Feb20 – Feb26

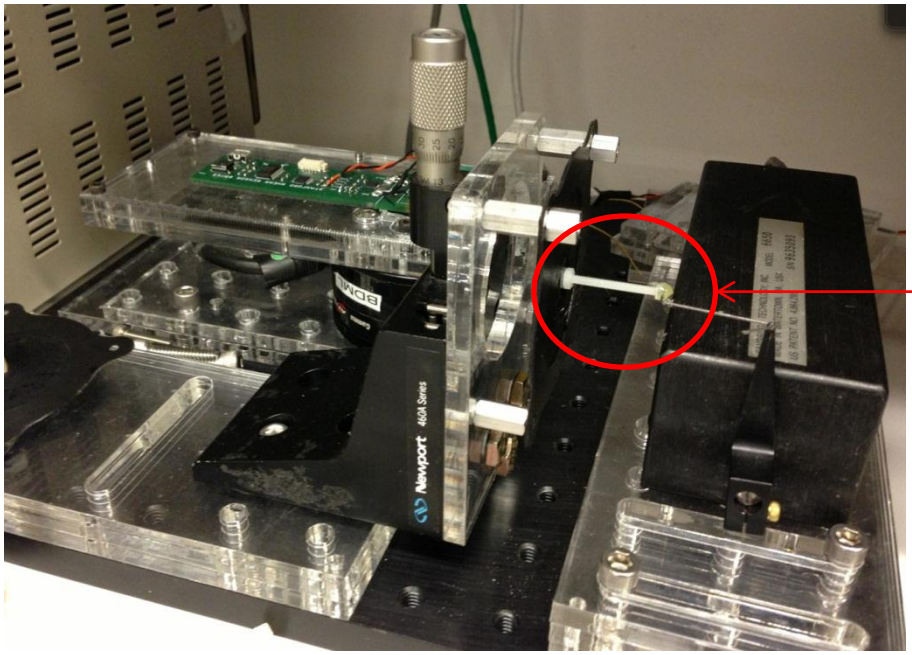
Finding:

The current fiberglass outer frame is not strong enough to hold the 3-layer suspension.
The masking frame cannot fully prevent the stretching frame from electrode spray.
Need to be larger and stay closer to the stretching frame.
Super glue cannot do any good to prevent the slippage(滑る) when cutting off the larger film.
Solely wrapping is enough but the large stretching frame need to be larger to provide wider film edge for wrapping.
Painful to alternately work on stretching film and spraying because the carbon mixture is quite messy...
With current method, marginal time cost for adding one layer is around 20 min.
Consider new method to accelerate the process:

glue super thin rigid film as the outer frame on only one side of the acrylic film (or two sides if it curl) so as to produce layers in batch, then attach them together. Candidate material: 0.002" PTFE sheet.
This method is not helpful for large film fabrication.

Experiment

Reduced the mass between suspension and the lever to address the resonance of the muscle lever (length control)
: Attach:Photo_mass reduced.png



Very nice Update
from last week!!

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Experiment

Test without actuating:

Experiment data plot:

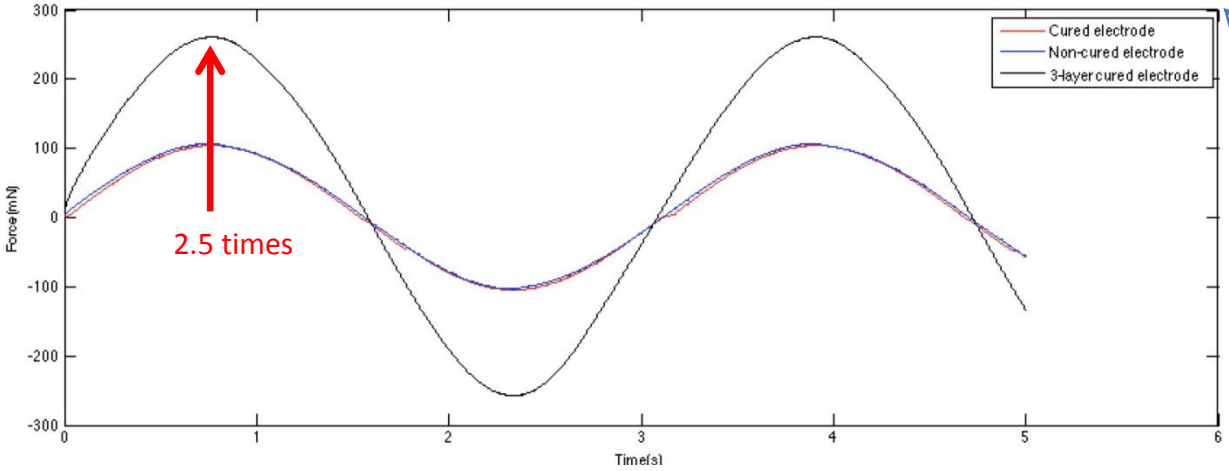
1) Attach:Plot_force vs. time_Feb25.png 2) Attach:Plot_force vs. displacement_Feb25.png

Cured electrode doesn't add any stiffness to the suspension.

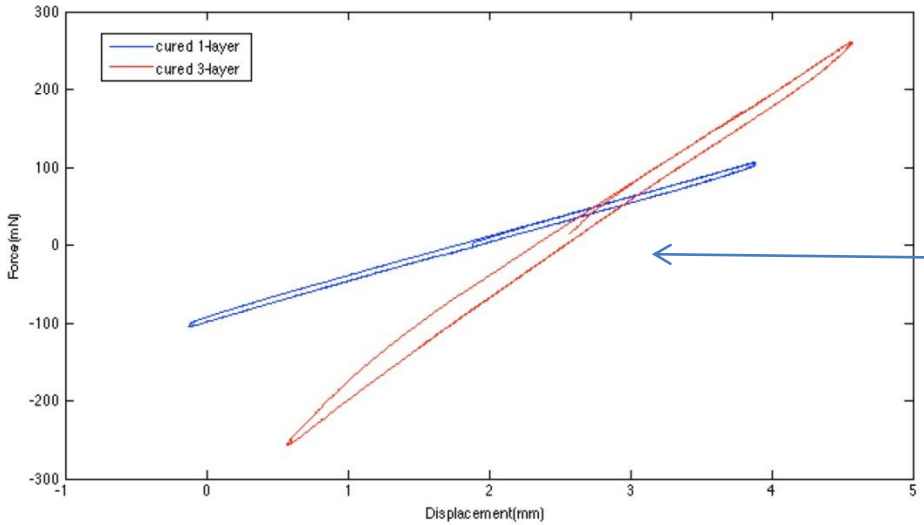
Probably because the electrode is already in slack condition when cured.

3-layer suspension average stiffness is 2.5 times than single layer but not 3.

Probably due to the compliance of the fiberglass outer frame and only 4 layers of electrodes.



Q:
I want to understand the comparison between 3layer and 1layer.
and
How much pre-strained are these films.



Q:
Is there the black line in this figure? Or almost same data to blue data?

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Experiment

Actuating test:

- Haven't come across any short so far which indicates good stability of cured electrode.
  Q: Do you have any reason of this result?, How much Voltage did you charge in your experiment?

- Connection problem: purely electrode antenna cannot ensure reliable connection between electrode and metal screws on the outer frame.

- Consider carbon grease + metal conductive tape which is used in Sanjay's work.
  But need to find a flexible, softer and thinner conductive tape for multiple layer suspension.

  C: I also search a flexible, softer and thinner conductive tape.

- Despite of the connection problem,
  directly lay high voltage supplier cable pins on both sides of the suspension can successfully actuate both single and 3-layer units stably.

  C: Very nice, Good job!!