Yarn Coating Device

I designed and built a yarn coater to mass produce MXene coating yarns, used to build three MXene knitted antennas, which would then be used for a wearable energy harvesting device. As the only mechanical engineer on the team, I got to showcase my abilities by designing and building the entirety of the device, given engineering requirements such as the required dry time required for any unit length of yarn. The prototype built cost less than $100.

Yarn Coater design in Creo

https://www.youtube.com/watch?v=eRSjix_nh38

Yarn Coater in action

https://www.youtube.com/watch?v=I73g5njRLsl

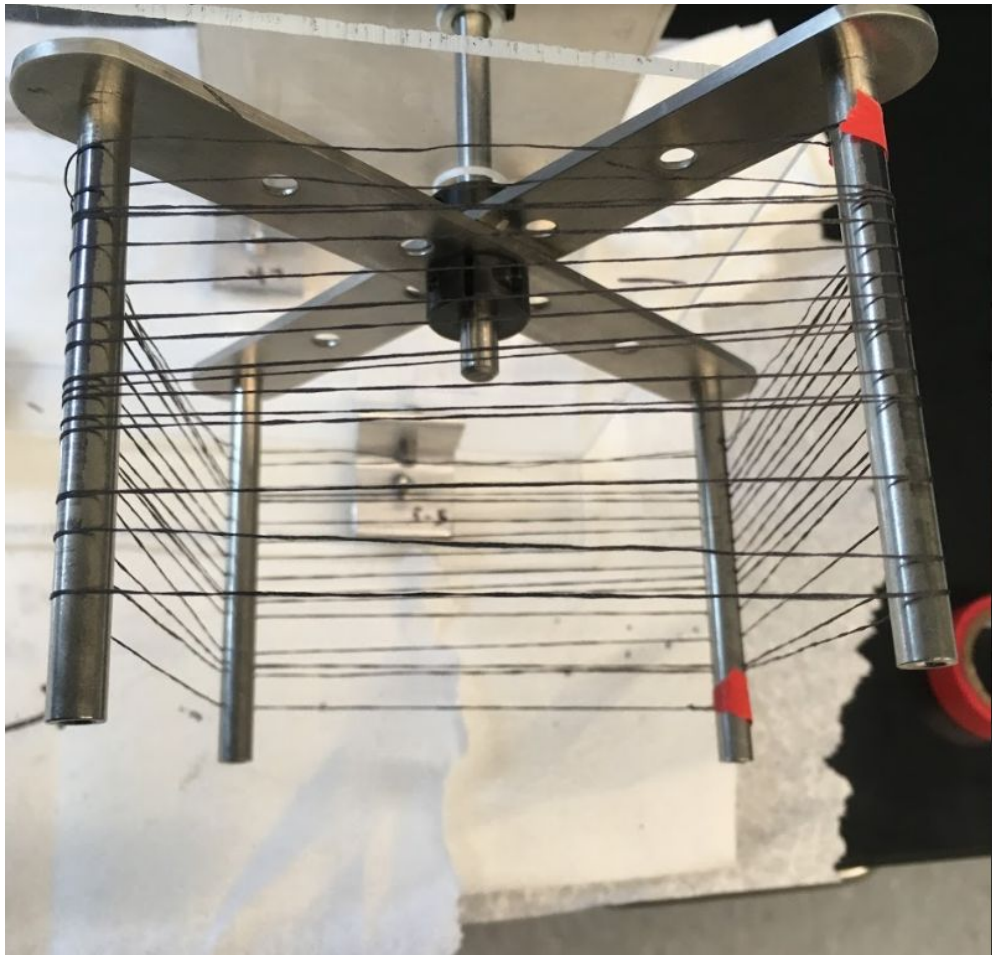**Photos**

I designed and 3D printed these tube holders.
The yellow part of tube holder is an insert, giving the user freedom in using different sized (diam) tubes.
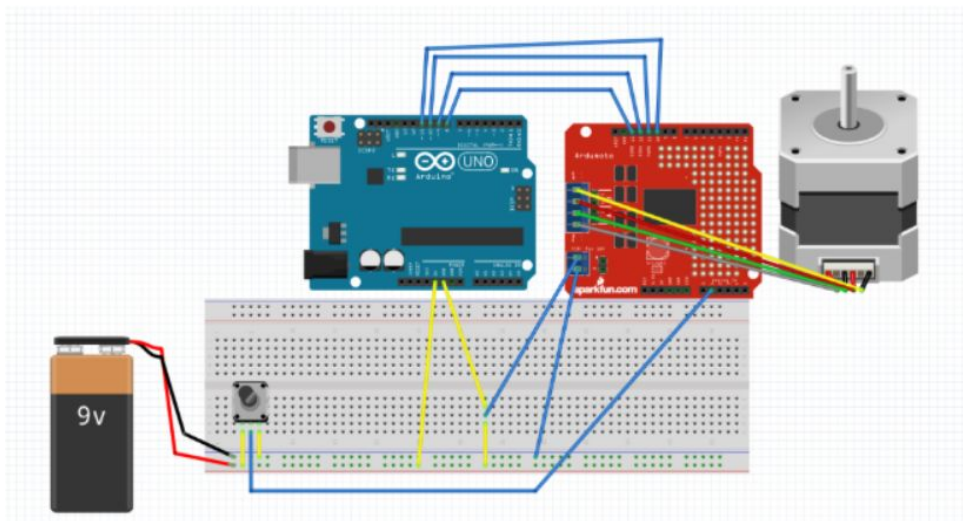
Yarn coater: 2m long

Winder with 6m of coated yarns.

Wiring (used a motor shield, stepper motor, potentiometer, 9V power source, and Arduino UNO)

Yarn Coater future design (for enhanced automation)

https://www.youtube.com/watch?v=uZgv8luSYpQ