

1 **Highly sensitive and selective fiber-optic modal**
2 **interferometric sensor for detecting trace mercury ion in**
3 **aqueous solution**

4
5 Mingjie Yin^a, Bobo Gu^b, Jinwen Qian^{a*}, A. Ping Zhang^b, Quanfu An^a,
6 and Sailing He^{b,c}

7 ^aMOE Key Laboratory of Macromolecular Synthesis and Functionalization,
8 Department of Polymer Science & Engineering, Zhejiang University, Hangzhou
9 310027, China

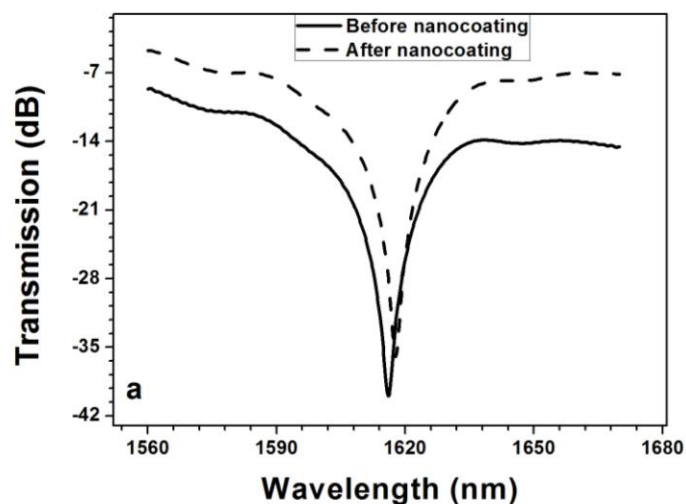
10 ^bCenter for Optical and Electromagnetic Research, State Key Laboratory of Modern
11 Optical Instrumentation, Zhejiang University, Hangzhou 310058, China

12 ^cDivision of Electromagnetic Engineering, School of Electrical Engineering, Royal Institute of
13 Technology, S-100 44 Stockholm, Sweden

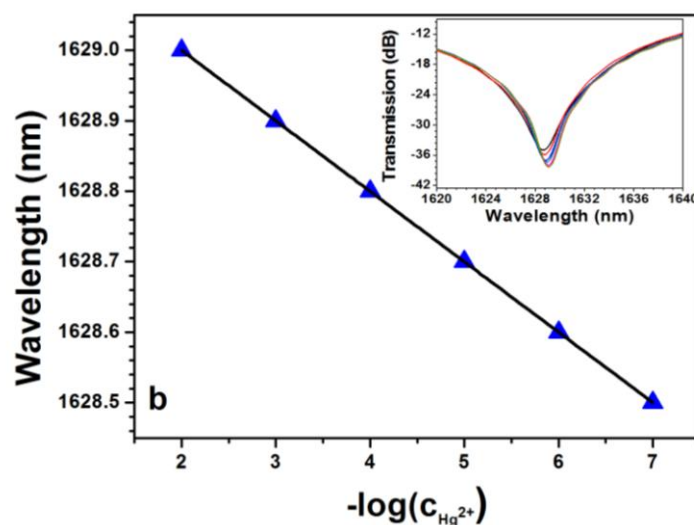
14
15
16
17
18
19
20
21
22
23
24

*Corresponding author: J.-W. Qian: Tel: +86-571-87953780; E-mail:
qianjw@zju.edu.cn

1
2
3
4
5
6



7

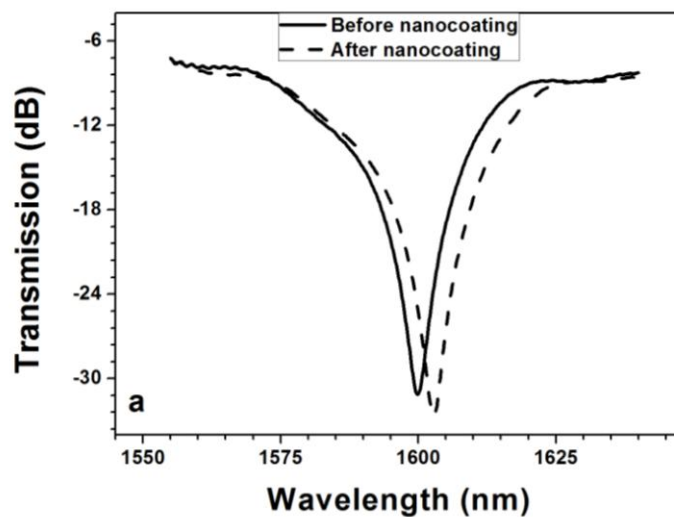


8

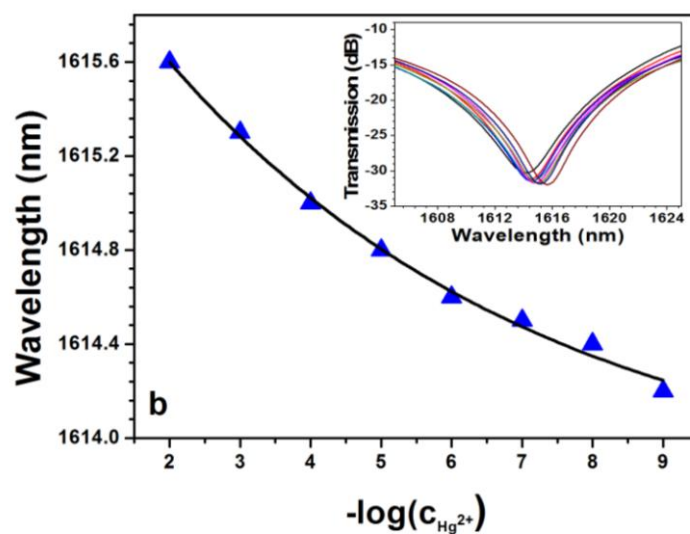
9 **Fig. S1.** The performance of TCFMI mercury ion sensor tested at pH=1 HgCl₂
10 solutions: a) Spectrum of TCFMI before (solid line) and after (dashed line) the
11 deposition of (P4VP·HCl /PSS)₁₀ multilayers; b) The response of the fabricated
12 TCFMI mercury sensor to different HgCl₂ solution concentration. The inset shows the
13 measured spectra.

14

1
2
3
4
5



6
7



8
9

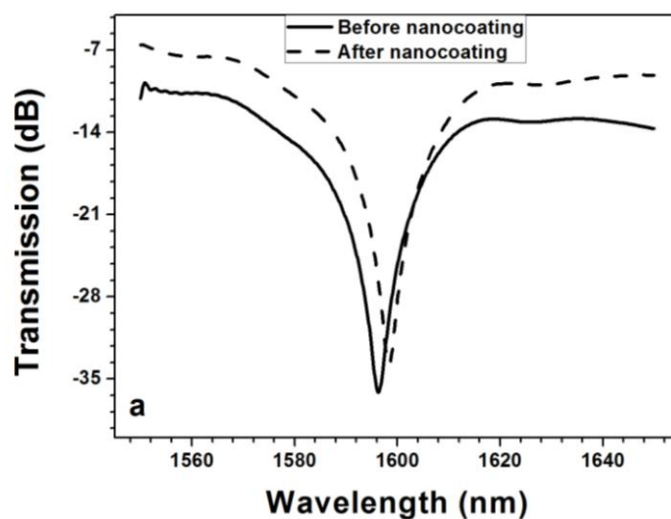
10 **Fig. S2.** The performance of TCFMI mercury ion sensor tested at pH=3 HgCl₂
11 solutions: a) Spectrum of TCFMI before (solid line) and after (dashed line) the
12 deposition of (P4VP·HCl /PSS)₁₀ multilayers; b) The response of the fabricated
13 TCFMI mercury sensor to different HgCl₂ solution concentration. The inset shows the
14 measured spectra.

1

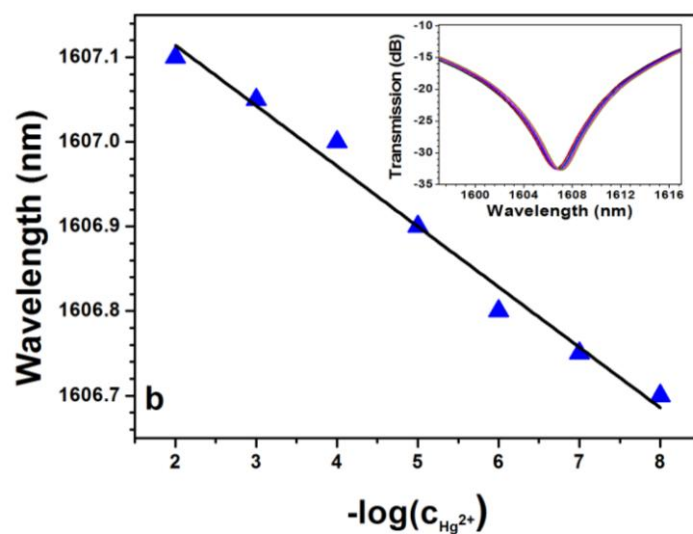
2

3

4



5



6

7 **Fig. S3.** The performance of TCFMI mercury ion sensor tested at pH=8 HgCl_2

8 solutions: a) Spectrum of TCFMI before (solid line) and after (dashed line) the

9 deposition of $(\text{P4VP}\cdot\text{HCl} / \text{PSS})_{10}$ multilayers; b) The response of the fabricated

10 TCFMI mercury sensor to different HgCl_2 solution concentration. The inset shows the

11 measured spectra.

12

13