 3400 cm^{-1} indicates reduced water content in the film.

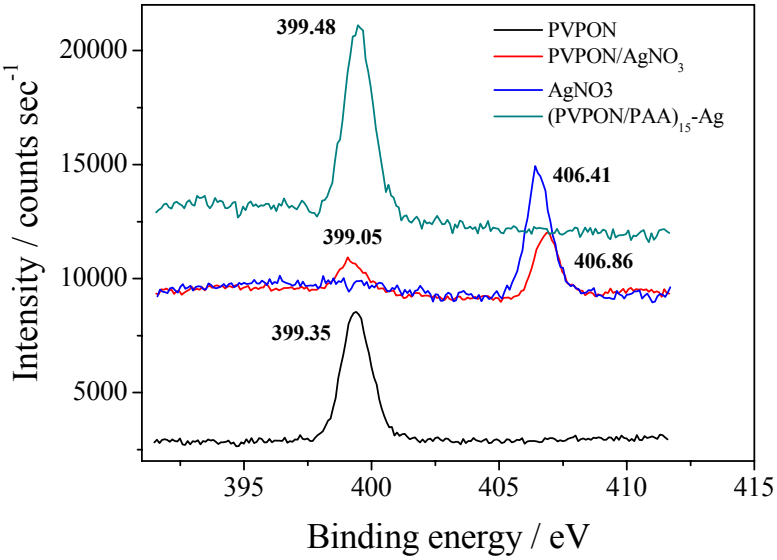

Fig. S3. N 1s region of the XPS spectra of a silver-loaded $(PVPON/PAA)_{15}$ film, $AgNO_3$, PVPON and PVPON-$AgNO_3$ complex at $[C=O]:[Ag^+]$ = 1:1. The peak for NO_3^- appears at ~406 eV, while the peak for pyrrolidone ring appears at ~399 eV. No NO_3^- is detected in the spectrum of silver-loaded PVPON/PAA film.