EE 492 Biweekly Report 5

Timeframe: 3/9/18 – 3/23/18

Group: 38

Project: Sensors for Measuring Chemical Content in Soil

Client and Advisor: Dr. Liang Dong

Team Members – Broken down into 3 group roles (Control Box, Sensor, and Software).

Colin Cox – Software

Jarrod Droll – Sensor

Rachel Hoke – Sensor

Wage Miller – Control Box

Scott Rowekamp - Software

Tyler Thumma – Control Box

Summary:

Control Box – It was decided that the original circuit design is what the team will go with as the new PCB was not functioning as desired. A CAD file was created with correct placement of the holes which will be cut out at Boyd Lab. After that is accomplished the whole control box will be ready for assembly and testing.

Software – Updated android app to make it more user friendly and flow better, hid some of the features that aren't needed by normal users. In the next reporting cycle I plan on implementing some software filters as well as the ability to download the historical contents held on a sd card in the control box via Bluetooth. After getting the server set up by ETG, we started to configure it. In the next reporting period, the firewall, database, and server software will be installed.

Sensor – Finished printing and placing shadow masks on the 15 sensor boards. Over spring break sensors were sent out for chemical deposition to apply the gold and silver to the working and reference electrodes. Next step is to finish the deposition and start working on changing silver to silver chloride and applying the photolithography process to finish the sensors fabrication.

Accomplishments:

Control Box – Created CAD file with cutouts for switch, connectors, and sensors. Tested complex PCB however decided it will not be worth it in the long run, as a result the old design will be used.

Software – Created updated user interface with better flow for the Android app.

Sensors – All wafers have shadow masks applied to them. Successfully sent out all of the sensors for deposition and received some sensor wafers back with gold and silver applied to the electrodes. Started research on available options for chemical spreading. Started work on next steps for sensor fabrication.

Pending Issues:

Software – No pending issues

Sensors – When it comes to the depositing of FeCl3 to the Ag we are looking into other methods for application to help with the issue of chemical spreading.

Control box – No pending issues

Individual Contributions:

Name	Contribution	Hours	Cumulative Hours
Colin Cox	Reworked User interface to make it more user friendly.	7	30
Jarrod Droll	Received sensor boards from Au and Ag application and prepared for next steps in fabrication, further research and started next steps for cleaning boards for FeCl3.	7	28

Rachel Hoke	Received sensor boards from Au and Ag application and prepared for next steps in fabrication, further research and started next steps for cleaning boards for FeCl3.	7	28
Wage Miller	Tested new PCB once it came in. Helped decide where holes will be cut in the control box by measuring dimensions and drawing schematic.	7	27
Scott Rowekamp	Added the following methods to the server: createUser, login, uploadData. Also designed all the front end components.	10	35
Tyler Thumma	Designed new box design in AutoCAD. Also, troubleshooted the issue with current PCB design and ordered new	8	28

	board as well as other necessary parts.		