Supplemental Information

Bacteria-Resistant, Transparent, Free-standing Films Prepared from Complex Coacervates

Irene S. Kurtz†, Shuo Sui†, Xi Hao†, Mengfei Huang, Sarah L. Perry*, and Jessica D. Schiffman*

Department of Chemical Engineering, Institute of Applied Life Sciences, University of Massachusetts Amherst, Amherst, MA 01003

†These authors contributed equally.

* Corresponding authors: Jessica D. Schiffman, Email: schiffman@ecs.umass.edu; Sarah L. Perry, Email: perrys@engin.umass.edu

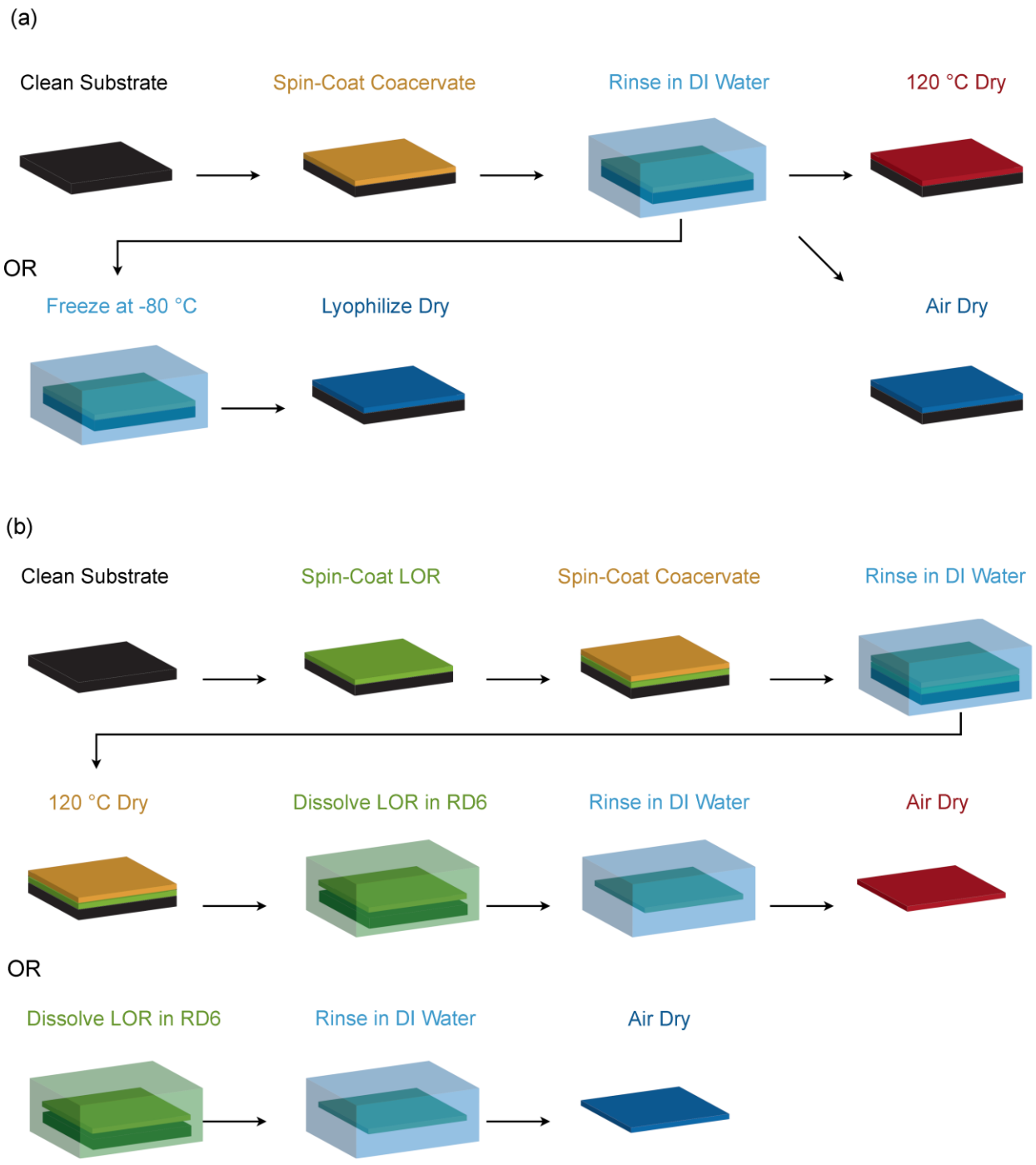

Figure S1. Schematic of the method used to fabricate **(a)** immobilized PEC coatings and **(b)** free-standing PEC films. Drying at 120 °C allowed for the creation of transparent films, regardless of subsequent processing steps, while air drying led to opaque films.

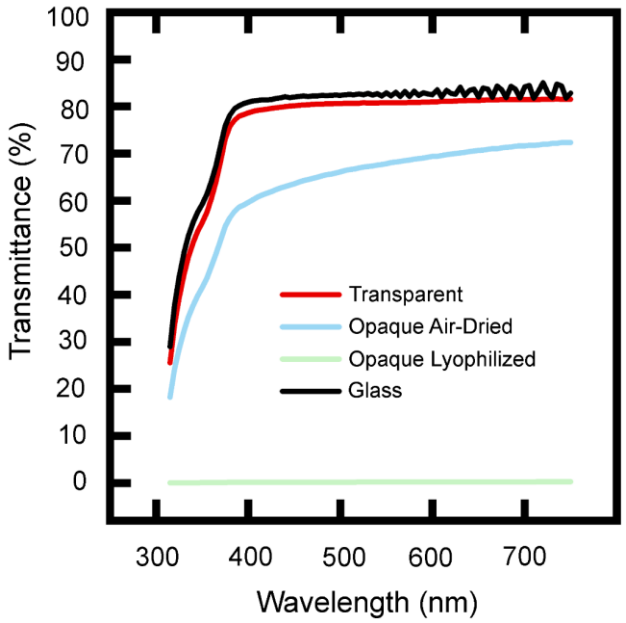

Figure S2. Transmittance of transparent (3.9 µm thick), opaque air-dried (9.2 µm thick), and opaque lyophilized (26.5 µm thick) PEC films, as well as glass slides. PEC films were prepared using PSS/PDADMAC with 1.6M KBr and spin-coated at 2000 rpm.

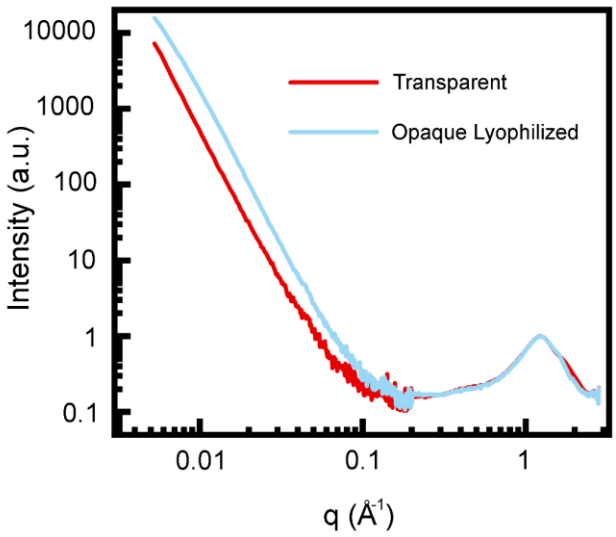

Figure S3. One-dimensional integrated and overlapped SAXS and WAXS intensity profiles for transparent and opaque PEC films. The two curves were normalized by the peaks in the WAXS region. PEC films were prepared using PSS/PDADMAC with 1.6 M KBr and spin-coated at 2000 rpm.

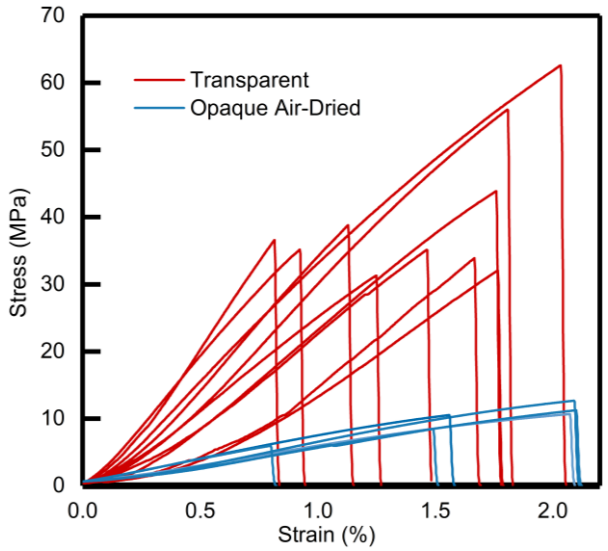

Figure S4. Stress-strain curves for transparent and opaque PEC films. PEC films were prepared using PSS/PDADMAC with 1.6 M KBr and spin-coated at 2000 rpm.

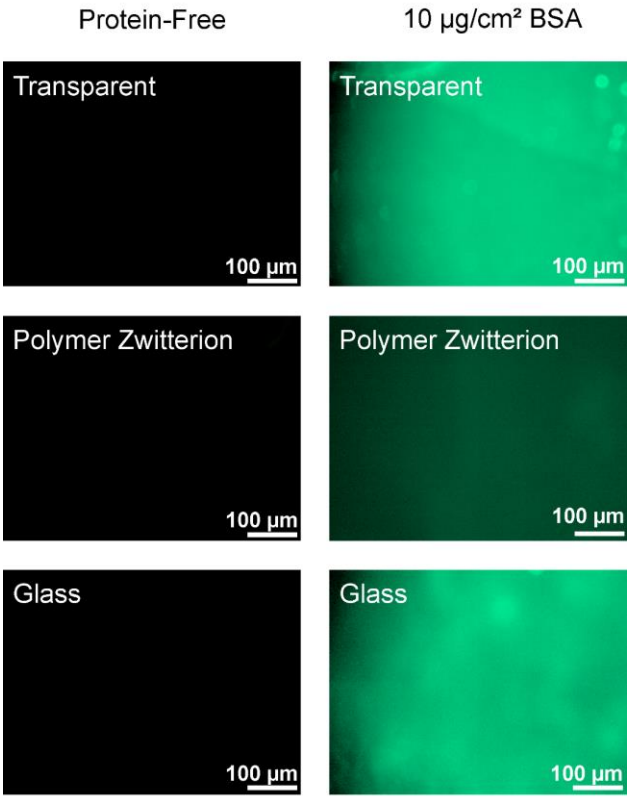

Figure S5. Representative micrographs of fluorescently-tagged bovine serum albumin adsorption on transparent PEC films, polymer zwitterion films and glass slides. Minimal fluorescence was detected on polymer zwitterion controls, while protein visibly adhered to transparent PEC films and glass.

Methods: Protein adsorption was assessed using a fluorescent protein assay. Transparent PEC films, polymer zwitterion coatings, and cleaned glass coverslips were placed at the bottom of 24-well plates, to which fluorescently-tagged bovine serum albumin (BSA, 10 µg/cm^2) was added and gently agitated at 100 rpm for 48 hr at 23 °C. Samples were gently rinsed using DI water and analyzed using an Axio Imager A2M (20x objective).