

EE/CprE/SE 491 WEEKLY REPORT 5

Start Date 03/10/2019 – End Date 03/15/2019

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 got our first sample of the ultra thin layer plate. We used this to replace the regular paper we had previously been using when doing chromatography tests. The spotted dye didn't move up the plate and we suspect this was due to low capillary force. Based on the research paper, given to us at the start of the project, we would try to improve the thickness of the next set of fabricated UTLC plates and see if we get better results.

o Past week accomplishments

Yifu Zhang

Try to figure out the which type of high polarity chemical can mix with water and researched the GLAD principle

Hao Wang

Researched the better solvents to use for chromatography process and observed and realized how the fabrication process works

Zheyuan Tang

Research the solvent choice through their property and worked to improve the resolution and get better result

Ugerah Abalu

Researched better solvents to use during chromatography process and communicated with research assistant regarding production of ultra thin layer chromatography plates samples to use in experiment

Kossi Egla

We order the arduino board from ETG and got a camera from our professor. We also talk with our professor about the next step about our project.

Olouwole Eteka

We order the arduino to and the camera that is going along with it. We have to touch base with the professor to talk about the frame of our design.

o Pending issues

In UTLC, the solvent cannot move up on the surface of the GLAD plate. We expect the solvent can flow on the plate so that separate the dye sample hence we would try another ultra thin layer plate with improved thickness next time.

o Individual contributions

NAME	Individual Contributions	Hours this week	Hours
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			cumulative
Hao Wang	<ol style="list-style-type: none"> 1. Performed the experiment about ultrathin-layer by different solvent. 2. Observed the fabrication equipments and function of each parts of the equipments 	6	30
Zheyuan Tang	<ol style="list-style-type: none"> 1. Learning the process of GLAD organic oxide on the glass base plate 2. Using UTCL to separate the dye with acetone and hexane 	6	30
Ugerah Abalu	<ol style="list-style-type: none"> 1. Used the Ultra thin layer Silicon dioxide plate for this set of chromatography experiments. The liquid spotted didn't move up the plate so we would try to increase the thickness of the plate and the capillary force required 	6	30
Yifu Zhang	<ol style="list-style-type: none"> 1. Try to understand the fabrication process of our plate 2. Try to get familiar with the glacial angle deposition 	6	30
Kossi Eglu	<ol style="list-style-type: none"> 1. Start wiring the arduino and the camera 	6	30

	2. Working on the program needed for the arduino board.		
Olouwole Eteka	<ol style="list-style-type: none"> 1. I worked on the programming of the camera especially how to detect our camera module. 2. I help with the wiring of the microcontroller/camera. 	6	30

o Plans for the upcoming week

Group 1 Fabrication: Zheyuan Tang, Yifu Zhang:

We will try thicker thickness for our UTLC plate, see weather the solvent can flow on the surface of the UTLC plate. If it is not, then we will do BOE process to etch the plate in order to increase the porosity of the plates.

Group 2 Sample Test: Hao Wang, Ugerah Abalu:

We will try the chromatography again by increase the thickness of layer from 500 nm to 1um and research how to increase the capillary force so the solvent can flow upwards on the plate.

Group 3 Instrumentation: Kossi Eglu, Olouwole Eteka:

We need to figure out how we can save the picture taken by the camera because the arduino doesn't have enough memory to save a full picture data. We will need to add some external memory to our system.