



OVERVIEW

Dexcom provides an overlay patch that is placed onto a glucose monitor wearable to enhance the adhesion over time. Some patients have difficulty retaining the wearable onto their bodies.

This project is intended to design and determine a test method for comparing patch performance of the overlay on an Instron with LDPE plates, and developing a proposal of an on body working model to compare and correlate the results.

SPECIFICATIONS

Instron peel tester:

- Gather stress and strain data from a 90° peel test for a Single Column Instron 5943
- Able to statically hold a 2"x5"x0.25" LDPE panel,
- Adjustable perpendicularly to sample axis $\pm 0.5^\circ$
- Able to withstand 2 lbf of pull force while maintaining a 90° angle between pulled material and substrate surface during test.

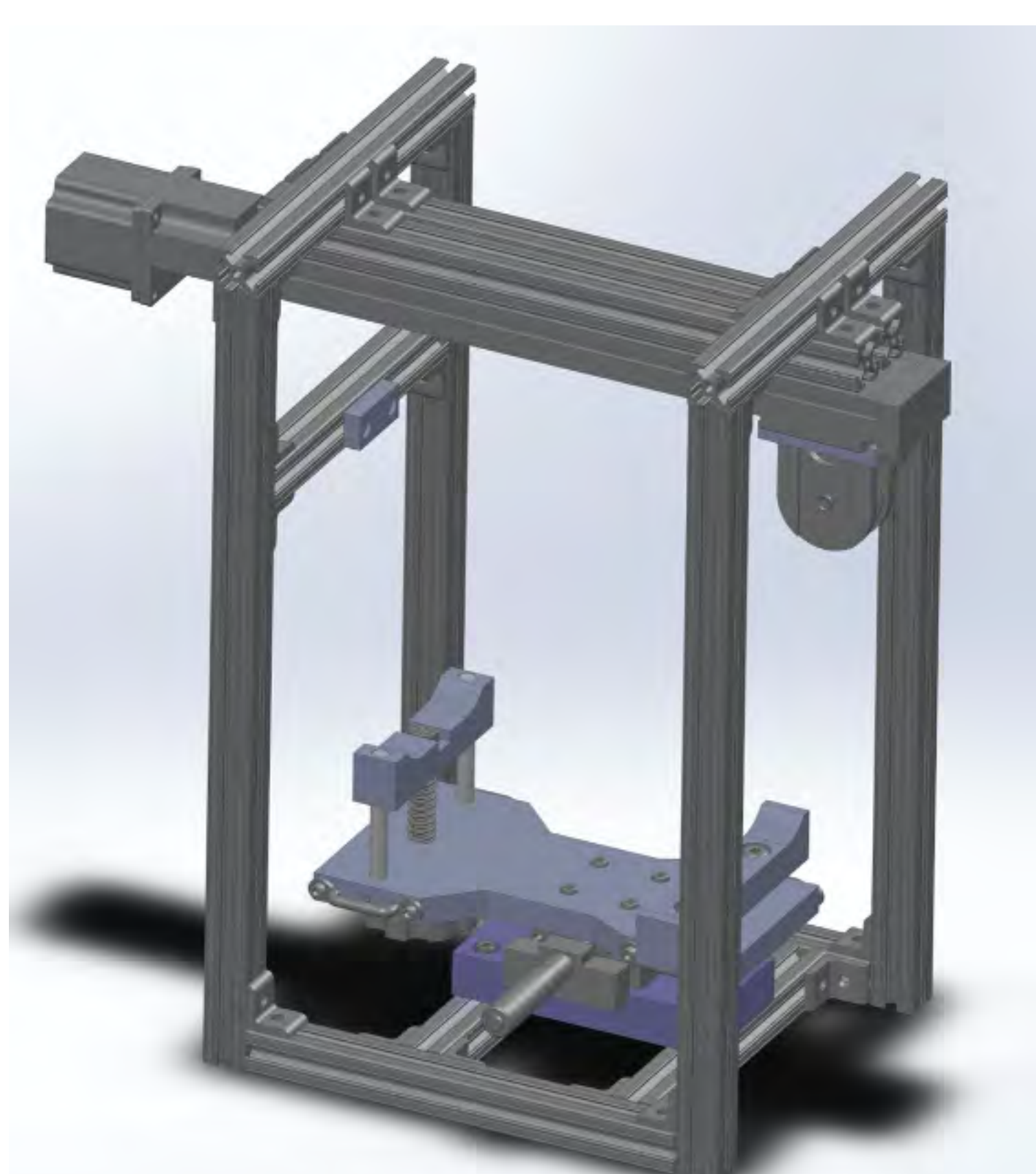
On Body Design:

- Design a proposal of a device that gathers stress and strain data from an on-body peel test
- Pull axis must be perpendicular to skin at peel edge
- Able to withstand up to 2 lbf of pull force.

DESIGN



Instron Fixture



On Body Design



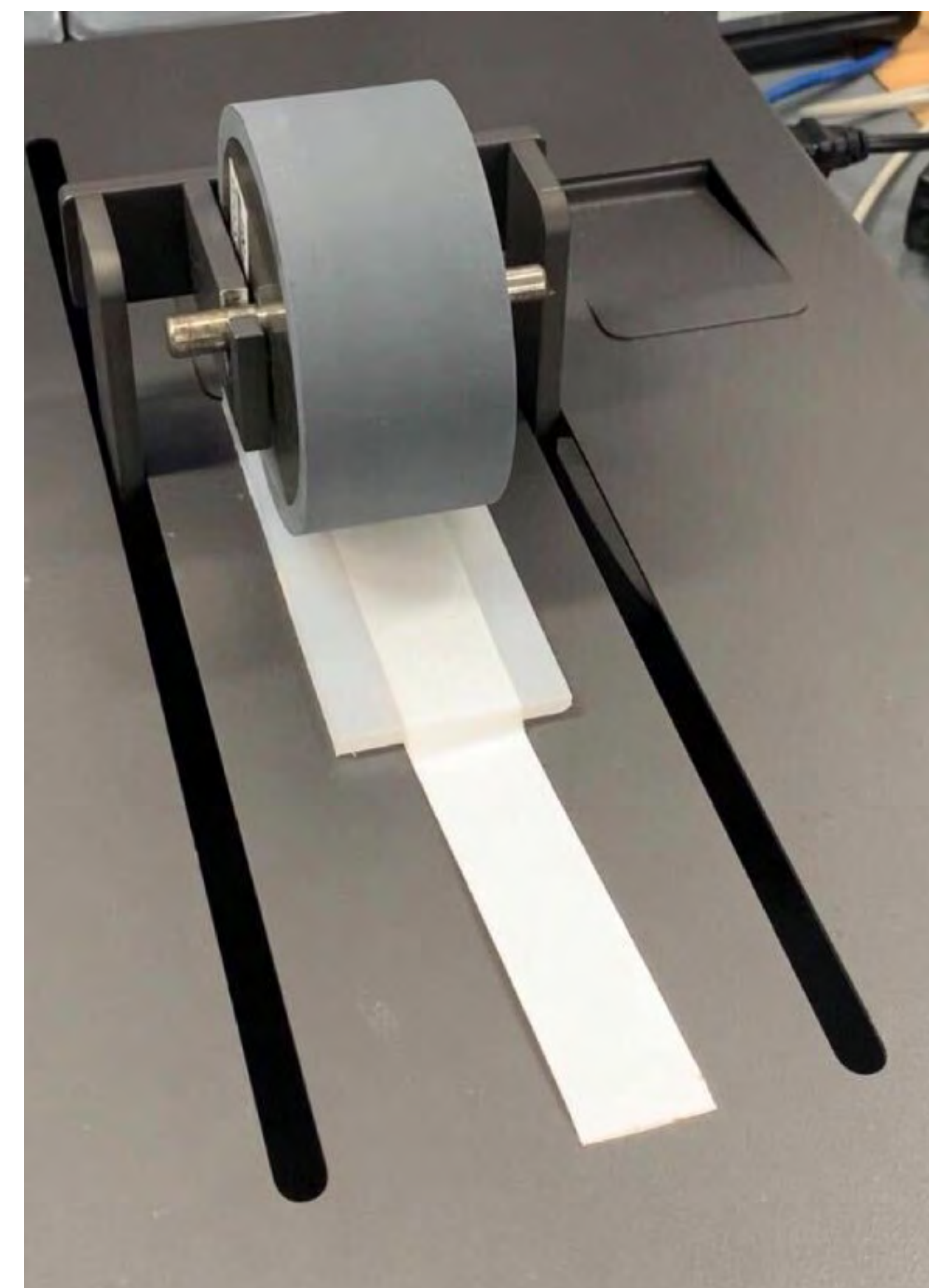
Test setup

TESTS

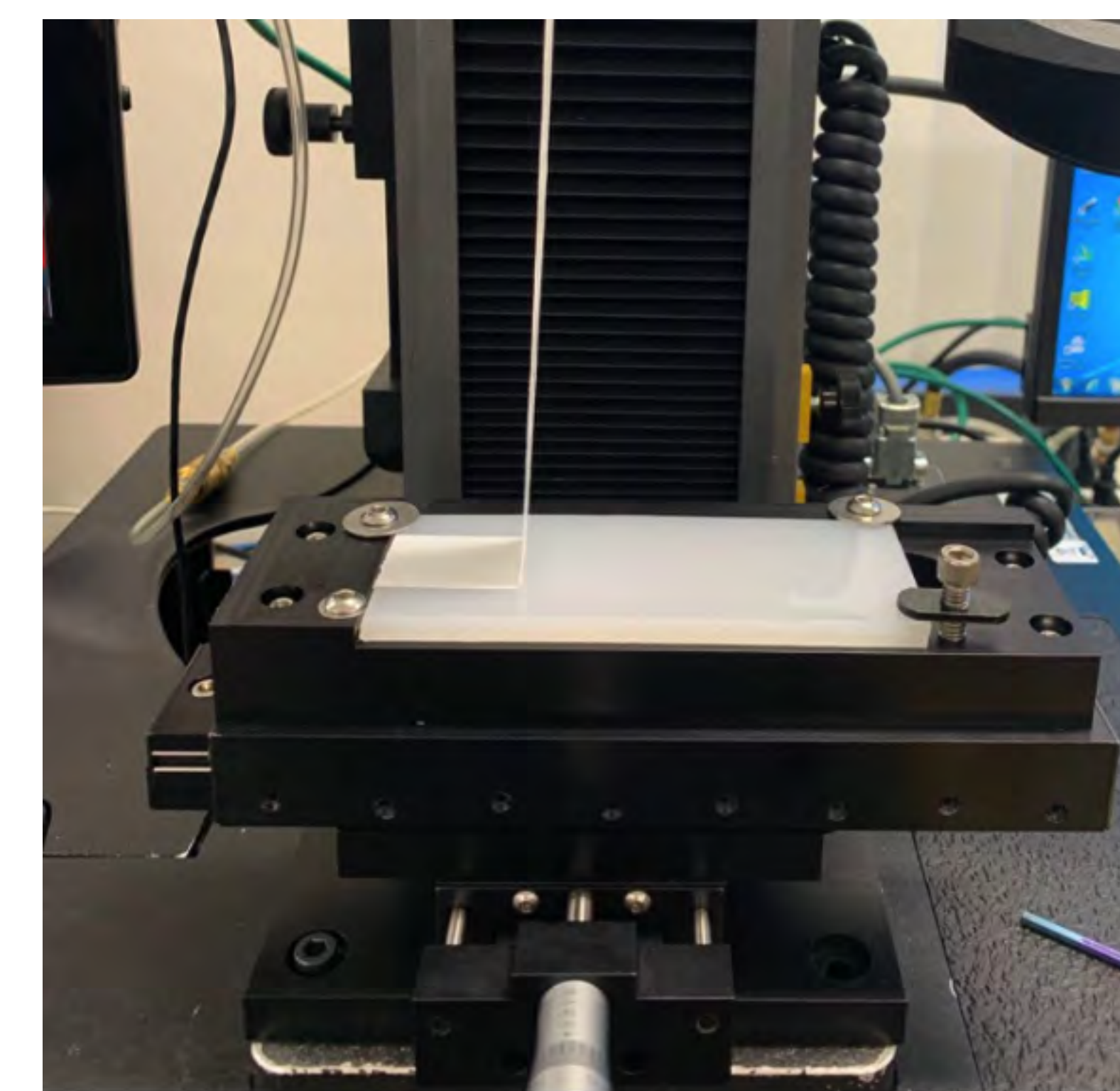
Peel testing with designed fixture was done and results were analyzed using ASTM standards



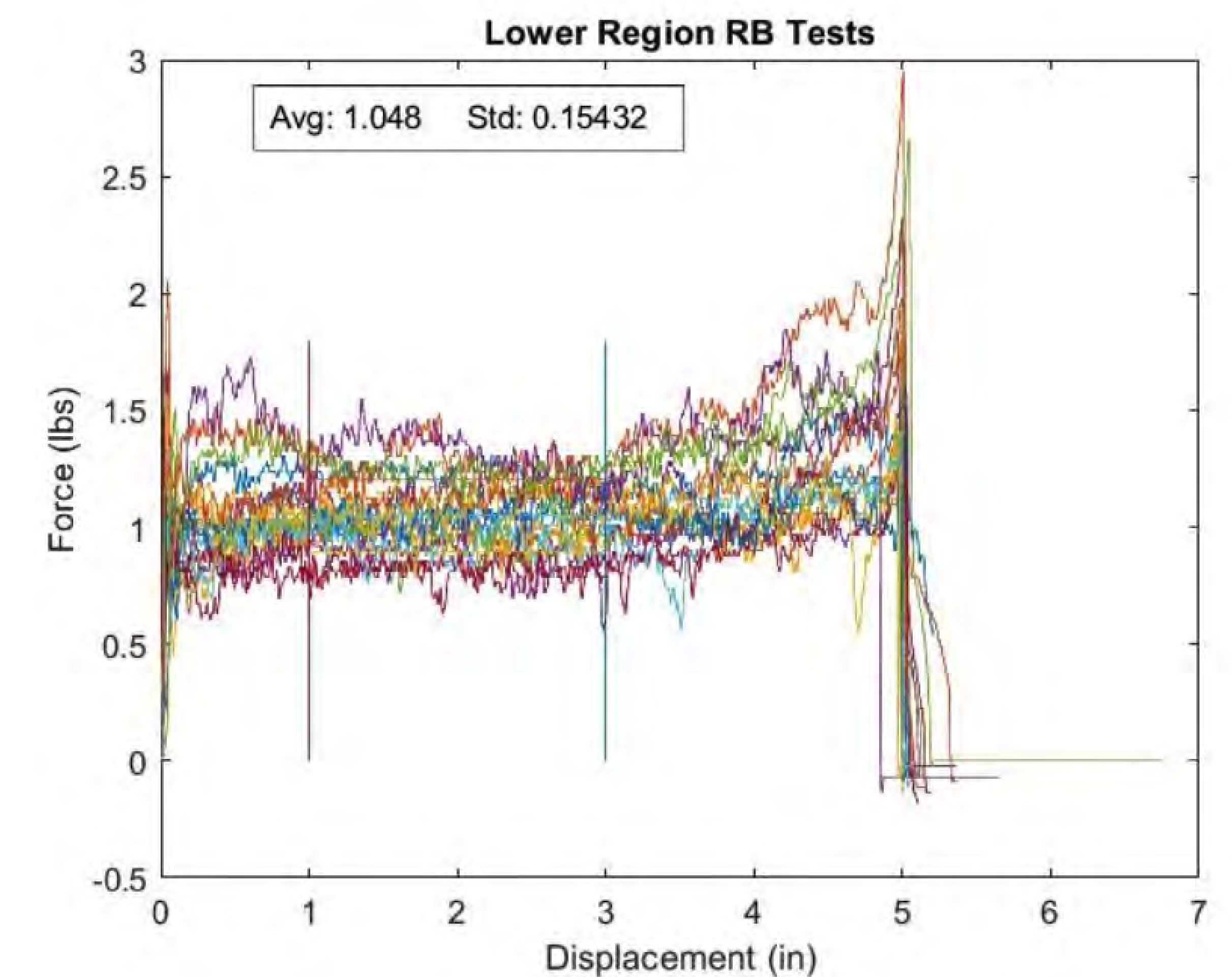
Sample Preparation - cutting samples and applying reinforcements (red tape)



Sample Preparation - adhering samples to LDPE plates by rolling



Peel test done as seen patch is peeling at 90°



Compilation of data, average : 1.048 lbf

TEAM



From the left: Brandon Lopez, Jaber Alyami, Laura Morcillo Romero, Noor Othman.



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