**Electronic Supplementary Information**

# Mussel-inspired Bio-compatible Free-standing Adhesive Films Assembled Layer-by-layer with Water-resistant Capacity

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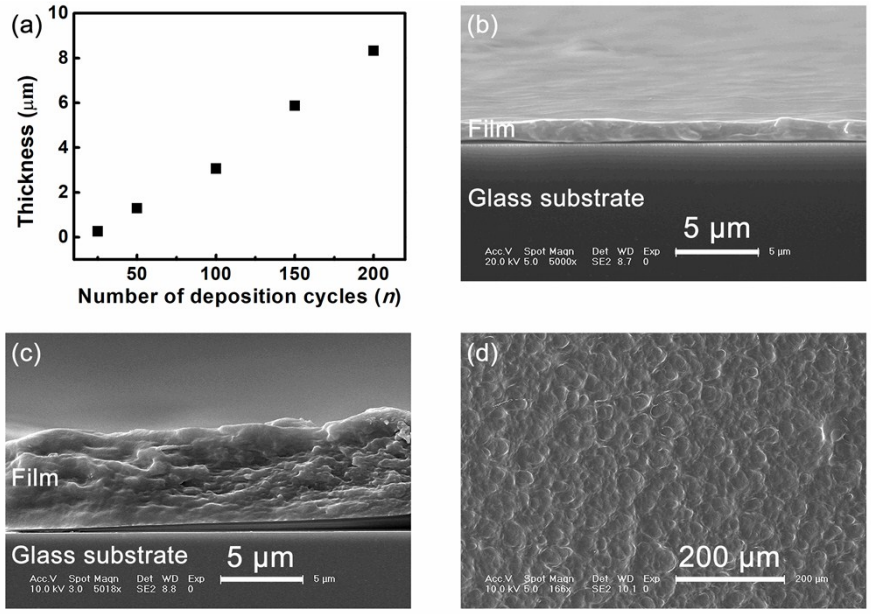


Fig. S1 (a) Thicknesses of (CHI-C/HA-D)*n water-resistant adhesive films assembled by LbL as a function of deposition cycles *n*. Cross-section SEM images of (b) (CHI-C/HA-D)*50 and (c) (CHI-C/HA-D)*150 multilayer films deposited on glass substrate. (d) Surface SEM image of (c).

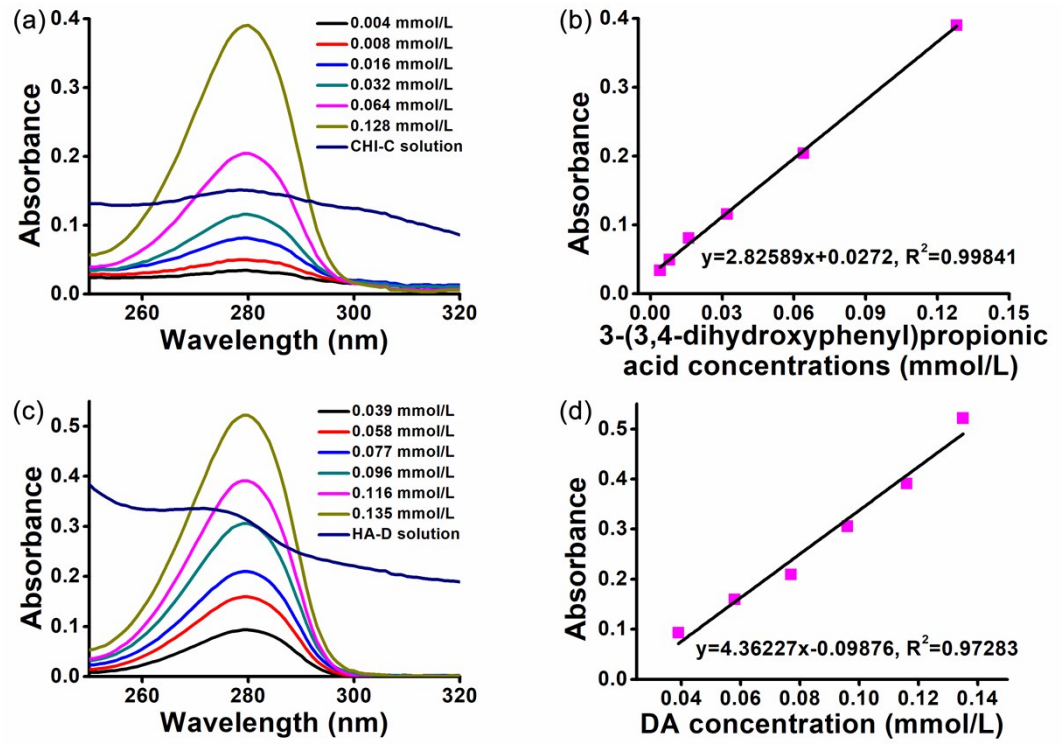


Fig. S2 UV spectra and standard curves of a series of 3-(3,4-dihydroxyphenyl)propionic acid (a,b) and DA (c,d) solutions with different concentrations at 280 nm. The blue line in a and c is the corresponding UV spectra of sample, respectively.

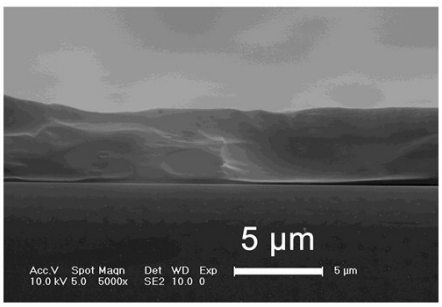


Fig. S3 Cross-section SEM image of (CHI/HA)*50 multilayer film deposited on glass substrate.

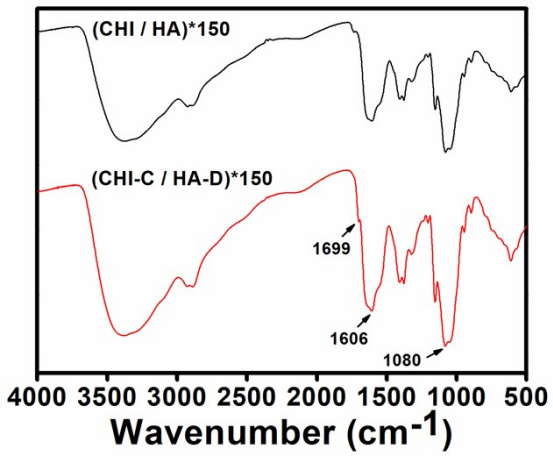


Fig. S4 FTIR spectra of (CHI-C/HA-D)*150 and (CHI/HA)*150 free-standing films.

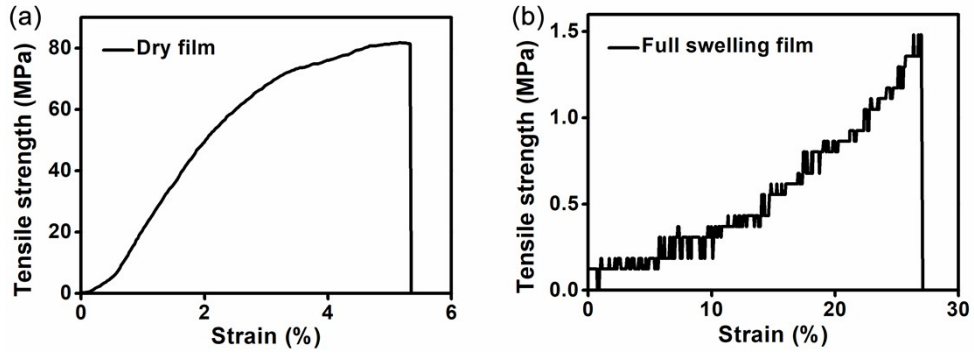


Fig. S5 Typical stress–strain curves of (a) dry and (b) full swelling (CHI-C/HA-D)*150 free-standing adhesive film.

**Supplementary Videos**

Video S1: Exfoliation process of adhesive film (3.5 cm × 2.5 cm) deposited on glass substrate.

Video S2: Porcine skin bonded with free-standing adhesive film.