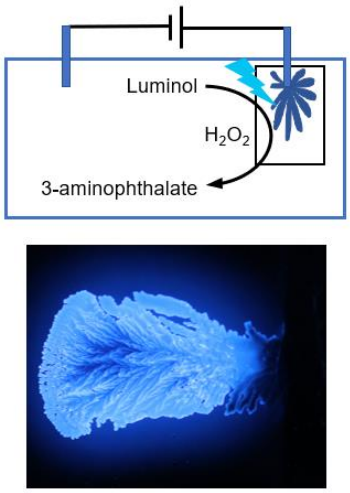
Electrochemiluminescence of Luminol on Conductive Poly (3,4-ethylenedioxythiophene) (PEDOT) and Its Derivatives in the Film State

([1]*School of Materials and Chemical Technology, Tokyo Institute of Technology*) ○Yanyun Zhang[1], Elena Villani[1], Naoki Shida[1], Ikuyoshi Tomita[1], Shinsuke Inagi[1]

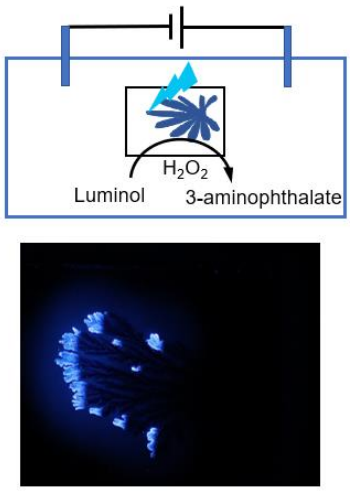
Keywords: Electrochemiluminescence; Poly(3,4-ethylenedioxythiophene); Bipolar electrode; Luminol

In our group, it was reported that a poly(3,4-ethylenedioxythiophene) (PEDOT) film was synthesized from the terminal of a gold (Au) wire on a glass substrate by the alternating current (AC) bipolar electrolysis.[1]

In this work, electrochemiluminescence (ECL) on PEDOT and its derivatives in the film state was studied to characterize the PEDOT film and the differences between PEDOT film and its derivatives. We achieved the visualization of the thin PEDOT film on the glass substrate which is very hard to be observed by naked eyes, by using PEDOT as an anode for the conventional electrochemical system in luminol-H_2O_2 system. Also, ECL on the PEDOT film and its derivatives used as a bipolar electrode (BPE) was achieved in both luminol-H_2O_2 system and ruthenium-tripropylamine (TPA) system. By optimizing the pH of luminol-H_2O_2 system, the different emission patterns of the PEDOT film and its derivatives was studied, which can further illustrate the different conductivities of different materials.



PEDOT Film Used as Anode



PEDOT Film Used as BPE

1) T. Watanabe, M. Ohira, Y, Koizumi, H. Nishiyama, I. Tomita, S. Inagi, *ACS Macro Lett.* **2018**, *7*, 551–555.

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