



US008900879B2

(12) **United States Patent**
Lin et al.

(10) **Patent No.:** **US 8,900,879 B2**
(45) **Date of Patent:** **Dec. 2, 2014**

(54) **SENSOR FOR DETECTION OF A TARGET OF INTEREST**

G01N 33/00 (2006.01)
C12M 3/00 (2006.01)

(71) Applicant: **National Taiwan University, Taipei (TW)**

(52) **U.S. Cl.**
CPC *G01N 21/82* (2013.01); *G01N 33/56983* (2013.01); *G01N 21/59* (2013.01)

(72) Inventors: **Shiming Lin, Taipei (TW); Si-Chen Lee, Taipei (TW); Luan-Yin Chang, Taipei (TW)**

USPC *436/501*; *435/6.1*; *435/7.72*; *435/287.2*; *436/86*; *422/82.06*

(58) **Field of Classification Search**

None
See application file for complete search history.

(73) Assignee: **National Taiwan University, Taipei (TW)**

(56) **References Cited**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

U.S. PATENT DOCUMENTS

(21) Appl. No.: **13/911,949**

5,512,131 A * 4/1996 Kumar et al. 438/738
2003/0170613 A1 * 9/2003 Straus 435/5
2005/0191663 A1 * 9/2005 Beattie 435/6
2010/0323372 A1 * 12/2010 Fulton et al. 435/7.72
2011/0053794 A1 * 3/2011 Zhang 506/9

(22) Filed: **Jun. 6, 2013**

* cited by examiner

(65) **Prior Publication Data**

US 2013/0330813 A1 Dec. 12, 2013

Primary Examiner — Neil N Turk

(74) *Attorney, Agent, or Firm* — Muncy, Geissler, Olds & Lowe, P.C.

Related U.S. Application Data

(63) Continuation-in-part of application No. 13/835,379, filed on Mar. 15, 2013.

(57) **ABSTRACT**

(60) Provisional application No. 61/656,354, filed on Jun. 6, 2012.

Embodiments of the present disclosure set forth a sensor for detecting a target of interest. One example sensor may comprise an apparatus for binding the target of interest and a draining unit for draining fluid from the apparatus. The apparatus may comprise a substrate, a material disposed on the substrate, and a probe disposed on the material and configured to bind to the target of interest. The probe is configured on the material to scatter light emitted from a light source when the target of interest is bound to the probe.

(51) **Int. Cl.**
G01N 33/566 (2006.01)
G01N 33/53 (2006.01)
G01N 21/01 (2006.01)
G01N 21/82 (2006.01)
G01N 33/569 (2006.01)
G01N 21/59 (2006.01)

22 Claims, 20 Drawing Sheets

