

EE/CprE/SE 492 BIWEEKLY REPORT 5

Start Date 11/4/2019 – End Date 11/8/2019

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 week we are trying to find a new way to improve the separation speed by analyzing the polarity of mobile phase and stationary phase. Otherwise, we also trying to increase the distance between each column on the surface of our chromatography plate, this can also accelerate the separation process.

o Past week accomplishments

Yifu Zhang

Performed the light detection experiment on the photonic crystal sample

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Zheyuan Tang

Test the capillary force for chromatography test

Ugerah Abalu

Try to help to decide the size of the prototype.

Kossi Eglá , Olouwole Eteka:

Continue to work on ESP 32 CAM, make sure the code to be able to take pictures continuously within a certain time frame and store them. We are also working on the 3D prototype.

Hao Wang

Did the chromatography experiment by using the deposited sample and working on research about how to improve the rate of separation.

o **Pending issues**

Instrumentation (kossi Eglu, Olouwole Eteka):

The code does not work as what we want (the functionality can not be displayed), so we are still working on how to modify the code. We also need to modify the user interface.

Fabrication & testing (yifu zhang, zheyuan tang, Ugerah Abalu, Hao Wang):

The separation occurs when we drop our food dye on bottom of the plate, but the separation rate is too slow, takes too much time. We try to accelerate this process by enlarging the distance between each column on the surface of the plate.

o **Individual contributions**

NAME	Individual Contributions	Hours this week	Hours cumulative
Hao Wang	1. Did the experiment on the deposited sample and research on how to improve the rate of separation	5	81
Zheyuan Tang	1. Research the way to increase the flow rate on photonic crystal plate 2. Test the chromatography experiment after increase the	6	87

	hydrophilic of plate surface		
Ugerah Abalu	1. Worked on determine the size of instrument setup.	5	81
Yifu Zhang	1. Try to figure out a way to improve the separation by looking at the material polarity	8	88
Kossi Eglá	1. work on ESP 32 CAM, make sure the code to be able to take pictures continuously within a certain time frame and store them	8	81
Olouwole Eteka	1. Working on the 3D prototype. 2. Also working on the ESP 32 CAM code and user interface	8	81

o **Plans for the upcoming week**

Instrumentation (kossi Eglá, Olouwole Eteka):

Try to modify the code, and be able to take pictures continuously within a certain time frame and store them directly on a drive folder. We will also continue working on the development of the user interface and the 3D prototype of the design.

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

To increase the flow rate, we decide to increase the porosity of photonic crystal sample. Then using plasma to increase hydrophilic of surface plate, and test chromatography.