

Irene Hu Sorted By Project

901805 - Coastal Biogeochemical Sensing Program

- Helped with analyzing/interpreting data from latest nanofet test (Week 16)
- Started assembling new parts for ECV system; will need to modify flowcell spacer (Week 17)
- Attended Carbon Lab weekly meeting (Week 17)
- Cut out channel for Rinko in flowcell spacer using jigsaw / file (Week 18)
- Started untangling mcap circuit (Week 18)
- Review nanofet circuit, discuss w/ Scott; some parts missing (Week 19)
- Meeting to discuss updates and timelines (Week 19)
- Weekly meetings (Week 19)
- Created (from old B draft) nanofet A-1-1 schematic with small changes, and sent to Jose's group for assembly of 2 more nanofets (Week 20)
- Created new nanofet B schematic to be a multipurpose small controller with integrated battery; changes ongoing pending battery decisions and parts arrival/evaluation (Week 20)
- Added missing resistors to existing nano1 and nano2; nano1 to Joe for titration test (Week 20)
- Borrowed Yokogawa from Paul M to measure bias battery current consumption. Bias battery appears to be parasitically powering other parts of circuit after it falls asleep (Week 20)
- Nanofet issue with bias battery powering circuit during sleep: discussed w/ Scott to ID/understand issue, testing fix involving HIB pin (may have new issues: current draw too low, Durafet voltages are off) (Week 21)
- Troubleshooting nanofet2 after accidentally shorting battery power to some components (Week 21)
- Continuing assembly of eddy covariance instrument, and fixing small problems with machined parts (Week 21)
- Weekly meetings (Week 21)
- Fixed broken Nanofet2 (replaced microprocessor + reprogrammed) (Week 22)
- Continued testing of HIB solution for buffer shutdown: Nano2 submitted to replace ADC (Week 22)
- Continued testing of HIB solution for buffer shutdown: incorrect pH voltages traced to software (Week 23)
- HIB pin does not go low when power is arbitrarily cut, despite implications in docu. On further probing and googling, it never has and probably never will. Working w/ Thom + consulted Scott, Alana, etc to brainstorm alternate solutions (Week 23)
- EC parts sent to MTechs to fix. (Week 23)
- Troubleshoot Nano4 (solder blob) (Week 24)
- Nano3 modified to tie buffer shdn to RES; seems to work. ~40 uA parasitic draw thru relay when HIB doesn't properly go low is still a problem, but tabled for now (Week 24)
- Final mods to nanofet revB and discussed w/ Jose for layout (Week 24)
- Working w/ Jon and Jose to design/integrate battery clips for nanofet board. Battery will hover above circuit to save space (Week 26)
- Mods to circuitry to accommodate "internal" reference as default (Week 26)
- Continue building up EC system and fixing parts as problems arise, update drawings as needed (Week 27)
- Continuing to build up EC instrument, modified some parts as necessary (Week 28)
- For nanofet, lots of reading on guard rings, low current measurements, reference electrodes; looked at a bunch of op amps and decided to continue with current selection for now (minor modifications to help with routing) (Week 28)
- Reorganized nanofet schematic and fixed references (Week 28)
- Li-SW first contact (Week 28)
- Completed EC mockup build (Week 29)
- Worked w/ Jose to rewire some connections in nanofet for better routing (Week 29)
- Making Tadiran battery adaptor board (Week 29)
- Wirewalker/Humboldt meeting (Week 29)

- Nanofet rB sent out for fab (Week 30)
- Laid out and sent out battery adaptor board (Week 30)
- Looked at some data from Wirewalker Humboldt, and helped Jacob troubleshoot their Durafet (Week 30)
- Wrote some EC data processing code, planning how to deploy EC instrument (Week 30)
- Compiled knowledge/understanding of ISFET chemistry and circuitry (Week 31)
- Nanofet rB tests of bias and main power/current consumption using Yokogawa (Week 34)
- Initial analyses of Nanofet noise performance, waiting for titration tests (Week 34)
- Prepping AEC instrument for tank dunk (Week 34)
- Finishing nanoB current tests; titrations look good (Week 35)
- Testing nanoB modifications to reduce noise (Week 35)
- Prepping AEC instrument for tank dunk; convo with Stanford team; planning for Saudi Arabia (Week 35)
- Tank dunk test for AEC instrument (Week 37)
- Visited Stanford to borrow ADV/Rinko; tested ADV (Week 37)
- Tracking down updated Vector firmware (Week 37)
- Massive scramble to order new 2-connector endbell for Vector; mapped out new cables, trying to expedite order (Week 37)
- Helping w/ job description for new tech (Week 37)
- Reassembled seaphox with aluminum fasteners (Week 38)
- Emergency packing and paperwork for KAUST trip (Week 38)
- Planning out second AEC setup (Week 38)
- Keeping an eye on nanofet tests- nano-dfet very noisy in seawater lab (bubble?), less noisy in a bucket in lab; nanofet+DSD had low noise in lab setup; nano-dfet is back to seawater lab to repeat test (Week 38)
- Packing for KAUST trip and last minute parts modifications (Week 39)
- Figured out how to rewire ADV harness for two-connector endbell; tools, pins, etc on order (Week 39)
- Chat w/ Peter Berg (Week 39)
- ADV harness rewired; new cables received, wired, tested, potted (Week 40)
- Packing for KAUST, paperwork, and last minute parts mods (Week 40)
- Nanofet looks good in wet lab with second ISFET assembly (Week 40)
- Shipment finally sent off to KAUST! (Week 42)
- Working through eddy covariance processing code (Week 42)
- Cable diagrams for BEAMS and Nanofet (Week 42)
- KAUST trip postponed to TBD date due to regional instability (Week 43)
- Got mcap board into EDM (with James's help), made rev D-1-0 with updates for n-channel LioniX isfet (Week 43)
- Troubleshoot low iDS issues for LioniX isfet (Week 44)
- Circuit worked out for n-channel nanofet (Week 44)
- Coordinating next steps for recently arrived nanofet, mfet, mcap boards (Week 44)
- Troubleshoot mfets, missing 5 + need to send all back to rotate RS232 transceiver (Week 45)
- Hiring for new tech (Week 45)
- Convo w/ KAUST (Week 45)
- Getting together QA procedure for nanofets (Week 48)
- Trying to get stuff back from KAUST (Week 48)
- Interviews for new lab tech (Week 48)
- Developed Nanofet QA procedure and QA'ed 8 new nanofets (Week 49)
- One nanofet (delivered weeks later) has 240 uA bias current draw instead of 216 uA like everyone else; "cleaning" board made it worse, rigorous cleaning brought it back down to 240 uA. Will continue troubleshooting (Week 49)
- Got mcaps and nanofet modified for n channel (Week 50)
- Forked mCAP to LionCAP in OrCAD and made changes (Week 51)

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- Hiring committee for new lab tech (Week 46)
- Housekeeping on new nanofets (Week 46)

901904 - Deep-Sea Coral Community Observatory

- Implemented all-LED light source + handed to Francisco (Week 16)
- Measured I-V of LEDs, ordered resistors to modify input V to current source (Week 16)
- MATLAB model of LED outputs to compare relative intensity factoring in LED output curves, attenuation of water, and QE of detector; 940nm LED will need 100-1000X longer exposure than others, depending on distance to object (Week 17)
- Watched Paul configure a local user and python environment on laptop Harlequin (Week 17)
- Watched Paul set up & interface with camera over Vimba Viewer and python (some connections issues, some issues possibly Windows related) (Week 17)
- Read lots of camera manuals; mapped out a workflow for camera-cpu-LED ring (Week 18)
- Simple Python program to synchronously stream camera frames w/ varying exposure (Week 18)
- Started on LEDring code to interact with camera/cpu (Week 18)
- Code written for comms to LED ring (Week 20)
- Replaced resistors to increase voltage to LED current source regulator; troubleshot and fixed problem with digital pot; characterized new LED I-V points at a few pot settings and measurement durations (Week 20)
- Set up LED ring to flash LED/camera pin on commands (Week 21)
- Set up camera to trigger on pulse, and tested w/ pulse gen (Week 21)
- Python script to communicate w/ LED ring, and coordinate, read, and display matching camera image (Week 21)
- Met w/ Paul to discuss next steps (Week 21)
- Setting up "streaming" version of camera as controlled by trigger pin on LED ring (Week 22)
 - Read through camera manuals for timing information, will try FrameTriggerWait for controlling frame rate (Week 22)
 - Code written and tested for LED ring (Week 22)
- Working on continuous / streaming mode to help with setup and focus before taking pictures with all LEDs (Week 23)
- Signals are not behaving as expected, with arbitrary pauses that slow down refresh rate; exchanging emails with AlliedVision support team (Week 23)
- Draft Python code to toggle between streaming mode and 8-shot mode (Week 23)
- Arbitrary pauses in camera's "continuous" mode traced to using synchronous instead of asynchronous capture; rewrote all code to use asynchronous (Week 24)
- Toggle between streaming (need to resize) and saving images from 8 LEDs - works (w/ workaround for crash when try to close streaming window) (Week 24)
- Camera crashes traced to USB cable - Paul has now rewired and housed system (Week 26)
- Refinements to code for resizing image, saving, etc (Week 26)
- After discussing w/ Paul, writing second version of Python code using multithreading with producer/consumer architecture (Week 26)
- Wrote multithreading version of code- works better than ever (Week 27)
- Ordered some parts and began finishing Paul's build (Week 28)
- Finished building multispec lab unit after receiving parts; it no longer works and draws too much current (Week 29)
- Opened unit back up and traced problem to screws shorting two ground planes. Ordered nylon screws. (Week 29)
- Finished building multispec instrument with nylon screws. Confirmed to work (Week 30)
- Designed cradle for multispec, sent out for 3D printing (Week 31)
- Ordered parts to set up calibration / testing jig (Week 31)

- Timed operations in detail to understand where lags are/how to speed up (Week 34)
- Restructured Python code, modified firmware and camera settings to cut small delays (Week 34)
- Planning meeting (Week 35)
- Played with ImageJ (Week 37)
- Convo w/ Paul and Steve re: next steps; ordered some Teflon (Week 37)
- Glued velcro to Teflon piece (Week 38)
- Prep for design review (Week 42)
- Refined MATLAB code for processing images (Week 42)
- Obtained a giant tub (Week 42)
- Imaged some feathers and leaves, refined image processing workflow (Week 43)
- Set up tub in seawater lab and ran some imaging tests (Week 44)
- Design review and meeting (Week 44)
- Getting started on boards (Week 45)
- Meeting w/ Paul (Week 45)
- Edited drawings for ROV housings, talked to Ray about fab (Week 46)
- Discussed electronics with Paul, started thinking about LED board (Week 46)
- Drawings submitted for ROV housings (Week 48)
- Working on Strobe board in KiCAD (Week 49)
- Laid out strobe board (Week 50)
- Started on remaining boards (Week 50)
- Working on junction box board (Week 51)

902305 - Event Detection using the Sedimentation Event Sensor

- Troubleshooting SES (eg issues with power circuitry) and reassembled (Week 16)
- Test tank test with MARS wet node simulator (Week 16)
- Helped troubleshoot Benthos modem comm issue (pins loose in internal connector) (Week 17)
- Deployment at MARS 5/8/23 (Week 19)
- Biweekly meeting (Week 21)
- Planning meeting (Week 26)
- Planning meeting (Week 31)
- Conversation with McLane; will likely use Gen3 controller to trigger a trap (Week 34)
- Read Crissy's abstract (Week 37)

Out of Office

- 4/28/23
- 4/28/23: cycling trip
- 5/8/23: SES deployment at MARS
- May 25-26 reunions
- 6/7/23: "emergency plumbing issues" (gross)
- Vacation in June TBD
- June 19-23: Vacation
- Sept 4-8: vacation
- Oct 17: car issues
- Oct 18: at home in bed due to COVID vaccine
- Nov 21-22: Thanksgiving vacation
- Nov 15: out
- Nov 21-27: Thanksgiving / bereavement
- Dec 25-29: Holiday

Overhead

- LASS design review (Week 16)
- Rec comm budget, presentation, meeting (Week 17)
- Learning python and trying to set up on laptop Mushu (Week 17)
- Python tutorial (Week 18)
- OrCAD tutorial (online + help from Scott and Jose) (Week 19)
- Rec comm meeting, and planning Bike to Work (Week 20)
- Planned/led Bike to Work on 5/18/23 (Week 21)
- Substitute interview for prototype machinist (Week 21)
- Rec com meeting (Week 23)
- Made some pies after work (Week 26)
- Put together reccom budget presentation (Week 34)
- Helping George with SINKER cables - looked over materials (Week 35)
- Rec comm meeting (Week 35)
- Engineering meeting (Week 37)
- Helping George with SINKER cables (Week 37)
- Completed DEI survey (Week 37)
- Helping George with SINKER cable diagrams (Week 38)
- Rec com meeting; chasing down strange budget entries (Week 38)
- Sept 20: PCB West convention w/ Jose and James (Week 38)
- Rec comm BBQ (Week 39)
- SINKER cables: online sleuthing / discuss w/ George to figure out wiring for Orin cables (Week 40)
- DEI focus group (Week 40)
- Helping George with SINKER cables - Orin, Pi, and other cables (Week 42)
- Helping George with SINKER cables (Week 43)
- Helped plan Bike to Work Oct 24 (Week 43)
- Rec comm meeting (Week 44)
- Rec com: pancake breakfast (Week 46)
- Rec comm budget (Week 48)
- Rec com project update (Week 50)
- Helped spot for drone project (Week 50)