Combined Electrochemical Surface Plasmon Resonance for Angle Spread Imaging

of Multi-Element Electrode Arrays

Chang Hoon Choi and Andrew C. Hillier*

Department of Chemical and Biological Engineering, Iowa State University, Ames, Iowa 50011

SUPPORTING INFORMATION

Supporting Information: Optical configuration and surface plasmon resonance data for uniform gold film (Figure A.1). Surface plasmon resonance images of 4, 8 and 16-element electrode band samples (Figure A.2). Electrochemical surface plasmon resonance data for uniform gold film versus potential for gold band (Figure A.3). Cyclic voltammetry and resonance angle change during poly(aniline) deposition (Figure A.4).
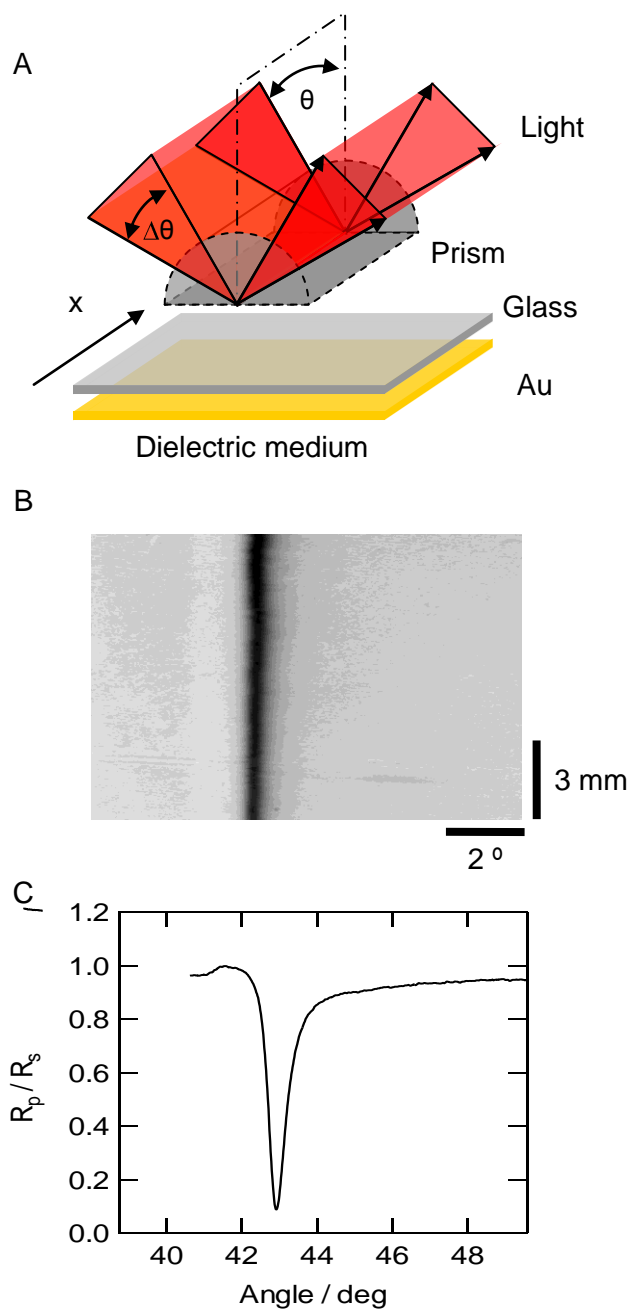
Figure A.1. (A) Schematic of hemi-cylindrical prism and uniform gold sample showing light path for angle spread SPR imaging. (B) Angle spread SPR reflectivity image (Rp/Rs) of gold surface in air. (C) Reflectivity profile extracted from angle spread image in air.
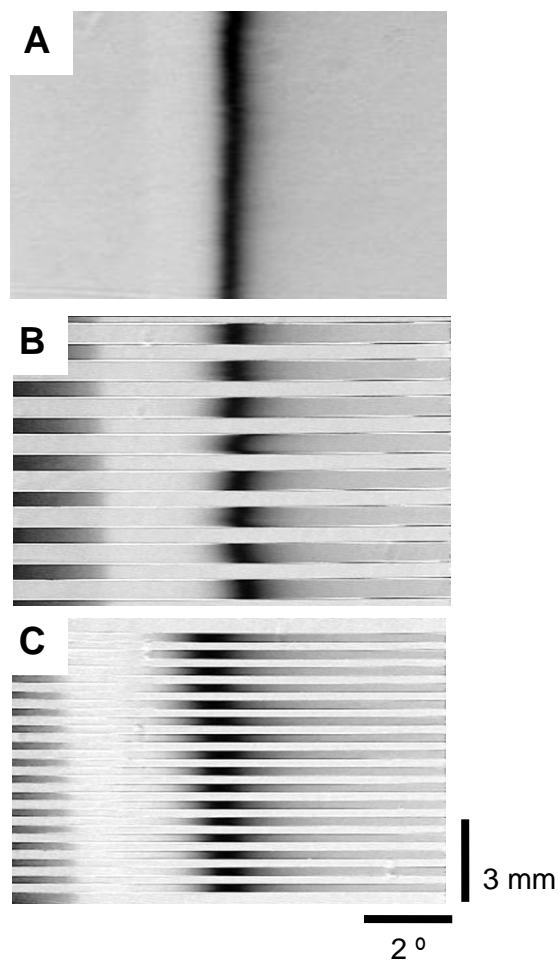
Figure A.2. SPR angle spread images (R$_p$/R$_s$) of electrode configurations consisting of (A) one, (B) eight and (C) sixteen electrode bands. Both glass and gold regions are evident in the eight and sixteen band electrode samples.
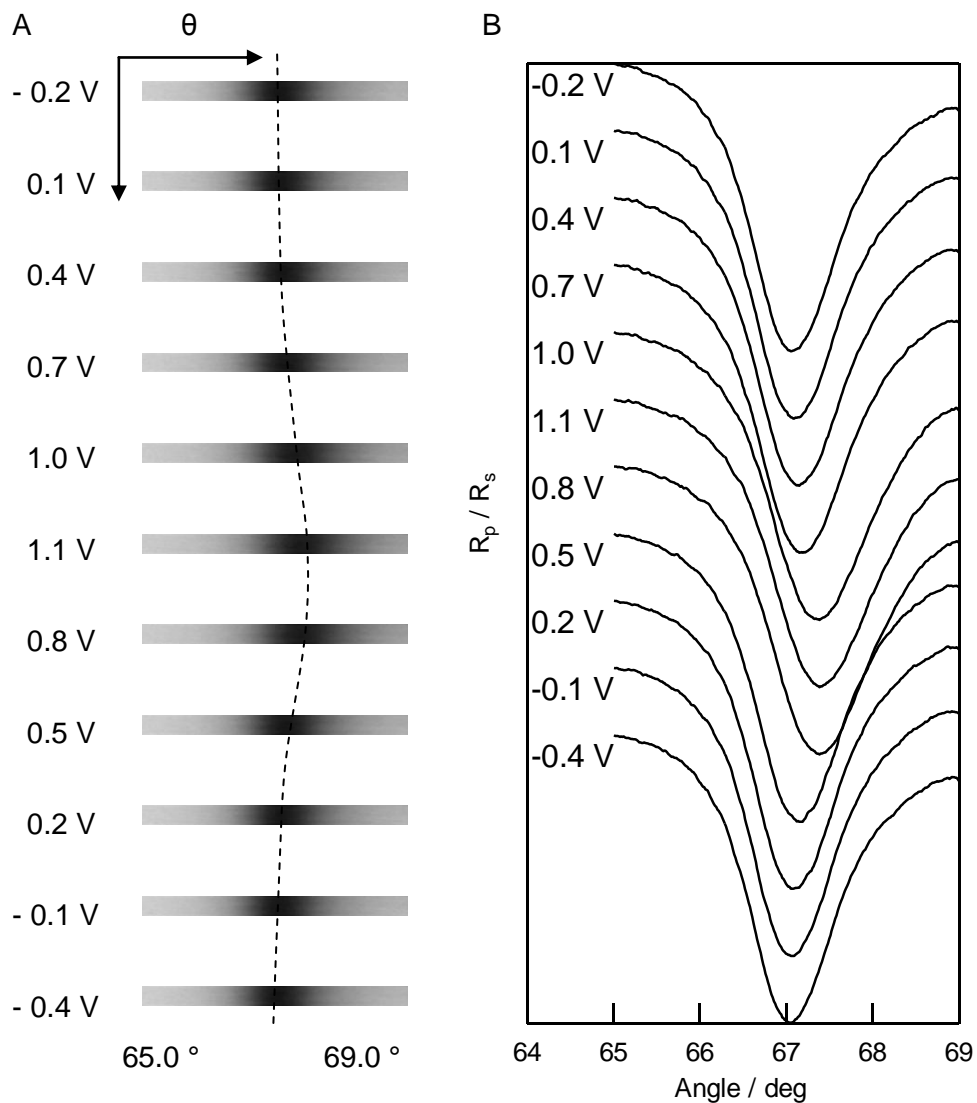
.

Figure A.3. Sequence of (A) angle spread SPR images and (B) reflectivity curves for single gold band as a function of applied electrochemical potential in aqueous solution containing 0.1 M H2SO4/0.1 M Na2SO4. A dashed line is added to (A) to identify the minimum angle position.
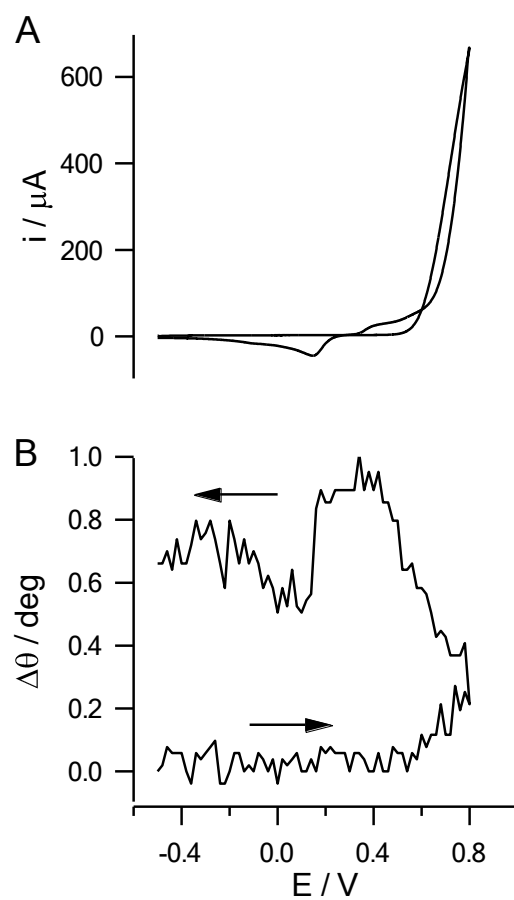
Figure A.4. (A) Cyclic voltammogram and (B) SPR minimum angle for single gold band during deposition of poly(aniline) film from solution containing 0.1 M aniline/0.5 M H₂SO₄. The arrows denote the scan direction in (B).