

901217 - Chemical Sensors

Week 29

1. Irene Hu
 - a. Picked parts for an LED excitation system for wastewater ISUS

Week 28

1. Irene Hu
 - a. Wastewater ISUS opening meeting
 - b. Evaluated some LED and lens options for wastewater ISUS prototyping

Week 26

1. Irene Hu
 - a. Looked into some LEDs for wastewater ISUS

Week 24

1. Thom Maughan
 - a. Worked with Josh on failed deuterium lamp analysis.
 - b. MoSoS v5.2 for MSC3

Week 22

1. Thom Maughan
 - a. Trouble shooting 4 ISUS resulted in 3 problems due to bubbles/droplets affecting optical path. 1 was due to a failed lamp.
 - b. Presented ISUS timing to the Carbon Lab. Lobbying for restructuring the routine and cutting down on the sample time with lamp on - hopefully going to save about 30% in power for ISUS sample while maintaining accuracy.

Week 21

1. Irene Hu
 - a. Minor scare on “malfunctioning” float ISUS was resolved as water droplet reflections

Week 19

1. Thom Maughan

- a. Prep'd then postponed the ISUS timing talk.

Week 18

- 1. Thom Maughan
 - a. ISUS sample timing presentation prep for science meeting. Postponed until May

Week 17

- 1. Irene Hu
 - a. Looked into some LEDs for wastewater ISUS
- 2. Thom Maughan
 - a.

Week 16

- 1. Irene Hu
 - a. A bit of exploration re: lighting sources for wastewater ISUS
- 2. Thom Maughan
 - a. Wahoo! MSC3 based GoBGC floats are now being deployed. This after nearly a year long four float engineering test.
 - b. Working on MMS interface v2.

Week 15

- 1. Thom Maughan
 - a. Investigating a Bug where the MSC3 fails to sleep. This has happened 3 times out of 50 4 day K0 calibration runs. Jess has setup a sampling / sleep interval test program to run on one of the test boxes to try and reproduce. Implemented an error log and reset handler in case of sleep fxn fail.
 - b. Working on MMS v2. Jess analyzed hundreds of floats including Seabird Suna to get the integration time setting from 2014 to 2025. As expected, SUNA required much less integration time due to higher optical signal. Reducing integration time will reduce power consumption and increase float battery life - the goal is to halve the power consumption of ISUS. Planning another lab talk on April 30 to go over the details and timing of an ISUS sample.

Week 14

- 1. Thom Maughan
 - a. In progress on MMS v2 Analog and Digital board design. Prototyped
 - b. Presented to the science group in Chem Sensors on the inner workings of the ISUS sensor.

c.

Week 13

1. Thom Maughan
 - a. Proof of concept prototype using an STM32u585 processor gpio to replace the fpga in the spectrometer interface boards.
 - b. Schematic design of improved mms2 analog board

Week 12

1. Thom Maughan
 - a. Support

Week 11

1. Thom Maughan
 - a. Supporting the lab. There have been two units that have had what appears to be a sleep problem that happens once in the 4 day cycle. Not sure if it's hardware / silicon errata related. Rerunning the K0 cal on the board that failed to try and reproduce. I've added an error log entry in the event HIB fails to sleep in the next release.

Week 7

1. Thom Maughan
 - a. Logic analyzer capture of MMS interface signals and timing.
 - b. Ordered STM32HU585 processor boards for evaluation as timing generator
 - c. Photodiode interface opamp selection for high gain transimpedance amp.
 - d. Setting up a thermal cooling / heating surface for testing MMS Analog board across 0c to 35c for eventual comparison to new MMS2
 - e. Looked into a minor bug on MSC3 MoSoS v5.1.8

Week 6

1. Thom Maughan
 - a. Working on design of new MMS interface analog and digital boards, aka, MMS2
 - b. Captured logic analyzer signals of existing FPGA design - very interesting that continuous photodiode read clocking and ADC conversion is happening when the MMS is idle.
 - c. Manufacturing support, discussions with Ben Davis on MMS board checkout and tuning.

Week 5

1. Thom Maughan
 - a. Finalizing MMS v2 Analog board design (new spectrometer interface). Started layout
 - b. Prelim MMS v2 Digital board design. Processor selection, power supply, ADC

Week 4

1. Irene Hu
 - a. Updated sampfast code for ISUS fast sampling to match a better format for MSC3; incorporated into main code
2. Thom Maughan
 - a. Merged and reviewed Irene's changes for the sampfast command. Advised modifying the arguments to make MoSoS v5.2 table driven command processing easier. Merged and tested the update.
 - b. Making good progress on the new MMS2 Analog and Digital board designs.

Week 2

1. Eric Martin
 - a. Setting up production server