

## Author's Accepted Manuscript

Lab-in-a-syringe using gold nanoparticles for rapid colorimetric chiral discrimination of enantiomers

Erhan Zor, Nisa Bekar



www.elsevier.com/locate/bios

PII: S0956-5663(16)31262-3  
DOI: <http://dx.doi.org/10.1016/j.bios.2016.12.031>  
Reference: BIOS9424

To appear in: *Biosensors and Bioelectronic*

Received date: 27 September 2016  
Revised date: 21 November 2016  
Accepted date: 12 December 2016

Cite this article as: Erhan Zor and Nisa Bekar, Lab-in-a-syringe using gold nanoparticles for rapid colorimetric chiral discrimination of enantiomers *Biosensors and Bioelectronic*, <http://dx.doi.org/10.1016/j.bios.2016.12.031>

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

# Lab-in-a-syringe using gold nanoparticles for rapid colorimetric chiral discrimination of enantiomers

Erhan Zor<sup>a\*</sup>, Nisa Bekar<sup>b</sup>

<sup>a</sup>Department of Science Education, A. K. Education Faculty, Necmettin Erbakan University, Konya, 42090, Turkey

<sup>b</sup>Department of Nanoscience and Nanoengineering, Graduate School of Natural Sciences, Necmettin Erbakan University, Konya, 42090, Turkey

ezor@konya.edu.tr

zorerhan@gmail.com

\**Corresponding author*: Tel.: +90 332 323 8220/5566

## Abstract

Nanomaterials with different characteristics are offering many ingenious sensing approaches with interest for simple and disposable paper-based (bio)sensing applications. In this study, the colorimetric discrimination of alanine enantiomers is examined and, more importantly, AuNPs-embedded paper-based lab-in-a-syringe (LIS) device is developed as a sensing strategy. The LIS consists of two cellulose acetate membranes: the conjugate pad capturing the analyte and the detection pad signaling the presence of the captured analyte, both are sandwiched between reusable plastic filter holders connected to a disposable syringe. The principle of LIS assay is based on the enantioselective interaction occurring between the inherently chiral AuNPs and enantiomers in the first filter holder, which results in aggregation of AuNPs to give a distinct colour change from red to purple in solution and finally the aggregated AuNPs is kept on the detection pad through vertical-flow operation. AuNPs show an enantioselective recognition response toward *L*-Alanine and limit of detection (LOD) value

Download English Version:

<https://daneshyari.com/en/article/5031151>

Download Persian Version:

<https://daneshyari.com/article/5031151>

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