Supporting Information

Modification of Indium Tin Oxide (ITO) with Dendrimer-Encapsulated Nanoparticles Provides Enhanced Stable Electrochemiluminescence (ECL) of $Ru(bpy)_3^{2+}$/Tripropylamine while Preserving Optical Transparency of ITO for Sensitive ECL-Based Analyses

Yeoju Kim and Joohoon Kim*

Department of Chemistry, Research Institute for Basic Sciences, Kyung Hee University

1 Hoegi-dong, Seoul 130-701, Republic of Korea

*Corresponding Author

E-mail: jkim94@khu.ac.kr; Voice: 82-2-961-9384; Fax: 82-2-966-3701

-CONTENTS-

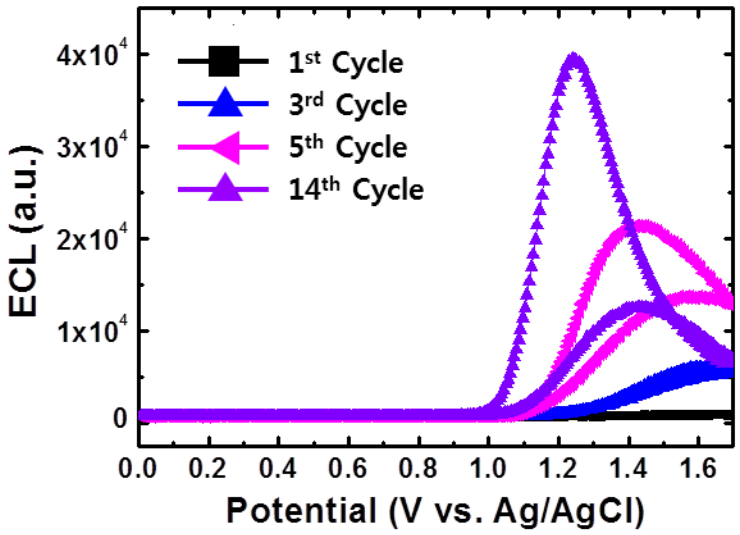

Figure S1. ECL curves of 100 μM $Ru(bpy)_3^{2+}$ and 100 mM TPrA in 0.15 M PBS solution (pH 7) upon the repetitive cycles of the electrode potential on a Pt DEN-modified ITO between 0.00 and 1.70 V (vs. Ag/AgCl). Scan rate: 100 mV · s^{-1}. Integration time: 0.05 s.

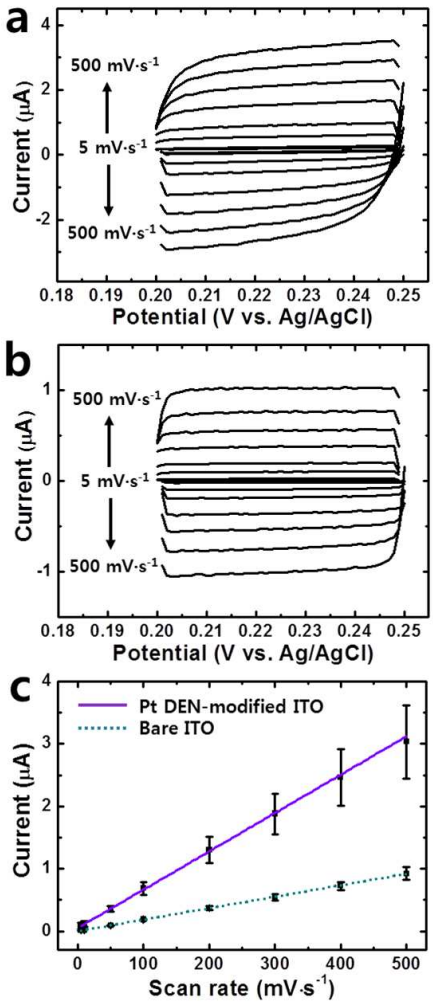

Figure S2. Cyclic voltammograms (CVs) obtained from (a) a Pt DEN-modified and (b) a bare ITO in 0.1 M $LiClO_4$ solution for measuring the capacitive currents of the electrodes at various scan rates from 5 to 500 $mV \cdot s^{-1}$. (c) Linear plots of capacitive current vs. scan rate obtained from charging curves in the double layer region as shown in (a) and (b). All experiments were carried out with four independent replicates to collect statistical data with error bars confirming satisfactory reproducibility in the measurements.

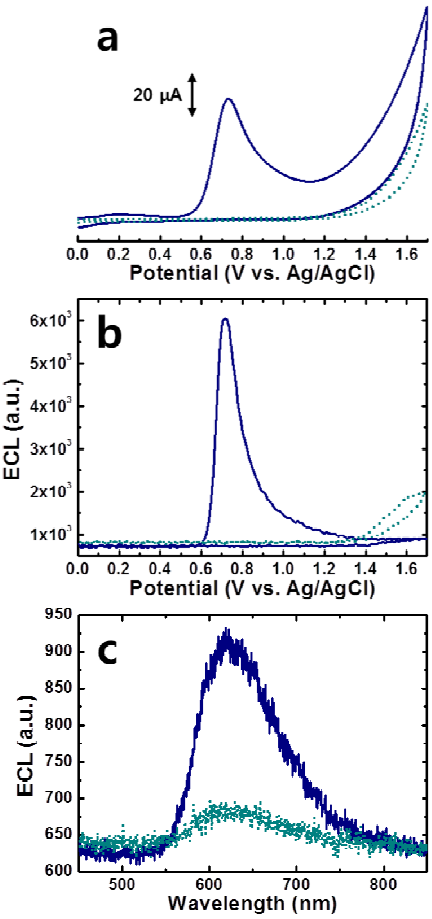

Figure S3. (a)-(b) CVs and corresponding ECL curves of 100 μM $Ru(bpy)_3^{2+}$ and 100 mM TPrA in 0.15 M PBS solution (pH 7), respectively, obtained on a Au DEN-modified (solid navy line) and a bare ITO (dotted dark cyan line). Scan rate: 100 mV · s^{-1}. Integration time: 0.1 s. (c) ECL spectra of 100 μM $Ru(bpy)_3^{2+}$ and 100 mM TPrA in 0.15 M PBS solution (pH 7) obtained on a Au DEN-modified (solid navy line) and a bare ITO (dotted dark cyan line). Applied potentials: 1.00 and 1.20 V (vs. Ag/AgCl) for the Au DEN-modified and the bare ITO, respectively. Integration time: 30 s.

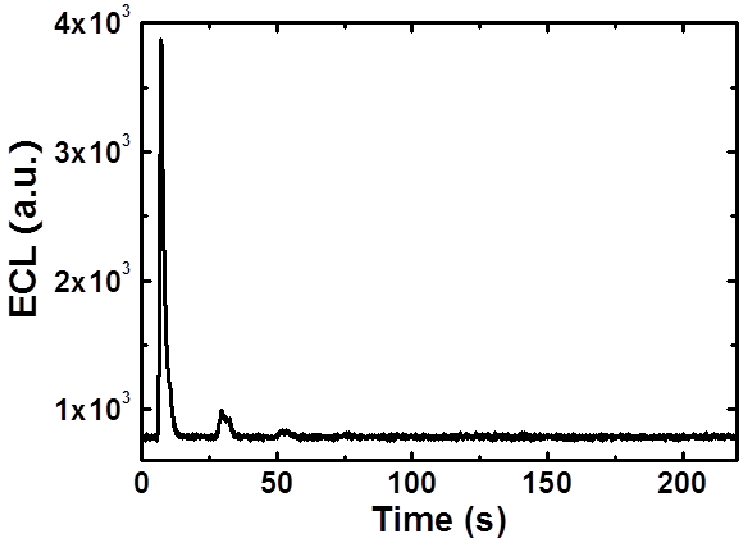

Figure S4. ECL emissions of 100 μM $Ru(bpy)_3^{2+}$ and 100 mM TPrA in 0.15 M PBS solution (pH 7) upon the application of repetitive potential cycles between 0.00 and 1.10 V (vs. Ag/AgCl) on a Au DEN-modified ITO. Scan rate: 100 mV · s^{-1}. Integration time: 0.1 s.