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## Novel Poly(aniline) Films as Electroactive Supports for Artificial Photosynthesis in a Planar Membrane

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Poster Presentation P14

**NOVEL POLY(ANILINE) FILMS AS ELECTROACTIVE SUPPORTS FOR  
ARTIFICIAL PHOTOSYNTHESIS IN A PLANAR MEMBRANE**

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In order to develop a solar-powered energy conversion device that mimics photosynthesis, stable architectures are sought for planar-supported lipid bilayers across which a proton gradient can be generated. Specific studies focused on two areas: the polymer interface and the substrate electrode.

In Part I, the polymer interface consisted of alternating layers of poly(aniline) (PANI) and poly(acrylic acid) (PAA). When taking multiple cyclic voltammograms of (PANI/PAA)<sub>2</sub> on an indium-tin oxide (ITO) electrode, the current decreased with each potential cycle, suggesting instabilities in the films. In response to this phenomenon, the effects of potential cycling on the structural and electrochemical properties of the film were investigated.

In Part II, the ITO electrode was replaced with an alkanethiol-modified gold electrode. In comparison to ITO, the modified gold electrode provided a smoother, more stable support for the polymer interface. Moreover, (PANI/PAA)<sub>2</sub> films on modified gold electrodes and on ITO showed a comparable pH response.