

Bipolar electrochemiluminescence on thread: a new class of electroanalytical sensors

Rui Liu, Cuiling Liu, Huijie Li, Min Liu, Dan Wang, Chunsun Zhang



PII: S0956-5663(17)30160-4
DOI: <http://dx.doi.org/10.1016/j.bios.2017.03.007>
Reference: BIOS9595

To appear in: *Biosensors and Bioelectronics*

Received date: 2 December 2016

Revised date: 12 February 2017

Accepted date: 6 March 2017

Cite this article as: Rui Liu, Cuiling Liu, Huijie Li, Min Liu, Dan Wang and Chunsun Zhang, Bipolar electrochemiluminescence on thread: a new class of electroanalytical sensors, *Biosensors and Bioelectronics* <http://dx.doi.org/10.1016/j.bios.2017.03.007>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Bipolar electrochemiluminescence on thread: a new class of electroanalytical sensors

Rui Liu¹, Cuiling Liu¹, Huijie Li¹, Min Liu, Dan Wang, Chunsun Zhang^{*}

MOE Key Laboratory of Laser Life Science & Institute of Laser Life Science, College of Biophotonics, South China Normal University, Guangzhou 510631, China

zhangcs@scnu.edu.cn

zhangcs_scnu@126.com

^{*}**Corresponding author.** Tel.: +86 20 85217070 8501; fax: +86 20 85216052.

Abstract

This paper introduces a new and simple concept for fabricating low-cost, easy-to-use capillary microchannel (CMC) assisted thread-based microfluidic analytical devices (CMCA- μ TADs) for bipolar electrochemiluminescence (BP-ECL) application. The thread with patterns of carbon screen-printed electrodes and bare thread zones (BTZs) is embedded into a CMC. Such CMCA- μ TADs can produce a strong and stable BP-ECL signal, and have an extremely low cost (\$0.01 per device). Interestingly, the CMCA- μ TADs are ultraflexible, and can be bent with a 135° bending angle at the BTZ or with a 150° bending angle at the middle of bipolar electrode (BPE), with no loss of analytical performance. Additionally, the two commonly-used ECL systems of Ru(bpy)₃²⁺/TPA and luminol/H₂O₂ are applied to

¹ These authors contributed equally to this work.

Download English Version:

<https://daneshyari.com/en/article/5031062>

Download Persian Version:

<https://daneshyari.com/article/5031062>

[Daneshyari.com](https://daneshyari.com)