



**COLLEGE OF ENGINEERING
AND COMPUTER SCIENCE**
FLORIDA ATLANTIC UNIVERSITY

Announces the Ph.D. Dissertation Defense of

Sandhya Sharma

for the degree of Doctor of Philosophy (Ph.D.)

**“Development of Microfluidic Platforms for Infectious Diseases Diagnosis
and Sperm Cell Sorting”**

**March 30, 2022, 12:00 p.m.
Engineering East, Room 405
777 Glades Road
Boca Raton, FL**

[Zoom](#)

Meeting ID: 864 8498 7138

Passcode: 7wLrGS

DEPARTMENT:

Electrical Engineering and Computer Science

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ABSTRACT OF DISSERTATION

Development of Microfluidic platforms for Infectious Diseases Diagnosis and Sperm Cell Sorting

A sudden eruption of infectious disease has caused a catastrophic impact causing many deaths and leaving lifelong severe health issues in many others. However, due to the lack of sophisticated lab locations and expensive equipment, diagnosis of the disease remains a significant challenge, particularly for low-income countries. To address these limitations, herein, in my dissertation, I have developed point-of-care (POC) microfluidic platforms for infectious diseases diagnostics for viruses such as Zika, Hepatitis C Virus (HCV), and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). In addition to this, I have also developed a microfluidic platform for functional sperm cell sorting from raw semen samples. All things considered, the developed devices are inexpensive, disposable, easy-to-use, and rapid that provide results within one hour.

BIOGRAPHICAL SKETCH

Born in Punjab, India

B.S., Lovely Professional University, Jalandhar, Punjab, India, 2011

M.S., Florida Atlantic University, Boca Raton, Florida, USA, 2014
Ph.D., Florida Atlantic University, Boca Raton, Florida, 2022

Time in Preparation: Summer 2017 - Spring 2022

Qualifying Examination Passed: Spring 2018

Published Papers:

Sandhya Sharma, Emmanuel Thomas, Massimo Caputi, Waseem Asghar "RT-LAMP based molecular Diagnostic set-up for rapid Hepatitis C virus testing" (*Under Review- Talanta*)

Sandhya Sharma, Md Alamgir Kabir, Waseem Asghar " Selection of healthy sperm cells based on positive rheotaxis using a microfluidic device." *Analyst* (2022)

Md Alamgir Kabir, Ruben Soto-Acosta, Sandhya Sharma, Shelton Bradrick, Mariano Garcia-Blanco, Massimo Caputi, Waseem Asghar "An antibody panel for highly specific detection and differentiation of ZIKV and Dengue viruses" *Nature Scientific Reports* (2020).

Sandhya Sharma, Md Alamgir Kabir, Waseem Asghar "Lab on a Chip Zika Detection with RT- LAMP-based Assay for Point-of-Care Settings" *Archives of Pathology & Laboratory Medicine* (2020).

Sandhya Sharma, Rachel Zhuang, Marisa Long, Mirjana Pavlovic, Yunging Kang, Azhar Ilyas, Waseem Asghar "Circulating Tumor Cell Isolation, Culture and Downstream Molecular Analysis" *Biotechnology Advances* (2018).