

Supplementary Information for: Electrosynthesis of Au nanocluster embedded conductive polymer films at soft interfaces using dithiafulvenyl-functionalized pyrene

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Modified Pipette Holder:

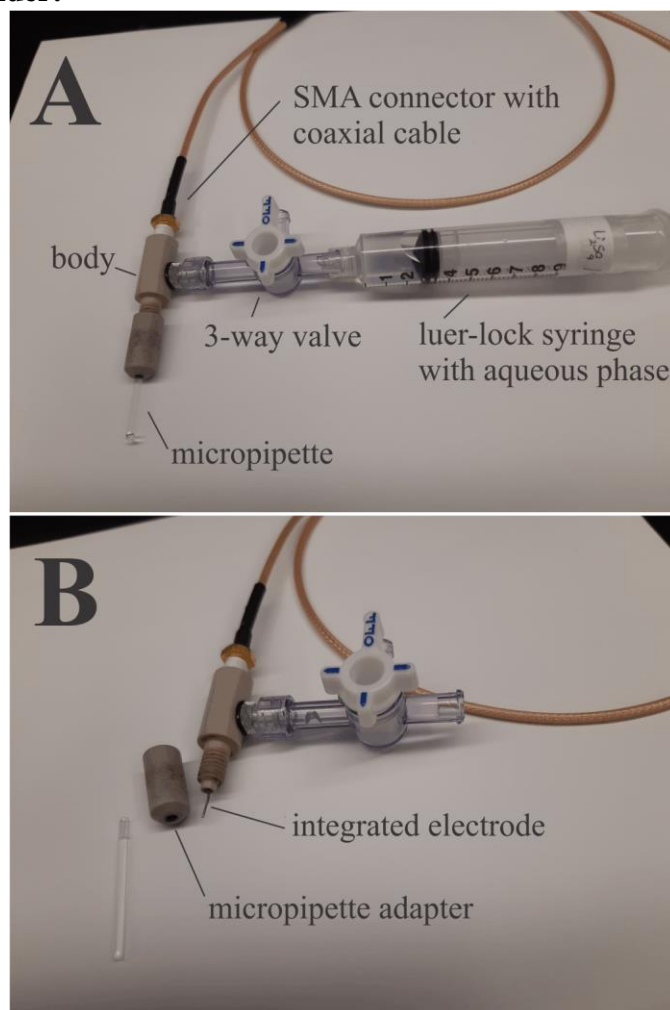


Figure S1: Photographs of the assembled (A) and partially disassembled (B) micropipette holder with integrated working electrode connected to an SMA adapter and shielded coaxial cable which is connected to the head-stage (not pictured) of the HEKA potentiostat. The body of the holder was fabricated from PEEK, *i.e.*, poly(ether ether ketone), by Memorial University's Technical Services Department.

Micropipette fabrication

Micropipettes were fabricated from a single borosilicate glass capillary (1.16 mm/2.0mm internal/external diameter, Sutter Instruments). The capillary was installed inside of an electric puller (PC-100-CA, Narishige, Japan) with the heating coil situated towards its middle and pulled by a weight affixed to the bottom end. In this way, two tapered tips were generated. Next, a hand torch was used to seal the tapered ends of the capillaries. A ~1.5 cm long segment of Pt-wire (25 μm in diameter, Goodfellow Inc.) fed into the open end of the capillary and pushed down into the tapered end using a ~1 mm diameter copper wire. A vacuum line was attached to the open end of the capillary which was held inside the electric puller. The capillary was placed under vacuum for ~5 min, and then the Pt-wire was annealed in place using the electric puller and suspending the tapered end inside the heating coil. Next, by using increasingly fine grinding/polishing pads, including 12, 4 and 3 μm FibrMet aluminum oxide Abrasive discs (Buehler), a smooth cross-

section of the capillary was achieved and confirmed *via* visual inspection using an optical microscope (AmScope). Polishing was also used to achieve an $R_g > 50$ ($R_g = r_g/a$), where r_g is the outer glass radius and a is the Pt disc radius. The Pt-wire was then etched *via* immersion in aqua regia (3:1 ratio of HCl:HNO₃) for up to 7 days generating a 25 μm diameter microchannel.¹⁻³

References

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3. R. Moshrefi, E. P. Connors, E. Merschrod and T. J. Stockmann, *Electrochim. Acta*, 2022, **426**, 140749.