Electronic supplementary information

Complex electrochemiluminescence patterns shaped by the hydrodynamics at a rotating bipolar electrode

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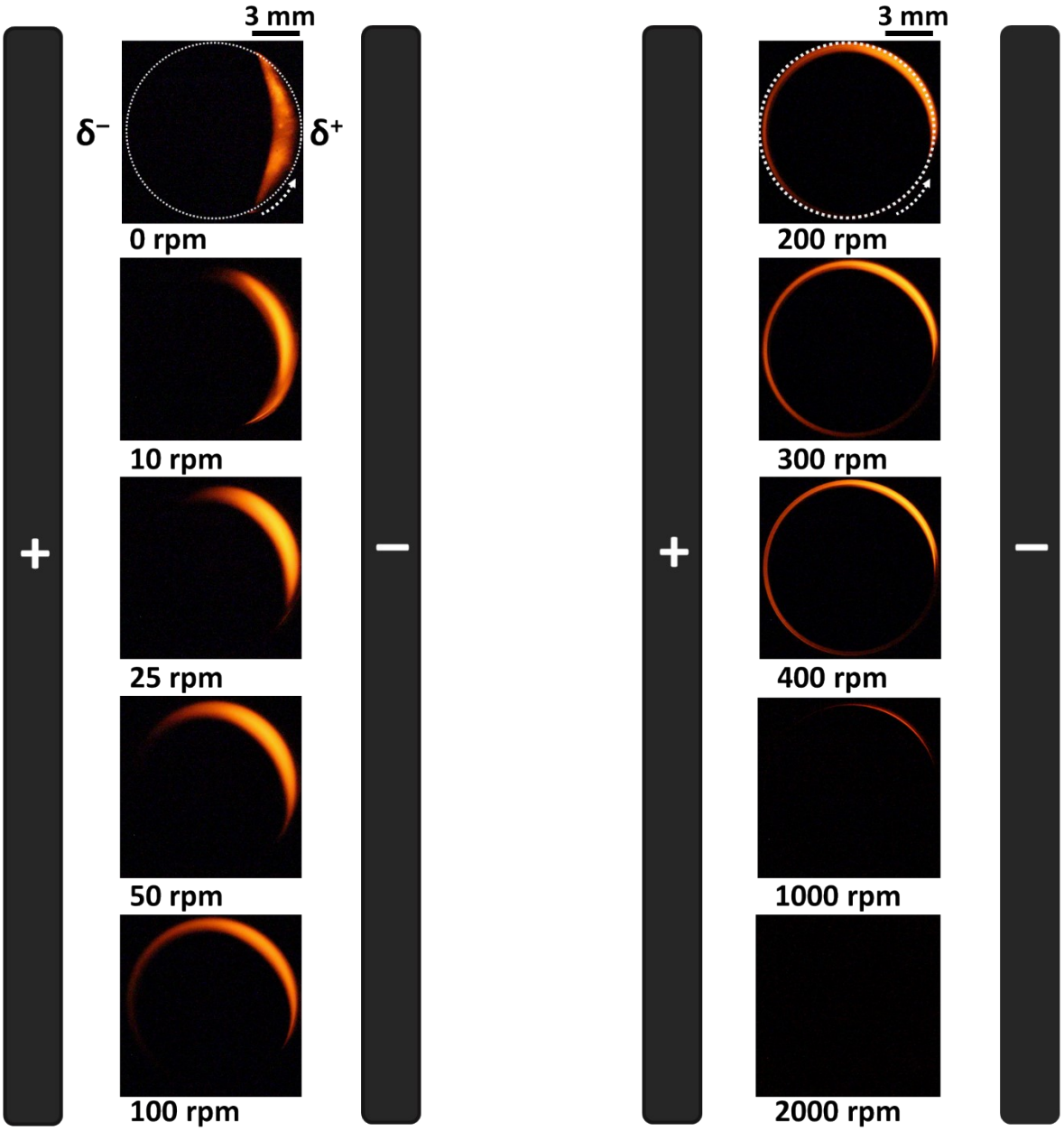

Figure S1. Optical images of the ECL emission at different rotation speeds (indicated in the figure) of the RDBPE. A constant electric field of 8.3 V/cm was imposed by the two graphite feeder electrodes schematized at both extremities. Experiments were performed in a PBS (10 mM, pH 7.4) solution containing 0.1 mM $[Ru(bpy)_3]^{2+}$ and 0.25 mM TPA.

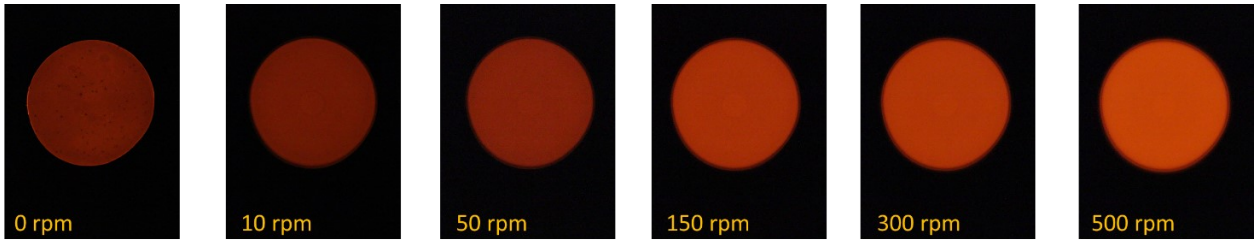

Figure S2. Optical images of the ECL emitted by a classic RDE in a 3-electrode configuration (i.e. not in bipolar electrochemistry mode) in 10 mM PBS (pH 7.4) containing 0.1 mM $[Ru(bpy)_3]^{2+}$ and 0.25 mM TPA at different rotation speeds. Potential scan range: 0.6 to 1.5 V vs. Ag/AgCl. Scan rate: 0.1 V s^{-1}. Each image is accumulated during the whole duration of the corresponding cyclic voltammetry experiment (i.e. acquisition time of 18 s).

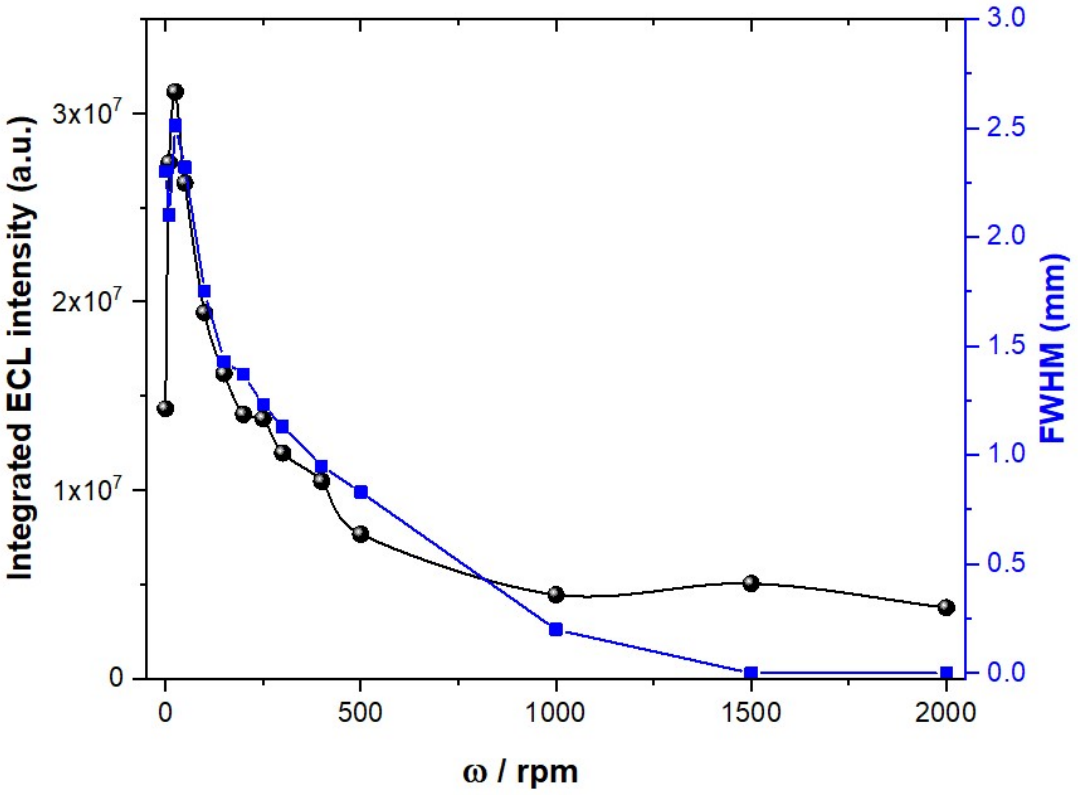

Figure S3. Integrated ECL intensity (black dots) and full width at half maximum (FWHM, blue squares) of the ECL intensity profiles where ECL intensity was maximum as a function of the rotation speed ω. Same experimental conditions as in Figure S1.

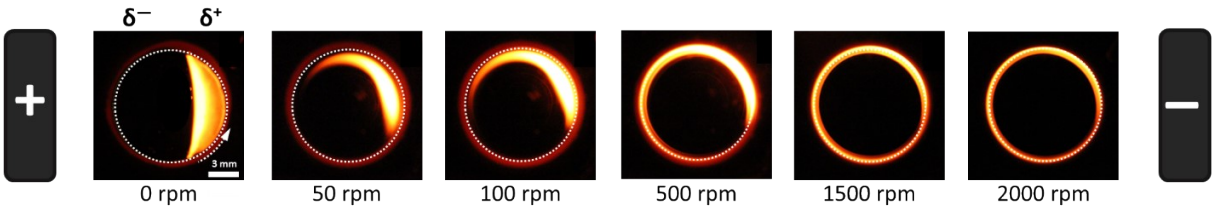

Figure S4. ECL images of the RDBPE at different rotation speeds ω. Experiments were performed in a PBS (10 mM, pH 7.4) solution containing 2 mM $[Ru(bpy)_3]^{2+}$ and 5 mM TPA. The dotted white circle and the dotted arrow indicate the position of the RDBPE and the direction of the rotation, respectively. A constant electric field of 8.3 V/cm was imposed by the two graphite feeder electrodes schematized at both extremities. Exposure time: 8 s.

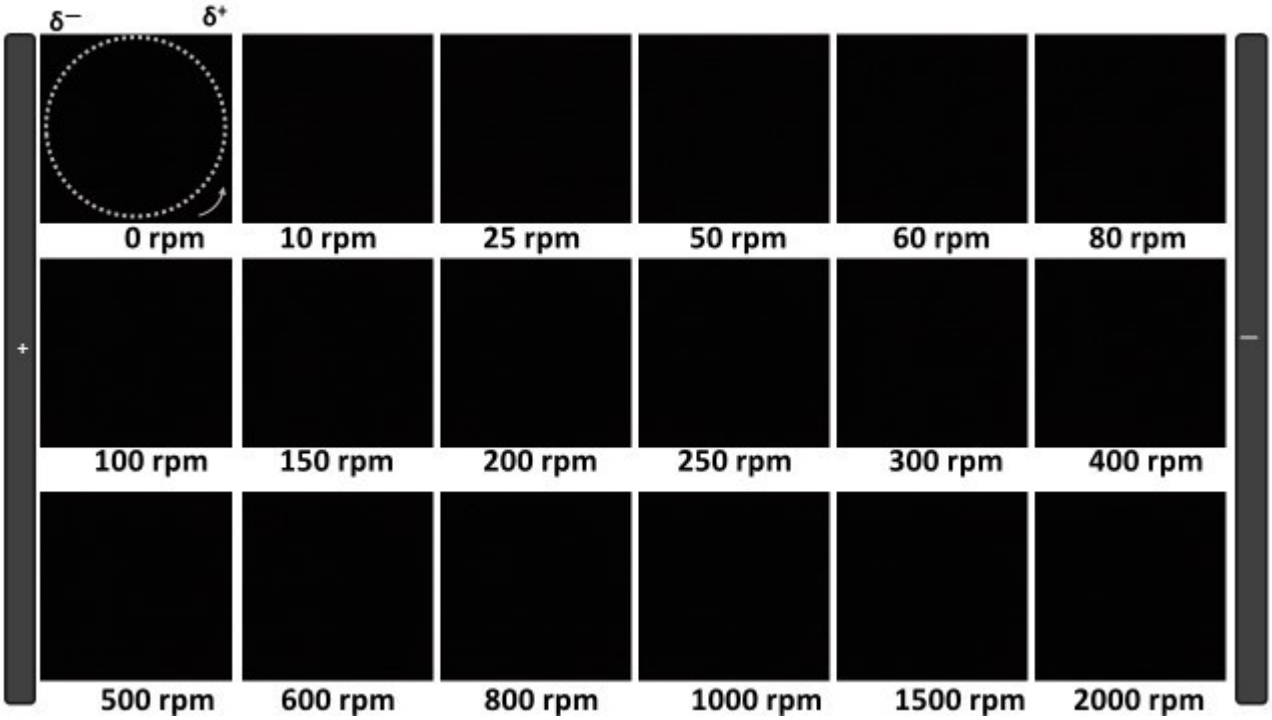

Figure S5. Effect of absence of TPA co-reactant on the ECL images of the RDBPE at different rotation speeds ω. Experiments were performed in a PBS (10 mM, pH 7.4) solution containing 2 mM $[Ru(bpy)_3]^{2+}$ without TPA. The dotted white circle and the dotted arrow indicate the position of the RDBPE and the direction of the rotation, respectively. A constant electric field of 8.3 V cm^{-1} was imposed by the two graphite feeder electrodes schematized at both extremities. Exposure time: 8 s.