### Accepted Manuscript

Title: Enzyme-free and label-free miRNA detection based on target-triggered catalytic hairpin assembly and fluorescence enhancement of DNA-silver nanoclusters

Authors: Hansol Kim, Shinyoung Kang, Ki Soo Park, Hyun

Gyu Park

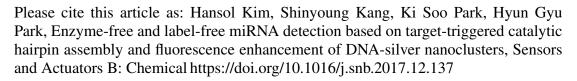
PII: S0925-4005(17)32470-X

DOI: https://doi.org/10.1016/j.snb.2017.12.137

Reference: SNB 23825

To appear in: Sensors and Actuators B

Received date: 28-8-2017 Revised date: 22-11-2017 Accepted date: 21-12-2017



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 proof before it is published in its final 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.



## ACCEPTED MANUSCRIPT

# Enzyme-free and label-free miRNA detection based on target-triggered catalytic hairpin assembly and fluorescence enhancement of DNA-silver nanoclusters

Hansol Kim<sup>a</sup>, Shinyoung Kang<sup>a</sup>, Ki Soo Park<sup>b,\*</sup> and Hyun Gyu Park<sup>a,\*</sup>

<sup>a</sup>Department of Chemical and Biomolecular Engineering (BK 21+ program), KAIST, Daehak-ro 291, Yuseong-gu, Daejeon 305-701, Republic of Korea <sup>b</sup>Department of Biological Engineering, College of Engineering, Konkuk University, Seoul 05029, Republic of Korea

\* To whom correspondence should be addressed.

E-mail: hgpark@kaist.ac.kr (H.G. Park); Phone: +82-42-350-3932; Fax: +82-42-350-3910.

E-mail: kskonkuk@gmail.com (K.S. Park); Phone: +82-2-450-3742; Fax: +82-2-450-3742.

#### **Highlights**

- An enzyme-free, label-free and cost-effective approach is developed to detect miRNA-141.
- We evaluate the concentration of miR-141 based on CHA and fluorescence enhancement of
- DNA-AgNCs nearby G-rich DNA.
- Diagnostic capability was demonstrated by measuring miR-141 in human blood serum.
- This strategy would be expanded to detect other miRNAs.

#### **Abstract**

We herein describe a simple, enzyme-free, and label-free strategy for the detection of miRNA based on target-triggered catalytic hairpin assembly (CHA) and fluorescence enhancement of DNA-silver nanoclusters (DNA-AgNCs). This strategy employs two hairpin probes that are rationally designed to contain AgNCs and guanine (G)-rich DNA sequence, respectively. In

#### Download English Version:

## https://daneshyari.com/en/article/7140760

Download Persian Version:

https://daneshyari.com/article/7140760

<u>Daneshyari.com</u>