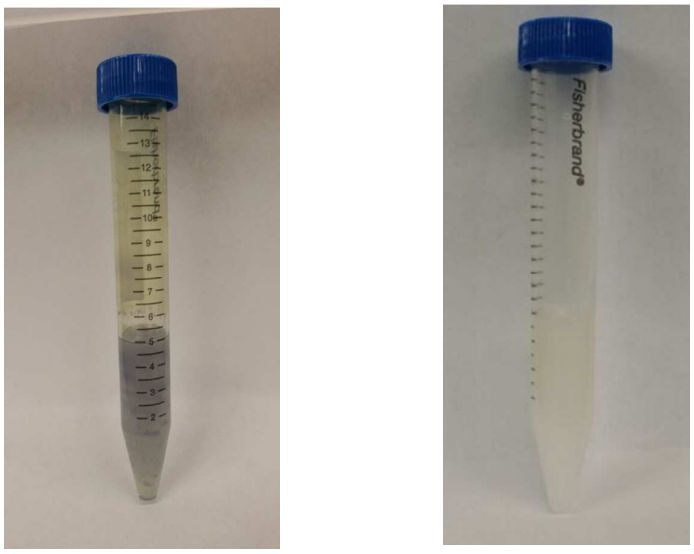
Supporting Information

Analyzing Benzene and Cyclohexane Emulsion Droplet Collisions on Ultramicroelectrodes

Yan Li, Haiqiang Deng, Jeffrey E. Dick and Allen J. Bard*

Center for Electrochemistry, Department of Chemistry, The University of Texas at Austin, Austin, Texas, 78712

Corresponding Author: ajbard@mail.utexas.edu



A B

Figure S1. Photographs of emulsions. (A) benzene (5 mM ZnTPP + 400 mM IL-PA)/water emulsion, (B) cyclohexane (20 mM Fc + 400 mM IL-PA)/water emulsion.

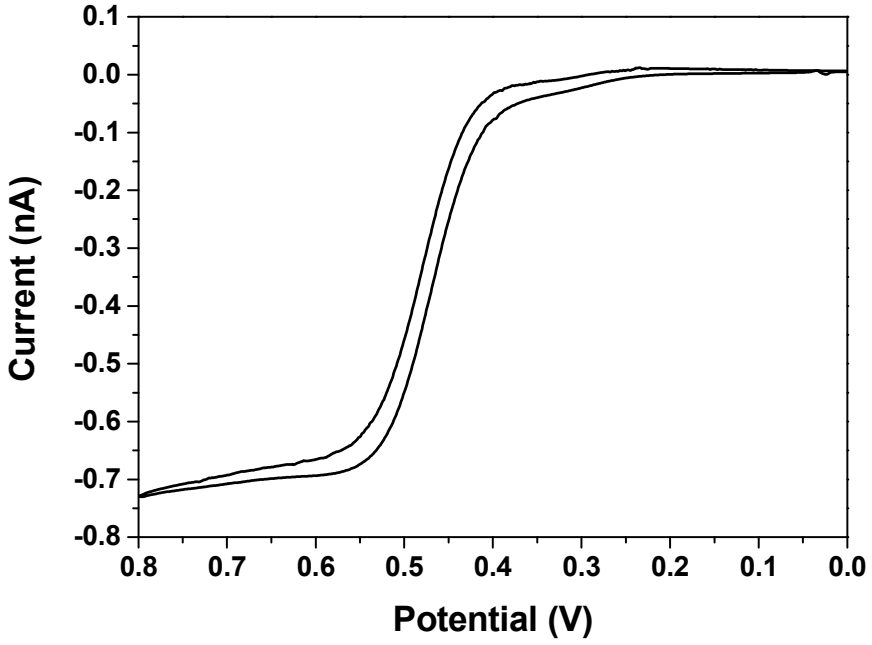


Figure S2. CV of 5 mM ZnTPP and 400 mM IL-PA in benzene on the Au UME (dia. 10 μm) at a scan rate of 5 mV/s.

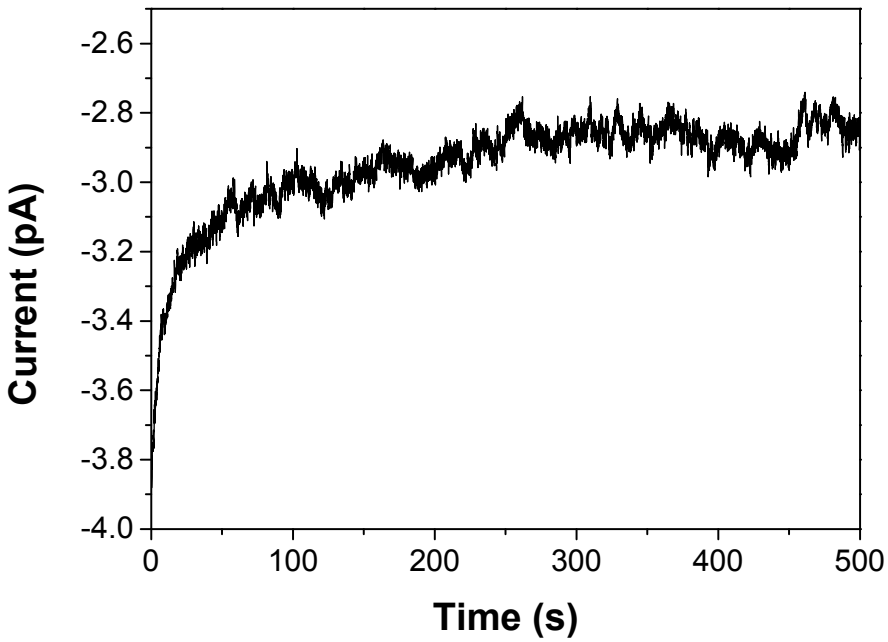


Figure S3. The *i-t* curve of single benzene droplet (400 mM IL-PA) collisions in 5 mL water on the Au UME (dia. 10 μm). The UME potential was +0.65 V *vs*. Ag wire.

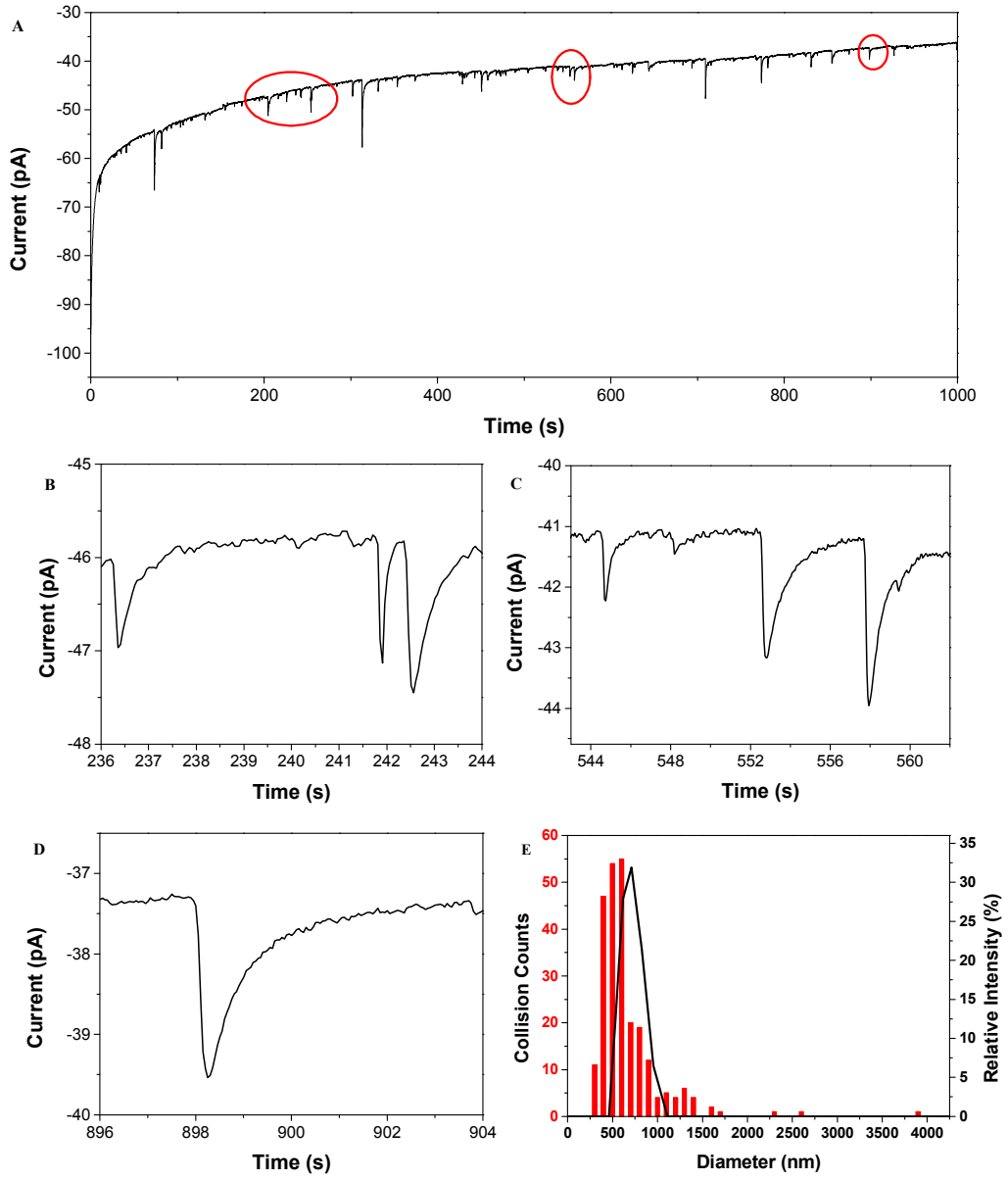


Figure S4. (A) *i-t* plot of 64.6 pM of benzene (ZnTPP+ IL-PA)/water emulsion collisions on the Au UME (dia. 10 μm). (B-D) Magnified *i*–*t* curves showing clear spike-shaped responses. The Au UME was biased at +0.65 V *vs*. Ag wire over the entire experimental time. (E) Comparison of droplet size distribution from eq. 3 (red bars) *vs*. DLS data (black line).

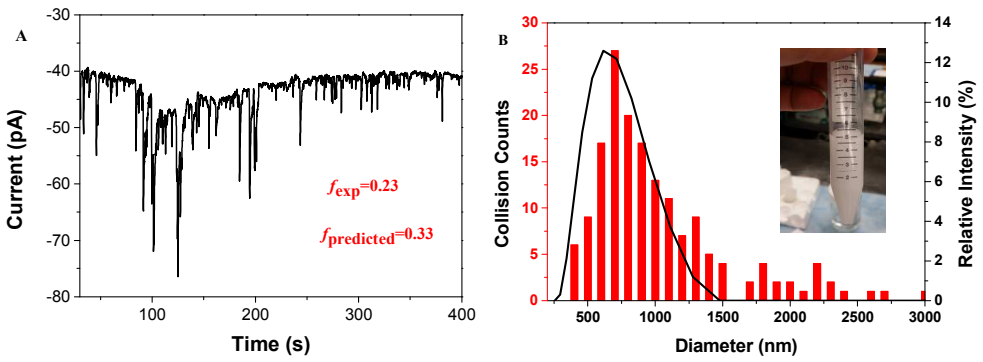


Figure S5. (A) *i-t* plot of 23.2 pM of benzene (Fc+ IL-PA)/water emulsion collisions on the Au UME (dia. 10 μm). (B) Comparison of droplet size distribution from eq. 3 (red bars) *vs*. DLS data (black line). The UME potential was +0.6 V *vs*. Ag wire.

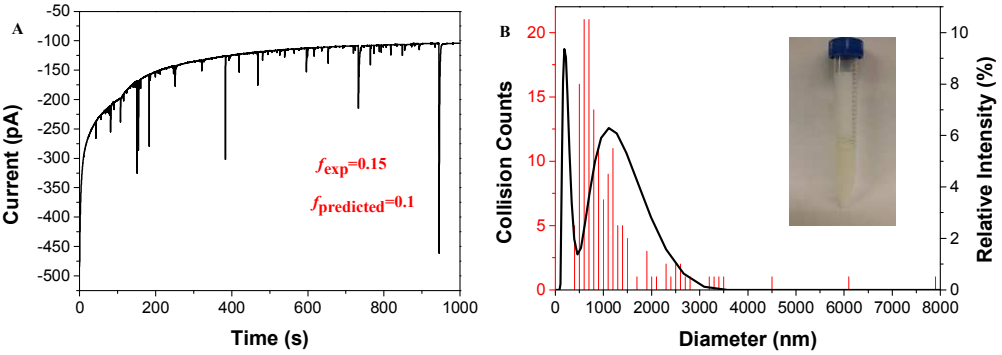


Figure S6. (A) *i-t* plot of 15.2 pM of benzene (DMFc+ IL-PA)/water emulsion collisions on the Au UME (dia. 10 μm). (B) Comparison of droplet size distribution from eq. 3 (red bars) *vs*. DLS data (black line). The UME potential was +0.7 V *vs*. Ag wire.

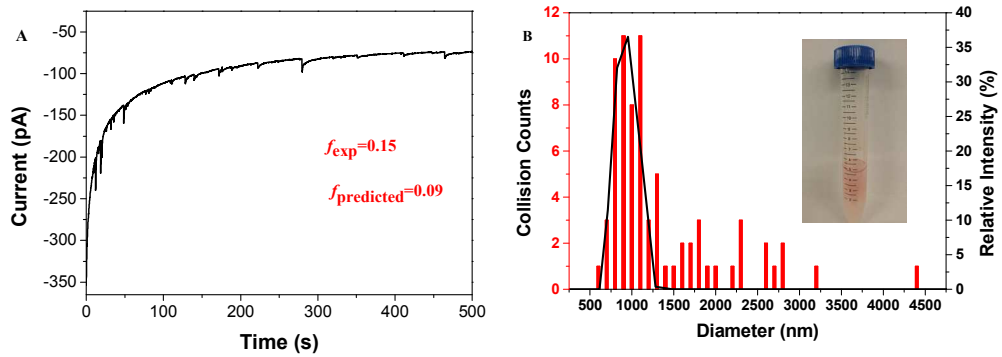


Figure S7. (A) *i-t* plot of 15.2 pM of benzene (CuTPP+ IL-PA)/water emulsion collisions on the Au UME (dia. 10 μm). (B) Comparison of droplet size distribution from eq. 3 (red bars) *vs*. DLS data (black line). The UME potential was +0.95 V *vs*. Ag wire.

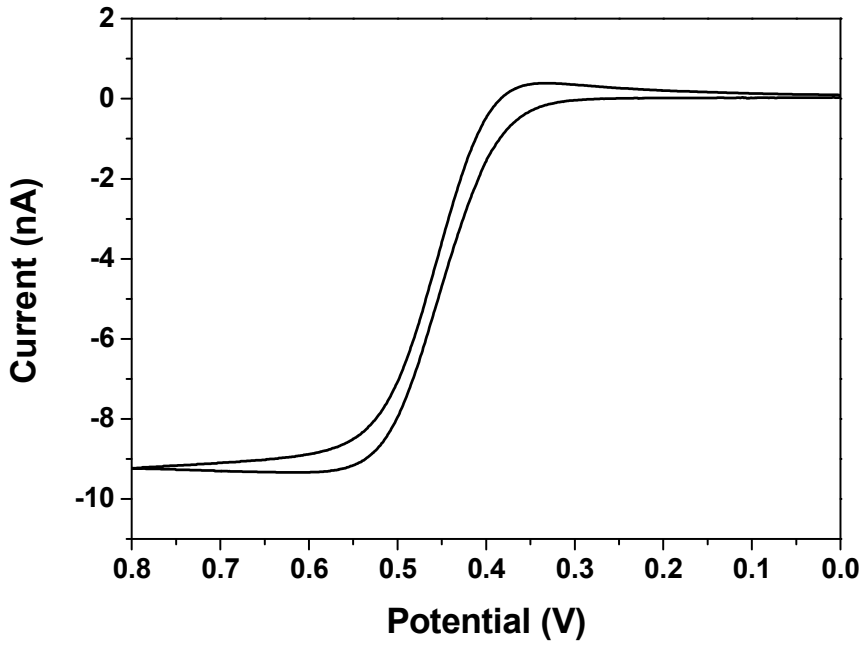


Figure S8. CV of 20 mM Fc and 400 mM IL-PA in cyclohexane on the Au UME (dia. 10 μm) at a scan rate of 5 mV/s.

Relative Intensity (%)

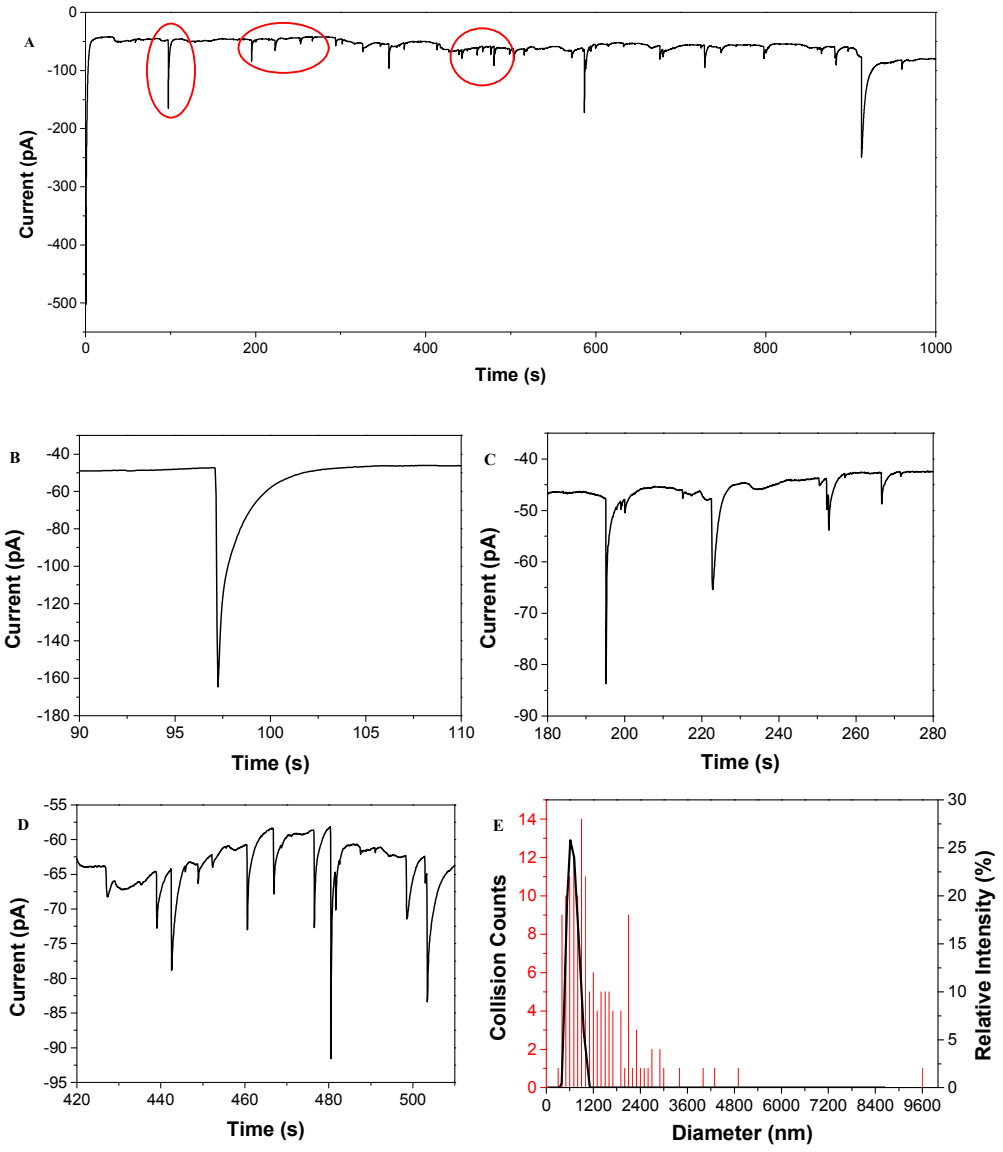


Figure S9. (A) *i-t* plot of 12.9 pM of cyclohexane (Fc+ IL-PA)/water emulsion collisions on the 10 μm Au UME. (B-D) Enlarged pictures of the *i-t* plot. (E) Comparison of droplet size distribution from eq. 3 (red bars) vs DLS data (black line). The UME potential was +0.6 V *vs*. Ag wire.