

Accepted Manuscript

Title: In-situ ultrasensitive label-free DNA hybridization detection using optical fiber specklegram

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PII: S0925-4005(18)31006-2
DOI: <https://doi.org/10.1016/j.snb.2018.05.099>
Reference: SNB 24755

To appear in: *Sensors and Actuators B*

Received date: 15-1-2018
Revised date: 28-4-2018
Accepted date: 17-5-2018

Please cite this article as: Fu Feng, Wang Chen, Dihan Chen, Wei Lin, Shih-Chi Chen, In-situ ultrasensitive label-free DNA hybridization detection using optical fiber specklegram, Sensors and Actuators B: Chemical <https://doi.org/10.1016/j.snb.2018.05.099>

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In-situ ultrasensitive label-free DNA hybridization detection using optical fiber specklegram

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Highlights:

- A new low-cost bio-molecule sensor based on fiber specklegram, achieving ultrahigh sensitivity and stability with a compact envelope.
- The new fiber-optic sensor achieves label-free DNA detection with a sensitivity of 10^{-16} M – the best fiber-based DNA sensor reported to date.
- The high sensitivity is realized via a new temperature compensation method with a custom-designed microfluidic chip.

Abstract:

In this work, we present a compact and ultrasensitive bio-molecule sensor based on fiber specklegram, achieving a DNA detection sensitivity of 10^{-16} M. To our knowledge, the new device

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