***EE 491 WEEKLY REPORT 7 Date: 10/18/16-10/24/16***

***Group number: 24***

***Project title: Ultrasound Water Purification***

***Client &/Advisor: Prof Bigelow***

***Team Members/Role:***

***Jacob Bernhard/Team leader***

***Yuhao Fu/Team Communication Leader***

***Parker Oltrogge/Team Webmaster***

***Subin Mao/Team Key Concept Holder***

***Xiyuan Wang/Team member***

***Tao Wu/ Team member***

* **Weekly Summary**

Since we have split our project into two part, purification system and testing system, two groups are working their own design to improve the efficiency.

For purification system, we met the Prof. Bigelow twice this week. One is the general meeting reporting the accomplish from last week, we all designed the housing for the purification system. on the other meeting, we brought the transducer from humidifier to professor’s office, so he can justify whether this transducer will work or not. also, Prof. Bigelow did the demonstration on his own ultrasound water purification system, taught us how to change the state of water by adjust the frequency and amplitude of the ultrasound.

For the testing system, we Looked into best diodes for diode style thermometer and prepared kit for creation and testing of diode thermometer. Also, we looked for the detailed information about “potable water” parameter upon different standards

* **Past week accomplishments (please describe as what was done, by whom, when)**
* Jacob Bernhard: reworked transducer and purification design into mini blast tubes rather than a continuous flow system.
* Yuhao Fu: Met with professor Biglow to watch the demo of the real ultrasound water purification system. and we switched the design from the continuous flow system to the mini glass tubes reflection system.
* Parker Oltrogge: Looked into best diodes for diode style thermometer. prepared kit for creation and testing of diode thermometer.
* Subin Mao: improved the housing of transducer, looked for the detailed information about “potable water” parameter upon different standards
* Xiyuan Wang: Understand that the housing of the transducer should consist of three parts and changed some details of the housing of transducer.
* Tao Wu: meet with Prof. Bigelow and talked about our new mind of purification design. thinked about the living lives in the water and read the document get from our advisor to get familiar with the new design.
* **Pending issues**
* Jacob Bernhard: We are trying to find a way to collect the water in order for it to not be contaminated by the already existing water
* Yuhao Fu: specify the data of frequency and amplitude of input source to adjust the ultrasound to achieve the capitation and squirting.
* Parker Oltrogge: not sure if a diode style thermometer is good enough(+-3 deg) for ph sensor to be based off of.
* Subin Mao: some of testing systems are way too expensive, it’s kind of infeasible to implement
* Xiyuan Wang: network analyzer is too expensive for us.
* Tao Unspecific data of transducer need to be determined. Also, for our new design, we need to come up a more clear idea of it.
* **Individual contributions**

|  |  |  |  |
| --- | --- | --- | --- |
| **NAME** | **Individual Contributions** | **Hours this week** | **HOURS**  **cumulative** |
| **Jacob Bernhard** | Met with professor to go over new transducer design | 5 | 20 |
| **Yuhao**  **Fu** |  | 4.5 | 21 |
| **Parker Oltrogge** | diode thermometer | 3 | 19.5 |
| **Subin Mao** | improved housing of transducer/did research on water testing part | 5 | 20 |
| **Xiyuan Wang** | Understand that the housing of the transducer should consist of three parts and changed some details of the housing of transducer. | 4 | 20 |
| **Tao**  **Wu** | think about our new design of purification part. tried to figure out how to make it works. read the research paper to see if there is any help | 4 | 20 |

* **Comments and extended discussion**

The biggest thing to happen in week seven was the splitting of the team based upon what each member wanted most to do and was most knowledgeable in. we will keep working on our own thoughts and design, and share the ideas weekly.

* **Plan for coming week**
* Jacob Bernhard: Find suitable bio contaminant that only requires BSL1 for testing purposes.
* Yuhao Fu: visit the bio-safety department to gain the information about the suitable bio contaminant that only requires BSL1 that we can culture.
* Parker Oltrogge: Doing research on water quality testing part
* Subin Mao: keep doing the research on water quality testing part
* Xiyuan Wang: do more study on water quality part.
* Tao Wu: try to find living lives which need to be purified in the water. also, we need to be able to culture it. think more about our new design of the purification.
* **Summary of weekly advisor meeting**

We had a general meeting with Prof. Bigelow on Tuesday. we decided to split our project into two part, purification system and testing system and two groups are working their own design to improve the efficiency.

Also, we share our design of the housing for the purification system. even though we are not using this continuous floating system anymore, we still learned how to use solidworks. we may need to build some part by 3-D printer in the future.

On the second meeting, three of us from purification system met Prof. Bigelow again on Friday. Prof. Bigelow did the demonstration on his own ultrasound water purification system, taught us how to change the state of water (mist, squirting, capitation) by adjust the frequency and amplitude of the ultrasound input.

we brought the transducer from humidifier to professor’s office to let him justify whether this transducer from humidifier will work or not in the purification system.

Also, Prof. Bigelow provided the idea of purification system, we will apply mini blast tubes rather than a continuous flow system for the purification system. (the specific data will be updated in the second version of project plan)

since we have limit time, we need to find suitable bio contaminant that only requires BSL1 for testing purposes.