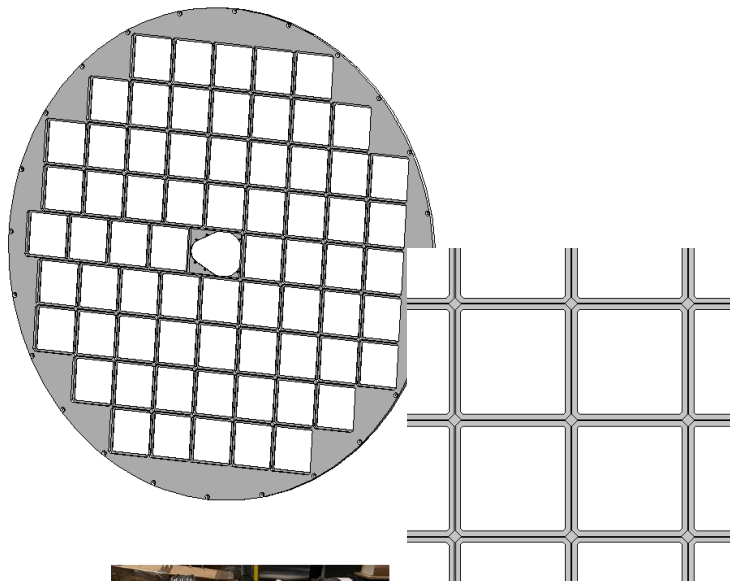


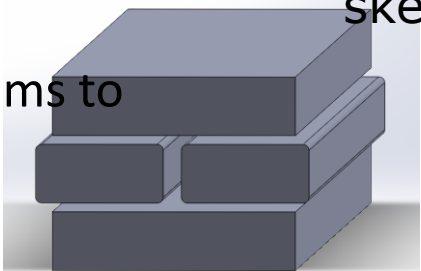
pfRICH Purdue Updates

Sushrut Karmarkar, Andy Jung

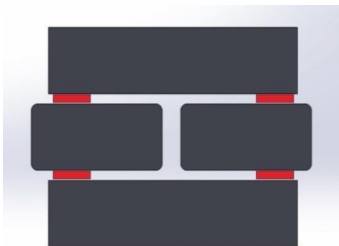
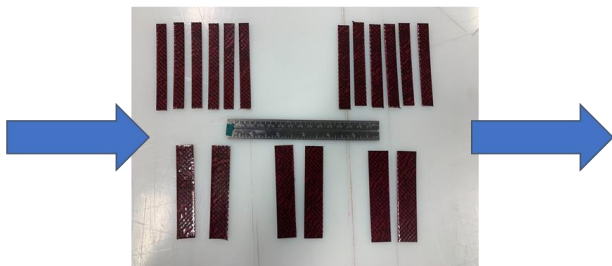
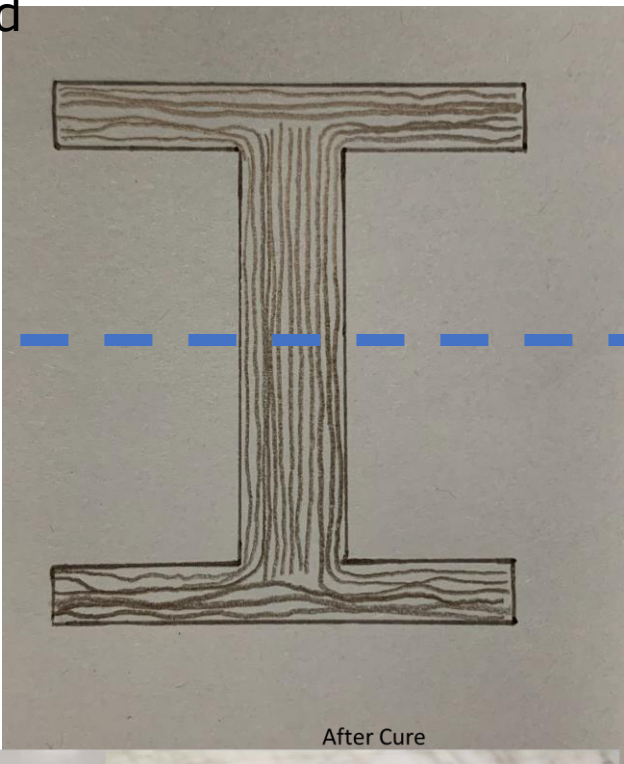
14 Dec 2023



- Plan to make I-beam and cut in half to make 2 T-beams
- Make and join such beams to validate the FEA
- Work by Jack Wheeler

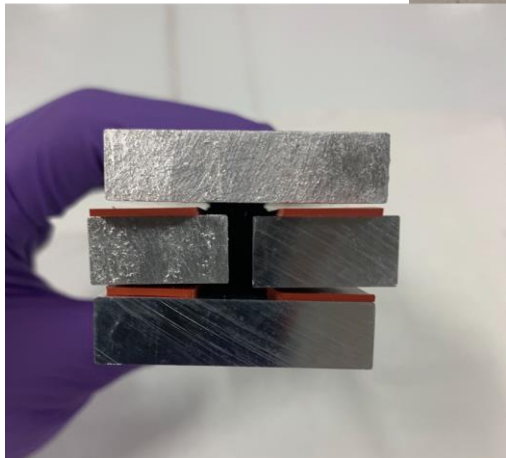
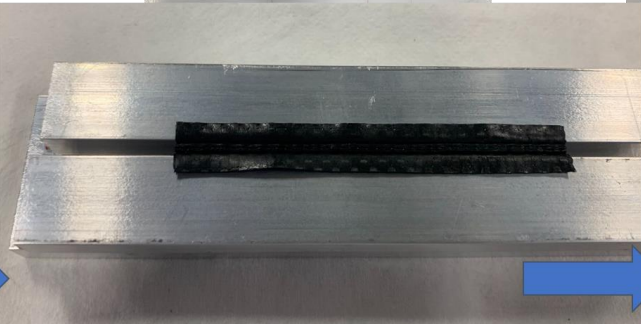
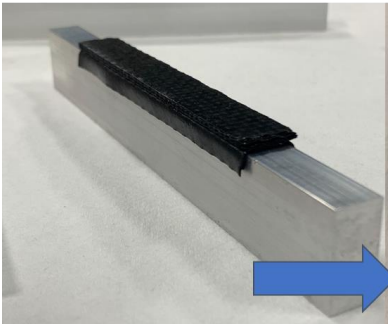


Mold and
concept
sketch



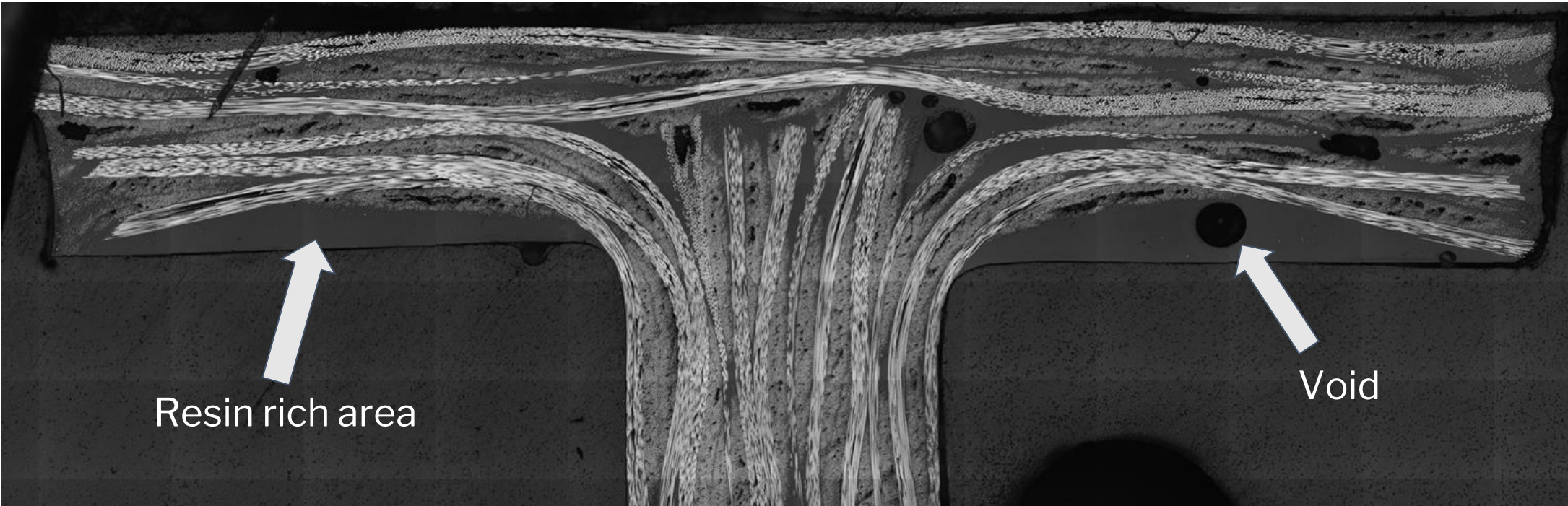
Before Cure

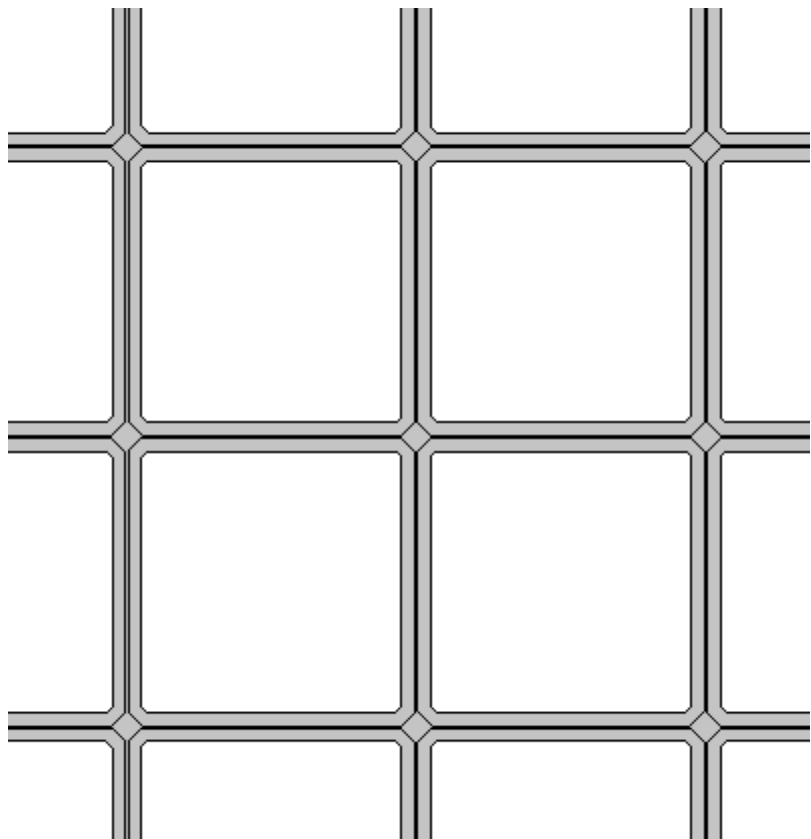
After Cure





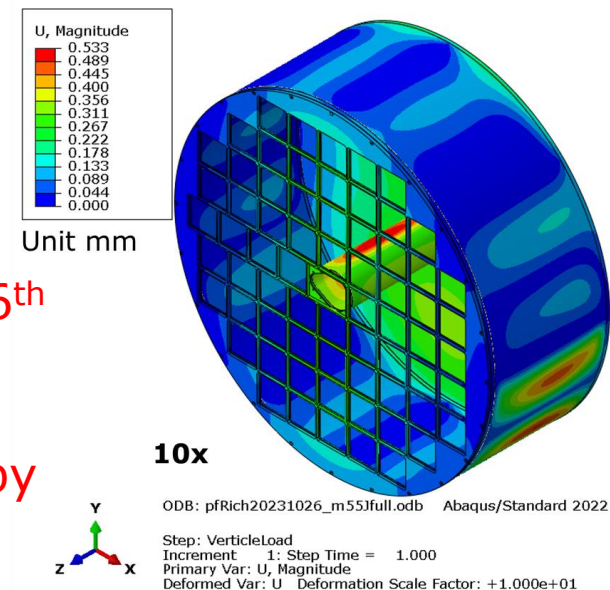
	Nominal	Actual	Percent error
Width	10.0mm	10.72mm	7.2%
Depth	13.5mm	13.11mm	2.89%
Web thickness	3.0mm	2.1mm	30%
Flange thickness	1.5mm	1.58mm	5.33%





- More tests with beams and assembly to make a small tiling scheme support structure
- Load testing to validate the FEA
- Further FEA analysis

OLD RESULTS – 26th
Oct 2023
presentation
See presentation by
Andy Jung



- Surface finish measurements after 1st try of gel coat and hand polishing
- More tests with gel-top coats and polishing upcoming



Value before polishing (Just CNC machine and sanding)

$$R_a = 0.394 \mu m \text{ (N5)}$$

Results with gel coat and polished 3D printed tool

Sample	Location	Side	Ra X (μm)	Ra Y (μm)	Average (μm)	Sample average (μm)	N
PPS_S1	Top Right	Right	0.190	0.229	0.230	0.272	4
		Left	0.203	0.297			
	Top Left	Right	0.214	0.267	0.241		
		Left	0.214	0.270			
	Bottom Right	Right	0.161	0.327	0.320		
		Left	0.278	0.513			
	Bottom Left	Right	0.236	0.195	0.297		
		Left	0.342	0.416			
PPS_S3	Top Right	Right	0.510	0.305	0.335	0.252	4
		Left	0.274	0.250			
	Top Left	Right	0.250	0.180	0.251		
		Left	0.249	0.324			
	Bottom Right	Right	0.196	0.195	0.201		
		Left	0.239	0.172			
	Bottom Left	Right	0.296	0.212	0.221		
		Left	0.191	0.184			
PPS_S4	Top Right	Right	0.131	0.143	0.191	0.137	3
		Left	0.156	0.332			
	Top Left	Right	0.118	0.088	0.123		
		Left	0.125	0.162			
	Bottom Right	Right	0.139	0.104	0.117		
		Left	0.150	0.073			
	Bottom Left	Right	0.104	0.086	0.119		
		Left	0.171	0.114			