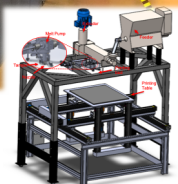
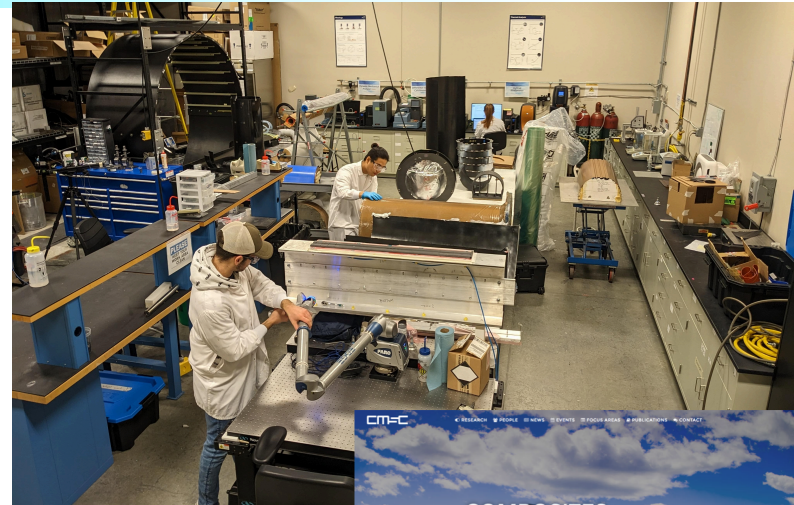


# BlueSky - CalVision

Andy Jung, Sushrut Karmarkar

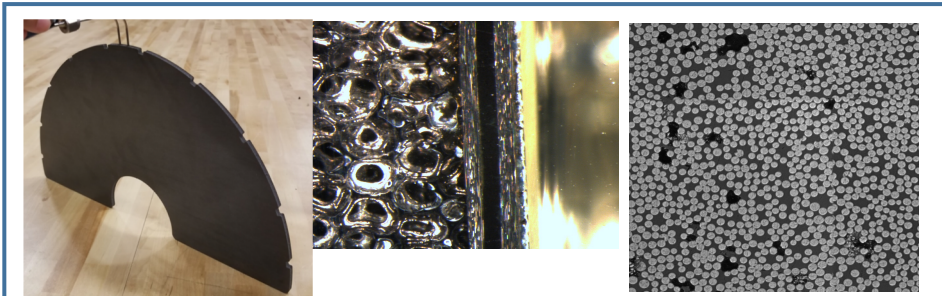
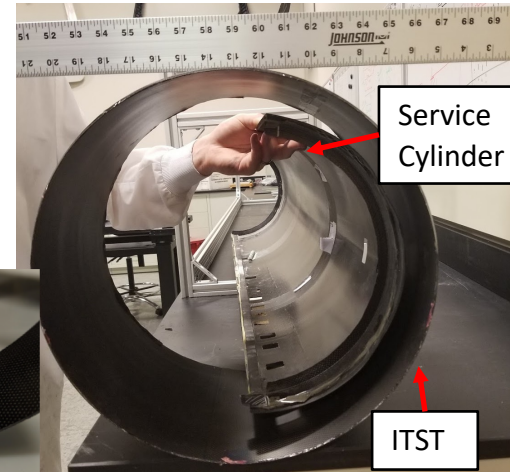
Jan 18<sup>th</sup> 2024

- Composite Manufacturing & Simulation Center at Purdue, completed in summer 2016
  - Purdue Center of Excellence across disciplines: Aeronautics, Chemical Eng, Materials Eng, Aviation Tech, Computer graphics, **and Physics**
  - A. Jung – Associated member of CMSC
- Professional composite experience:
  - Seven full-time technical staff, five post-doctoral researchers, twenty grad's
  - 35,000 sq. ft. of office and laboratory space
    - 2 large pressurized ovens, 1 larger oven with vacuum hook-ups
    - Larger ovens accessible with industry partners

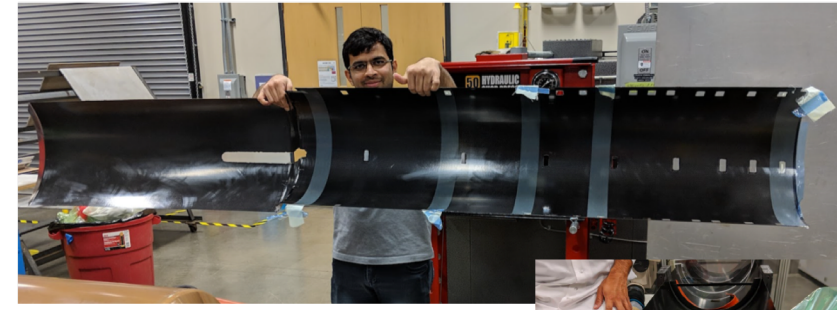
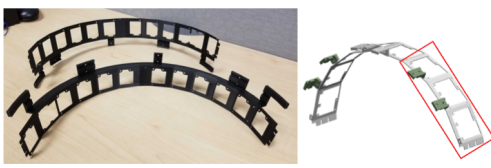
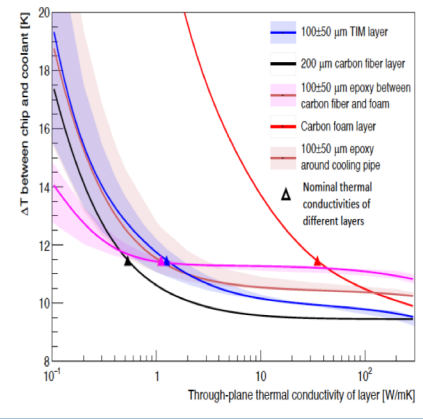


# Purdue – Related mechanics effort

- Prototyping & Manufacturing related to ITST, SC, Dee's
  - Prototypes confronted with FEA predictions, multiple iterations
  - Prototyping and Development of additional structures for IT pixel
    - Cartridges, Portcard holders, all extensively studied for high thermal performance
    - Accompanied by irradiation campaigns: sample prep, characterization, etc.
    - Dedicated measurement of thermal conductivities
    - High thermally conductive materials for 3D printed parts
    - Connects with TBPX and TEPX partners



- Forward pixel dee prototype
- Co-cured samples
- Microscopies
- 3D printed mechanical supports
- Critical interfaces via FEA



1<sup>st</sup> & 2<sup>nd</sup> Service Cylinder prototypes

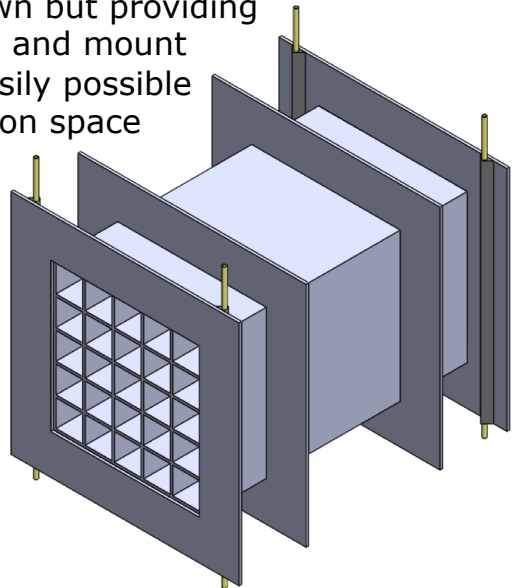


Learning phase of what is needed for CalVision beam test & beyond

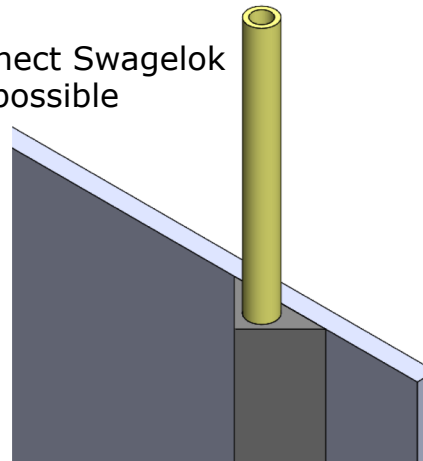
Design considerations – need some feedback here:

- Provide cooling for R/O boards and SiPM (need also temp stability)
- Swagelok and piping allows cooling and connecting “substrates”
- Integrate “box” or casing to allow tilting is simple
- Construction of such a box is fairly fast since no “tolerances” or envelopes in the way
- Want a fairly “rigid” box to travel to test beam and not damage it easily...
- Work towards a realistic concept to support FCC-ee sized structure

1. Not shown but providing a substrate and mount board is easily possible depending on space constraints



2. Connect Swagelok easily possible



3. Segmentation can be made highly TC to allow temp stability for crystals

