

EE/CprE/SE 492 BIWEEKLY REPORT 3

Start Date 09/26/2019 – End Date 10/10/2019

Group number: sddec19-07

Project title: Rapid detection of Fentanyl using a multifunction nanostructured

Client & Advisor: Meng Lu

Team Members/Role:

Yifu Zhang - Stationary phase fabrication group
Zheyuan Tang - Stationary phase fabrication group
Hao Wang - Testing group
Ugerah Abalu - Testing group
Kossi Egla - Instrumentation group
Olouwole Eteka - Instrumentation group

o Weekly Summary

This past 2 weeks we worked with the transmission setup lab. This setup uses a light source which goes through a polarizer before it is transmitted onto a Silicon dioxide photonic crystal. We are able to have light transmitted onto the crystal and read off wavelength of the spectrum using Ocean View software. This would help give us a good reference point to see the intended wavelength of a clean sample of the photonic crystal before any liquid is spotted and separated on it.

o Past week accomplishments

Yifu Zhang

Learn how to use the setup to observe the light transmission on sample

Zheyuan Tang

Assemble and modify the light transmission setup. Learn how to use setup.

Ugerah Abalu

Worked in lab using light transmission set up on photonic crystal

Kossi Eglá , Olouwole Eteka:

We founded the distance at which the lens of our camera can focus properly and it will represent the length from the camera to the photonic sensor in the 3D design.

Hao Wang

Tested the transmission on the photonic crystal in the lab by using the light transmission setup.

o **Pending issues**

Instrumentation (kossi Eglu, Oluwole Eteka):

We are having some issues uploading the ESP32 cam code into the board. The code is compiling properly, but the problem is that it is giving us error while we were trying to upload it on the ESP32 cam board. We are having difficulties finding the library needed for the code to properly upload and work. We are still working on fixing the problem.

Fabrication (yifu zhang, zheyuan tang):

The peak value of intensity is not stable enough.

o **Individual contributions**

NAME	Individual Contributions	Hours this week	Hours cumulative
Hao Wang	Test the photonic crystal by using transmission setup and find out the peak.	8	72
Zheyuan Tang	1. Ran tests to find the intensity peak for the photonic crystal by using optical transmission setup	4	72
Ugerah Abalu	1. Helped adjust and realign the transmission setup in lab 2. Ran experiment to find the peak transmitted light intensity on a clean sample of photonic crystal	6	72

Yifu Zhang	Using the setup to detect the light transmission on sample	8	72
Kossi Eglá	<ol style="list-style-type: none"> 1. Got the FTDI cable needed to upload the necessary code to the ESP32 cam. 2. Working on how to activate the new camera (ESP 32 cam) to be able to connect to a local network 	8	48
Olouwole Eteka	<ol style="list-style-type: none"> 1. Working on the code because we are having a library compatibility issue 2. Met with the grade student to get some help about how to fix the coding issue 	6	48

o Plans for the upcoming week

Instrumentation (kossi Eglá, Olouwole Eteka):

Making the ESP32 camera works and able to connect it to the internet and local network.
 Finding the angle of reflection for the photonic sensor using the ESP32 camera.

Separation & Testing(Hao Wang, Zheyuan Tang, Yifu Zhang, Ugerah Abalu):

Processing Chromatography test on photonic sensor. Test the photonic sensor sample until it dry. Comparing with the test on photonic sensor only, we can find out the shift on the screen.