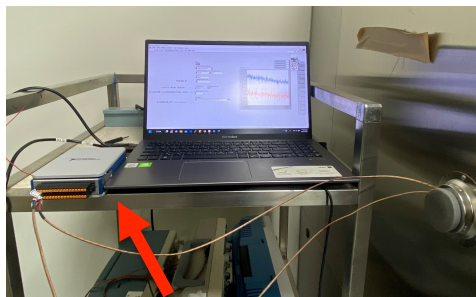


ePIC TOF Structure Thermal Test

08 May 2024

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NI 9213 DAQ



- 16 channels
- Accuracy:
 - High-resolution mode : $<0.02\text{ }^{\circ}\text{C}$
 - High-speed mode : $<0.25\text{ }^{\circ}\text{C}$

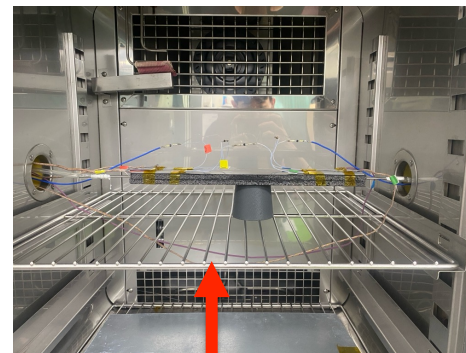


Heat source (x 9)

- Ceramic plate (5Ω): $\sim 500\text{ }^{\circ}\text{C}$

Thermocouple (x 16)

- Type E: $-250\text{ }^{\circ}\text{C} \sim 900\text{ }^{\circ}\text{C}$



Environmental chamber

- Inner dimensions: $40 \times 50 \times 60\text{ cm}^3$
- Temperature: $-40\text{ }^{\circ}\text{C} \sim 100\text{ }^{\circ}\text{C}$ ($\pm 0.2\text{ }^{\circ}\text{C}$)
- Humidity: $10\% \sim 98\%$ ($\pm 2.5\%$)

Cooling system

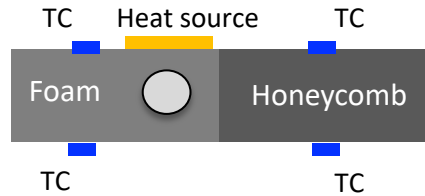
- Temperature: $3\text{ }^{\circ}\text{C} \sim 32\text{ }^{\circ}\text{C}$



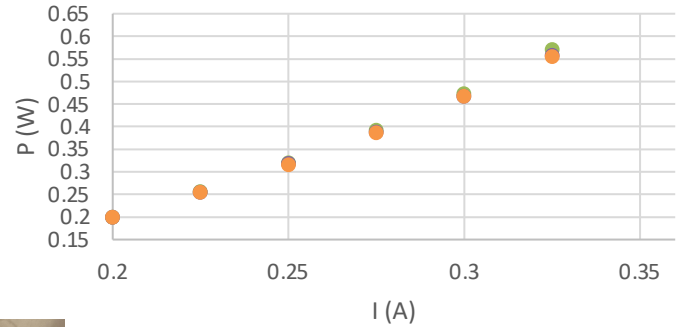
Test Setup



3D-printed holder

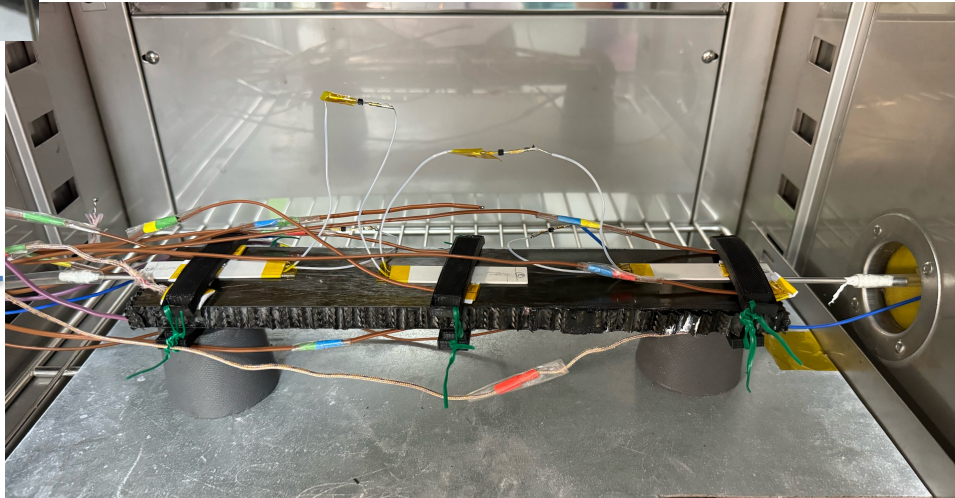


Power vs current



● source 2 ● source 3 ● source 5

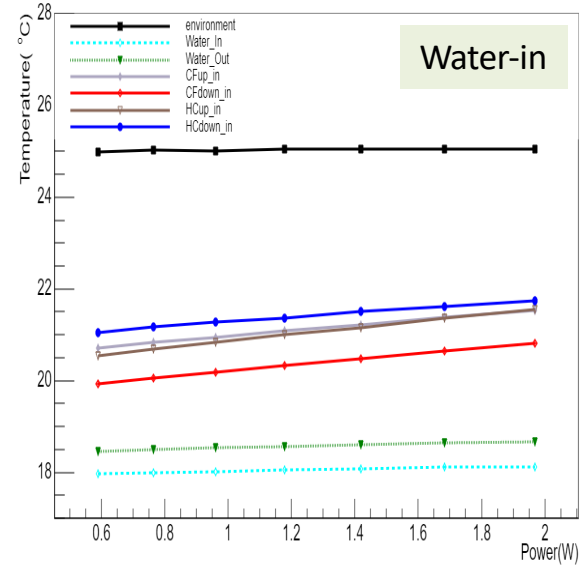
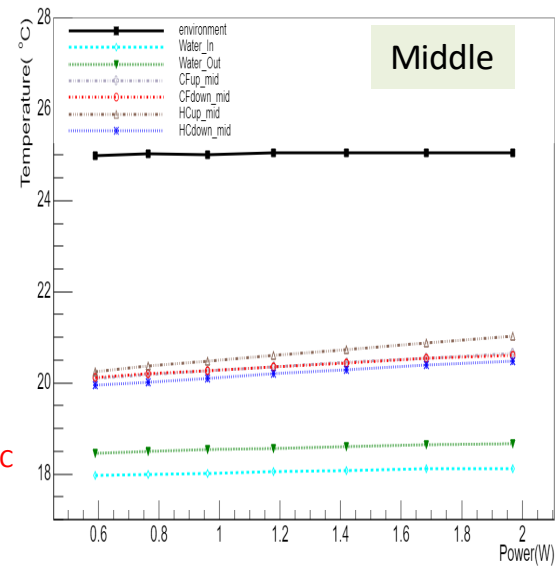
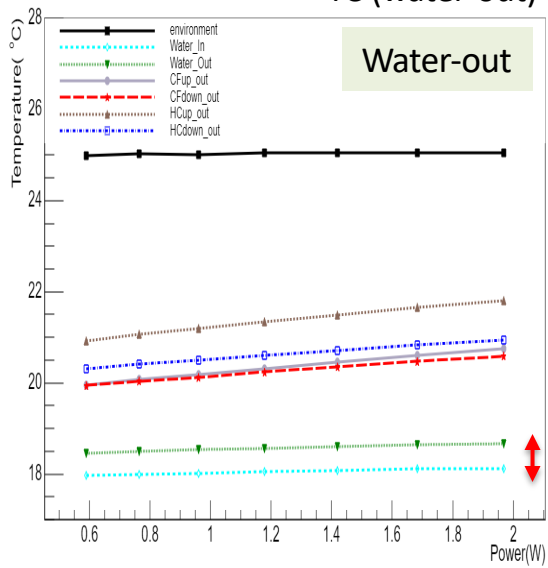
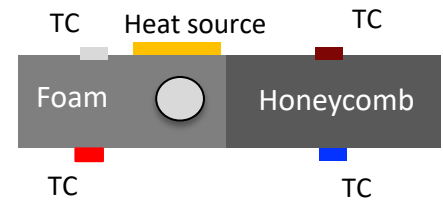
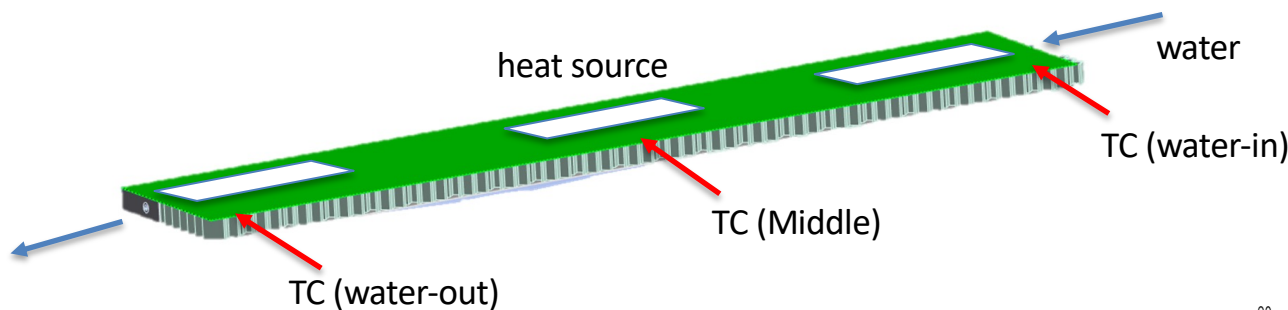
Water out ←



← Water in

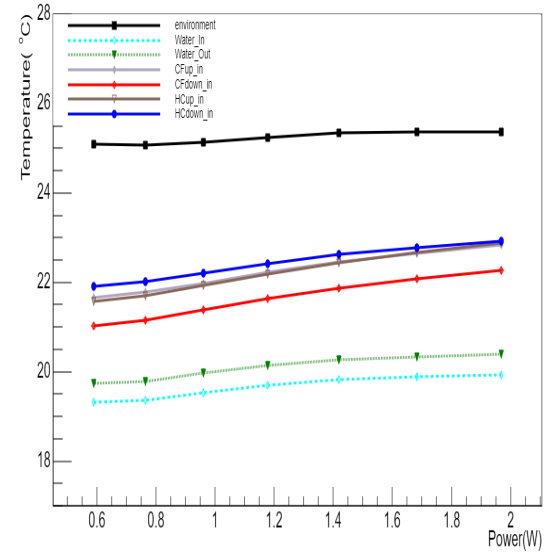
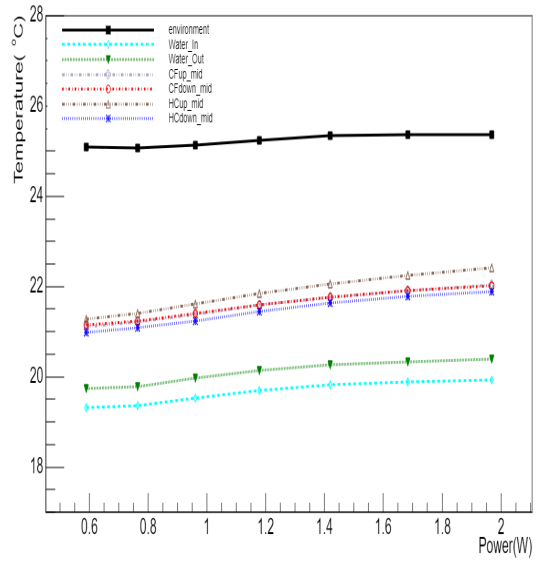
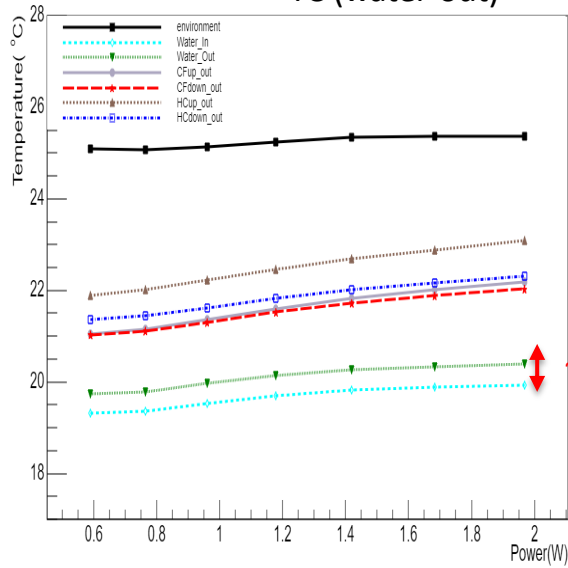
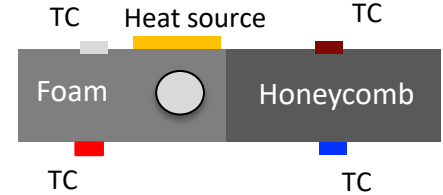
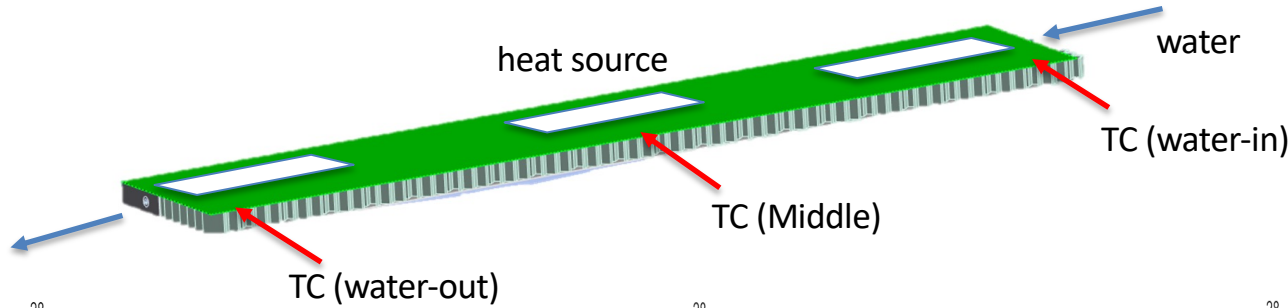


Cooling water @ 18 °C



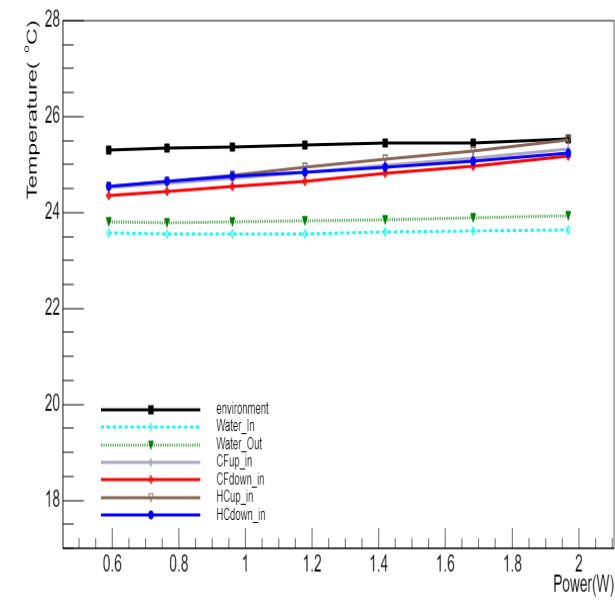
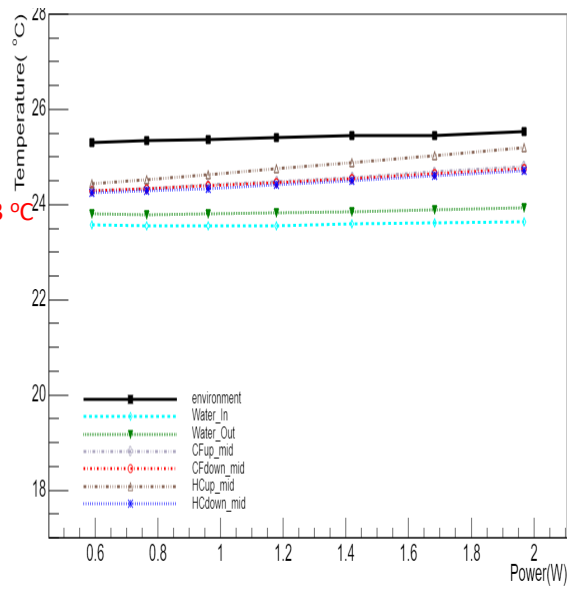
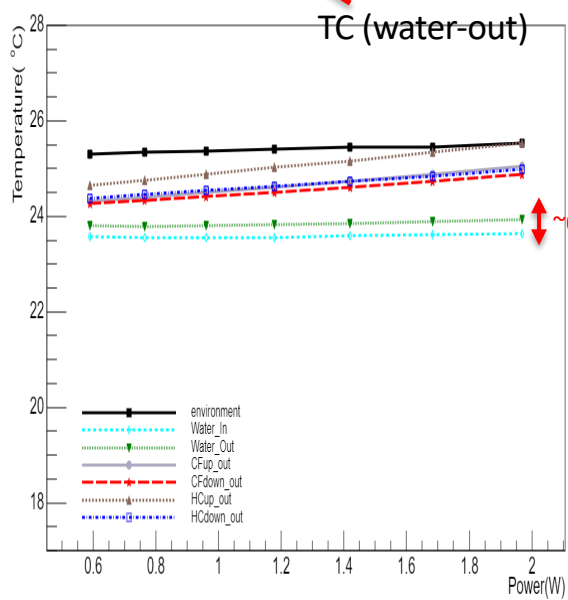
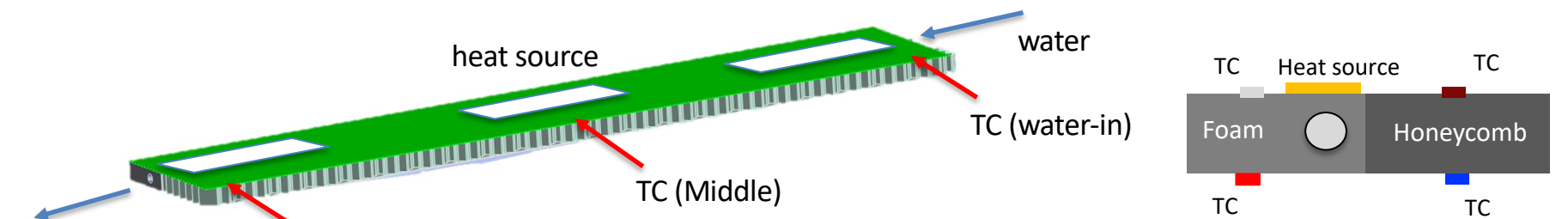


Cooling water @ 19 °C



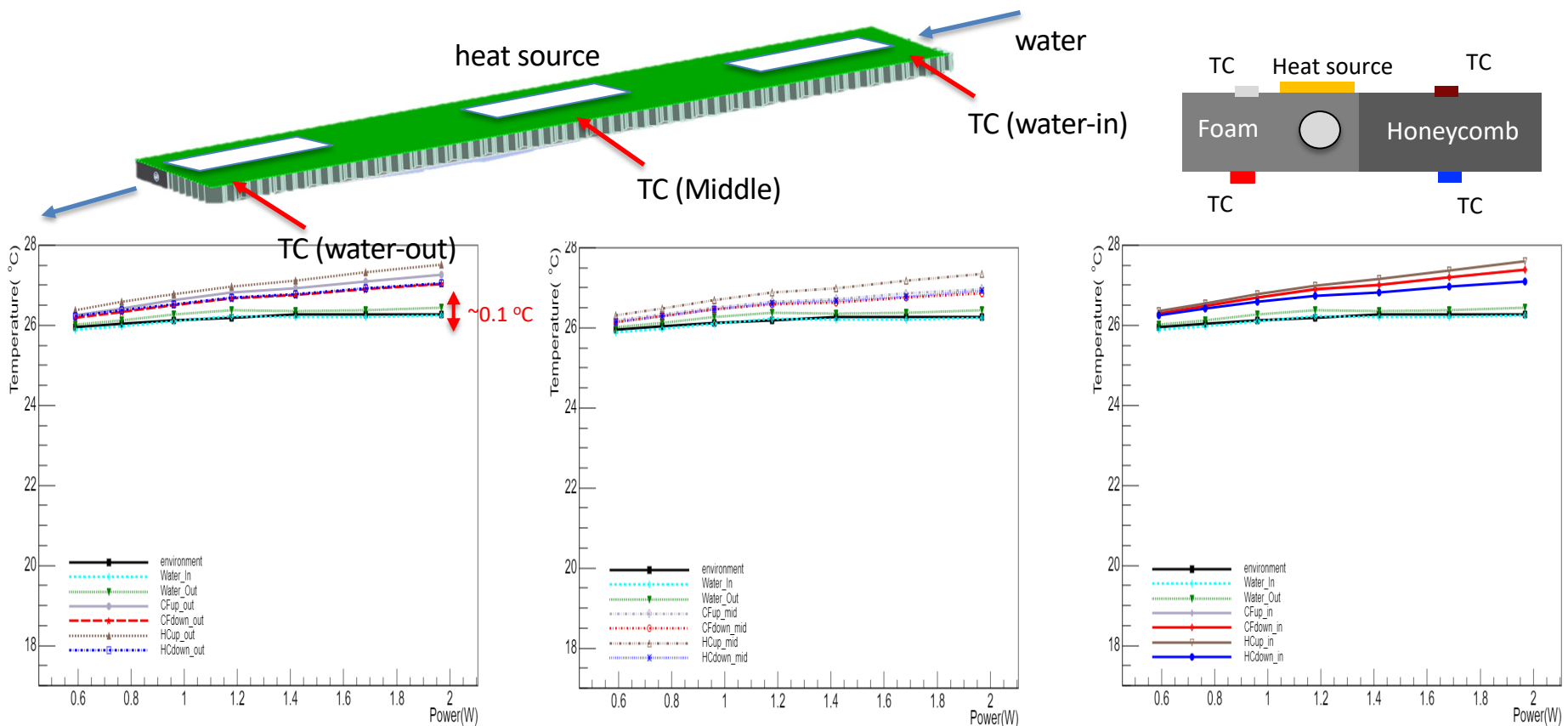


Cooling water @ 23.5 °C





Cooling water @ 26 °C





Do-to-list



- Flow meter will be installed this week
- New acrylic fixture will be ready this week
- Simulation is ongoing (new undergrad is working on it)



Flow meter

CC Water/min.	
5-50	32
10-110	33
20-300	34

Acrylic fixture

