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# Sensitive and Label-free Electrochemical Lead Ion Biosensor based on a DNzyme triggered G-quadruplex/hemin conformation

LeLe Wang<sup>a</sup>, Yanli Wen<sup>a\*</sup>, Lanying Li<sup>a</sup>, Xue Yang<sup>a,b</sup>, Nengqin Jia<sup>b</sup>, Wen Li<sup>a</sup>, Jiaoran Meng<sup>a</sup>, Manlei Duan<sup>a</sup>, Xiaoguang Sun<sup>a</sup>, Gang Liu<sup>a\*</sup>

*<sup>a</sup>Laboratory of Biometrology, Shanghai Institute of Measurement and Testing Technology, 1500 Zhang Heng Road, Shanghai 201203, People's Republic of China*

*<sup>b</sup>Department of Chemistry, College of Life and Environmental Sciences, Shanghai Normal University, 100 Guilin Road, Shanghai 200234, China*

\*Corresponding author : Shanghai Institute of Measurement and Testing Technology, Shanghai, 201203, P.R. China, Tel: 86 21 38839800; fax : 86 21 50798552, liug@simt.com.cn

## Abstract

Lead ion ( $\text{Pb}^{2+}$ ) is a common environmental contaminant, which causes serious bioaccumulation and toxicity in human body. In this work, we developed a novel  $\text{Pb}^{2+}$  electrochemical biosensor using the specific DNzyme on a DNA tetrahedron probe, in the presence of  $\text{Pb}^{2+}$ , the substrate strand was cleaved into two parts and released a “G-rich” oligo which subsequently formed a G-quadruplex/hemin complex, generating a detectable catalysis current signal with the assistant of  $\text{H}_2\text{O}_2$ . The 3-D

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