BITNG LAB UPDATE

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Date 6/24/2021

Progress from last week

- Shriner’s project
  - Strain sensor manufacturing
  - Temperature sensor calibration

SHRINER’S PROJECT

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Strain sensor

Rounded serpentine pattern on PDMS

Drop cast using AgNW

Laser cut etching after to separate AgNW from Stencil

Results:

- Higher yield
- Able to get a clean cast results
- Drop casting onto PI itself produces better surface quality and it is less likely to flake

Rounded serpentine pattern

Strain sensor: Screen Printing

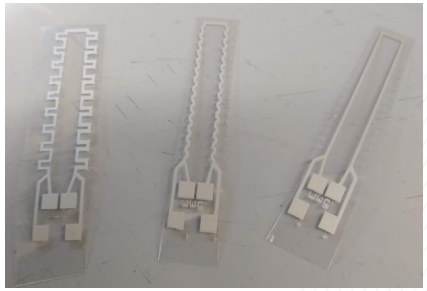
Manufacturing method:
- Screen printing

Design:
- Various serpentine patterns

Result:
- High manufacturing yield when printing on PET
  - Will encapsulate and test
- Low manufacturing yield when printing on TPU
  - Likely due to ink not being compatible with TPU

Takeaway:
- Nathan Z will have an update on inks

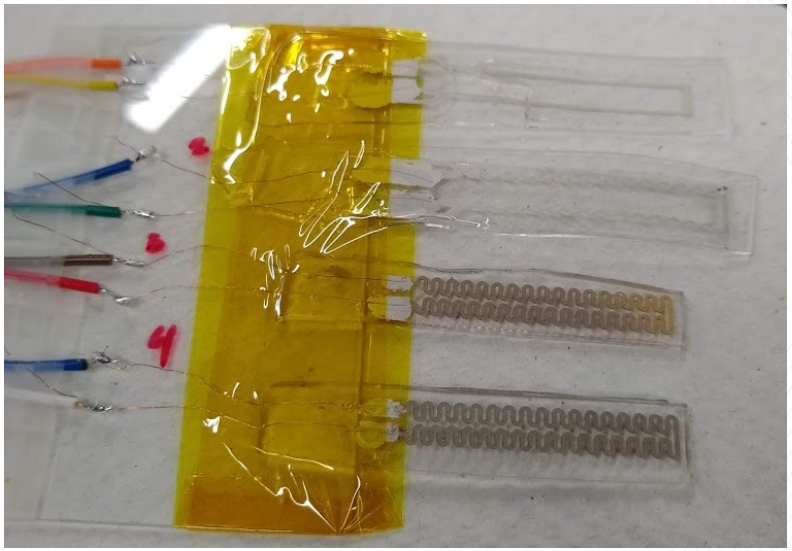
Strain Sensor on TPU



Strain Sensor on PET

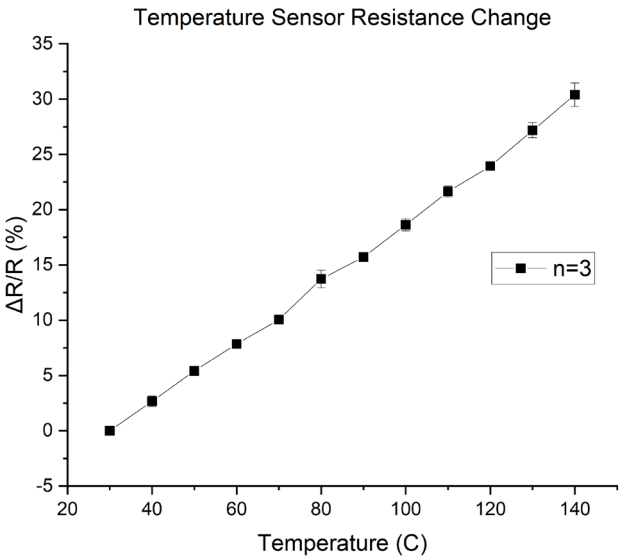
Strain sensor: testing

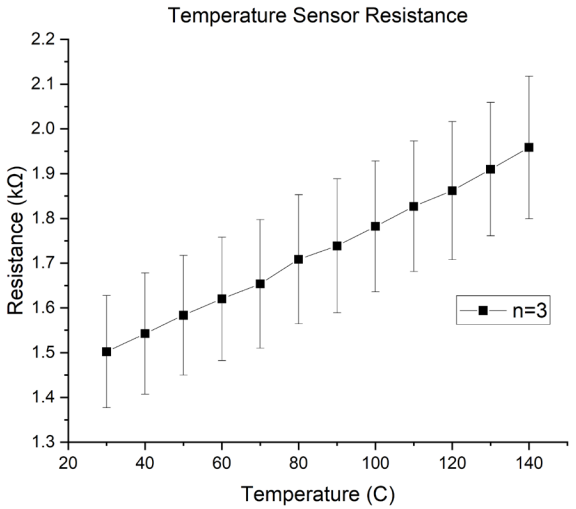
- Recording resistance change due to bending
- Recording resistance change due to strain
- Ongoing process…



Temperature Sensor

- Calibration
  - Temperature sensors calibrated
  - Will add linear fit line and slope information
  - PDMS substrate
  - Sensor placed on hot plate
  - Temperature verified with IR thermometer





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PATH FORWARD

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Path forward (6/21/21 – 6/28/21)

- Shriner's Project:
  - Sensor fabrication:
    - Strain sensor
      - screen printing
  - Sensor characterization:
    - Strain sensor
    - Temperature sensor

APPENDIX