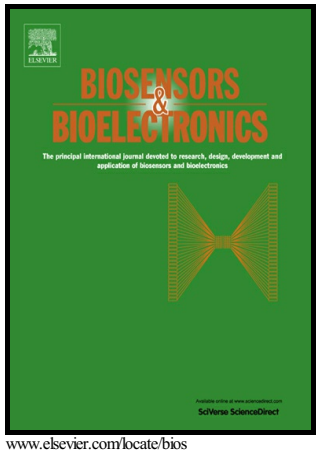

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PII: S0956-5663(18)30073-3
DOI: https://doi.org/10.1016/j.bios.2018.01.059
Reference: BIOS10252

To appear in: *Biosensors and Bioelectronic*

Received date: 19 October 2017
Revised date: 21 January 2018
Accepted date: 26 January 2018

Cite this article as: Fang-Kai Du, Hui Zhang, Xue-Cai Tan, Jun Yan, Min Liu, Xiao Chen, Ye-Yu Wu, De-Fen Feng, Quan-You Chen, Jian-Mei Cen, Shao-Gang Liu, Yu-Qin Qiu and He-You Han, $Ru(bpy)_3^{2+}$-Silica@Poly-L-lysine-Au as labels for electrochemiluminescence lysozyme aptasensor based on 3D graphene, *Biosensors and Bioelectronic,* https://doi.org/10.1016/j.bios.2018.01.059

$Ru(bpy)_3^{2+}$-Silica@Poly-L-lysine-Au as labels for electrochemiluminescence lysozyme aptasensor based on 3D graphene

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Abstract:

In this work, the feasibility of a novel sensitive electrochemiluminescence aptasensor for the detection of lysozyme using $Ru(bpy)_3^{2+}$-Silica@Poly-L-lysine-Au (RuSiNPs@PLL-Au) nanocomposites labeling as an indicator was demonstrated. The substrate electrode of the aptasensor was prepared by depositing gold nanoparticles (AuNPs) on 3D graphene-modified electrode. The lysozyme binding aptamer (LBA) was attached to the 3D graphene/AuNPs electrode through gold-thiol affinity, hybridized with a complementary single-strand DNA (CDNA) of the lysozyme aptamer labeled by RuSiNPs@PLL-Au as an electrochemiluminescence intensity amplifier. Thanks to the synergistic amplification of the 3D graphene, the AuNPs and RuSiNPs@PLL-Au NPs linked to $Ru(bpy)_3^{2+}$-ECL further enhanced the ECL intensity of the