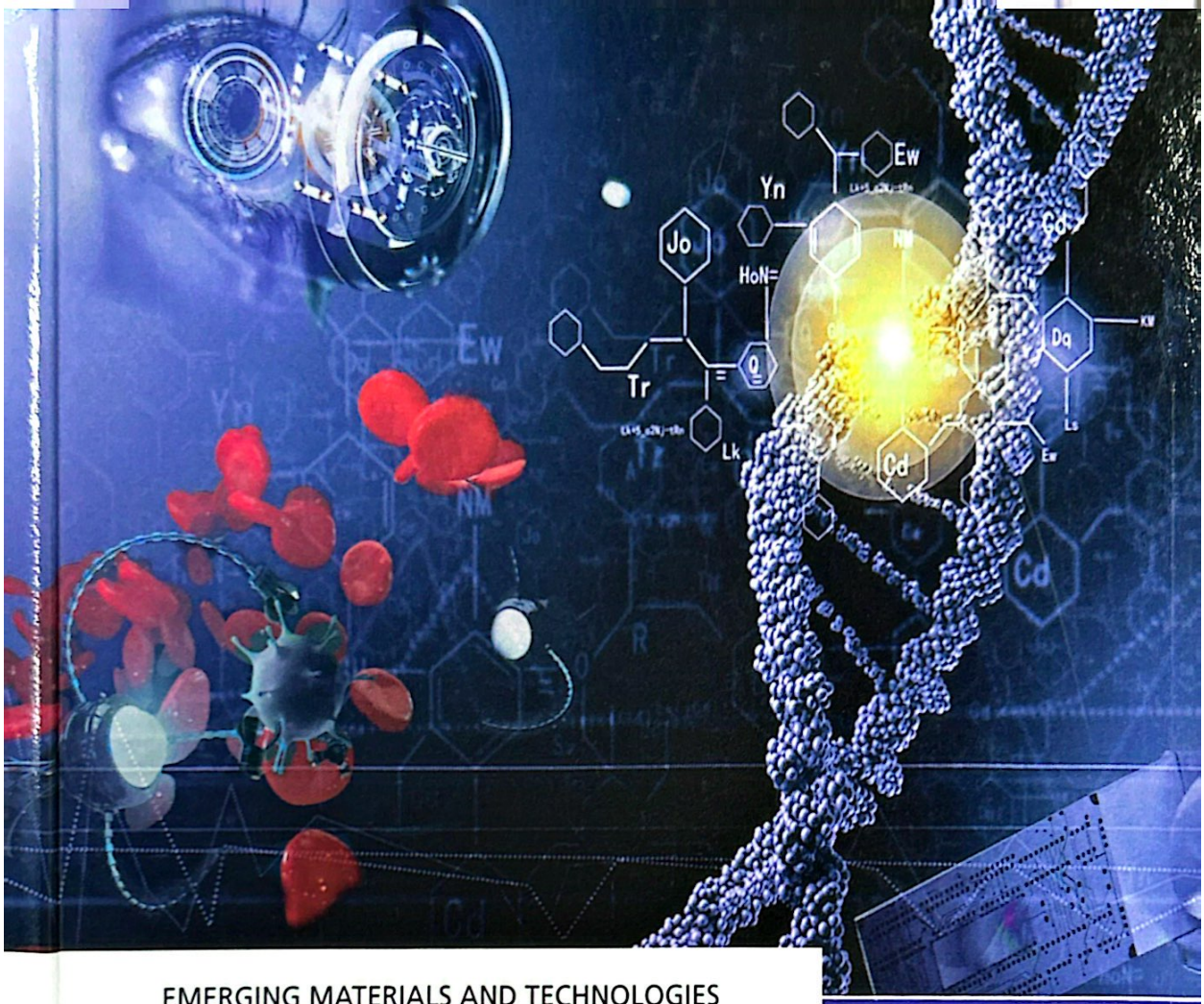


EMERGING MATERIALS AND TECHNOLOGIES

Biosensors

Fundamentals, Emerging Technologies, and Applications

Edited by
Sibel A. Ozkan
Bengi Uslu
Mustafa Kemal Sezgintürk

CRC Press
Taylor & Francis Group

Scanned with CamScanner

Chapter 18

Electrochemical virus detections with nanobiosensors

Sariye Irem Kaya[1], Leyla Karadurmus[1,2], Goksu Ozcelikay[1], Nurgul K. Bakirhan[3] and Sibel A. Ozkan[1]

[1]Department of Analytical Chemistry, Faculty of Pharmacy, Ankara University, Ankara, Turkey, [2]Department of Analytical Chemistry, Faculty of Pharmacy, Adıyaman University, Adıyaman, Turkey, [3]Chemistry Department, Arts and Science Faculty, Hitit University, Corum, Turkey

Chapter Outline

Abbreviations **303**
18.1 Introduction **304**
18.1.1 Viruses 304
18.1.2 Effects of viruses 304
18.1.3 Methods used for the determination of viruses 304
18.1.4 Electrochemical studies and advantages 306
18.2 The most observed viruses in humans **307**
18.3 Nanobiosensor **310**
18.3.1 Substrates 312
18.4 Methods **312**
18.5 Conclusion **318**
References **318**

Abbreviations

Au	gold
AuNPs	gold nanoparticles
Au@Pd/MoS_2@MWCNTs	gold@palladium nanoparticles loaded by molybdenum disulfide functionalized multiwalled carbon nanotubes
bi-MBs	bifunctional magnetic nanobeads
CIMC	carbon nanotubes–iron oxides magnetic composites
CNTs	carbon nanotubes
Cu-apoferritin	apoferritin-encapsulated Cu
CuNPs	copper nanoparticles
GO	graphene oxide
GQDs	graphene quantum dots
HAU	hemagglutination units
HBV	Hepatitis B virus
HIV	human immunodeficiency virus
HPV	Human papillomavirus
MWCNT	multiwalled carbon nanotubes
PANi–MWCNT	polyaniline–multiwalled carbon nanotube
PFU	plaque forming units
rGO	reduced graphene oxide
SWCNTs	single-walled carbon nanotubes
$TCID_{50}$	50% tissue culture infective dose

Nanosensors for Smart Cities. DOI: https://doi.org/10.1016/B978-0-12-819870-4.00017-7
© 2020 Elsevier Inc. All rights reserved.