



Integration of Sample Environment

LOKI System Acceptance Review Meeting

PRESENTED BY HANNAH BURRALL

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AB FIA
An Engineering Company
with a Chemistry Profile

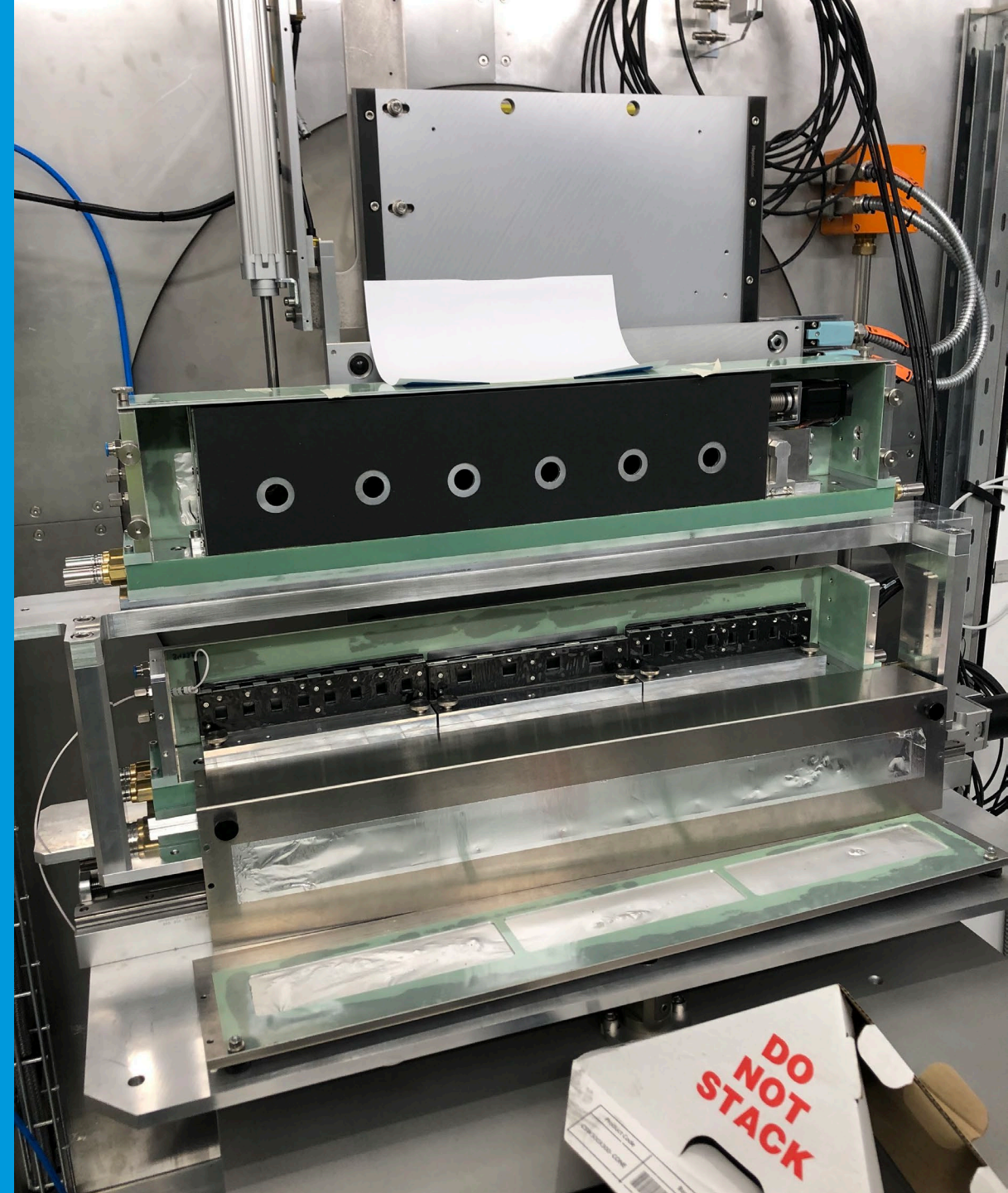
Overview



1. Sample Cell Holder – Linear and Rotational
2. Rheometer
3. NURF (In Situ Spectrometers and Continuous Flow Cell)
4. Summary

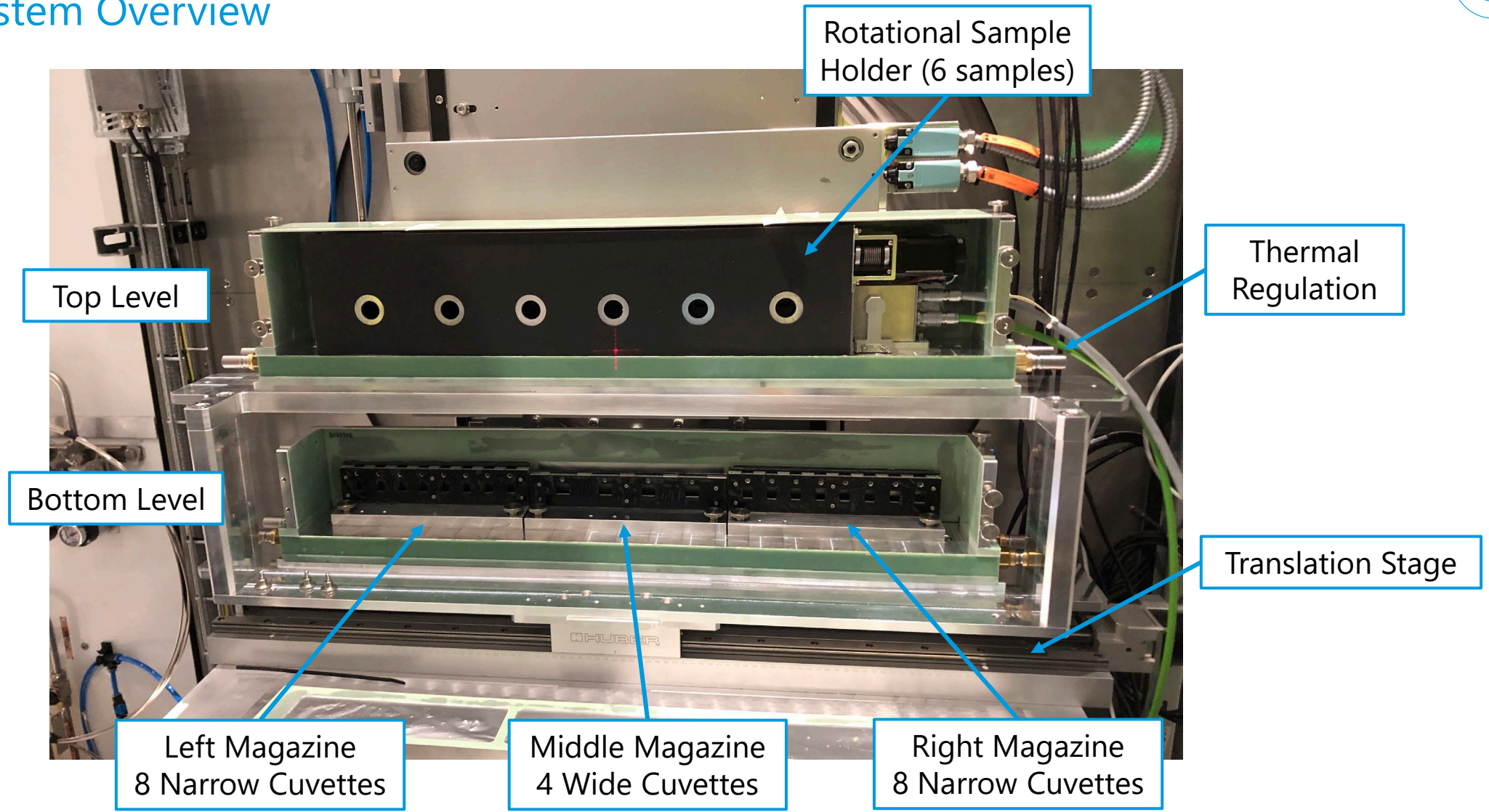
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Sample Cell Holder – Linear and Rotational



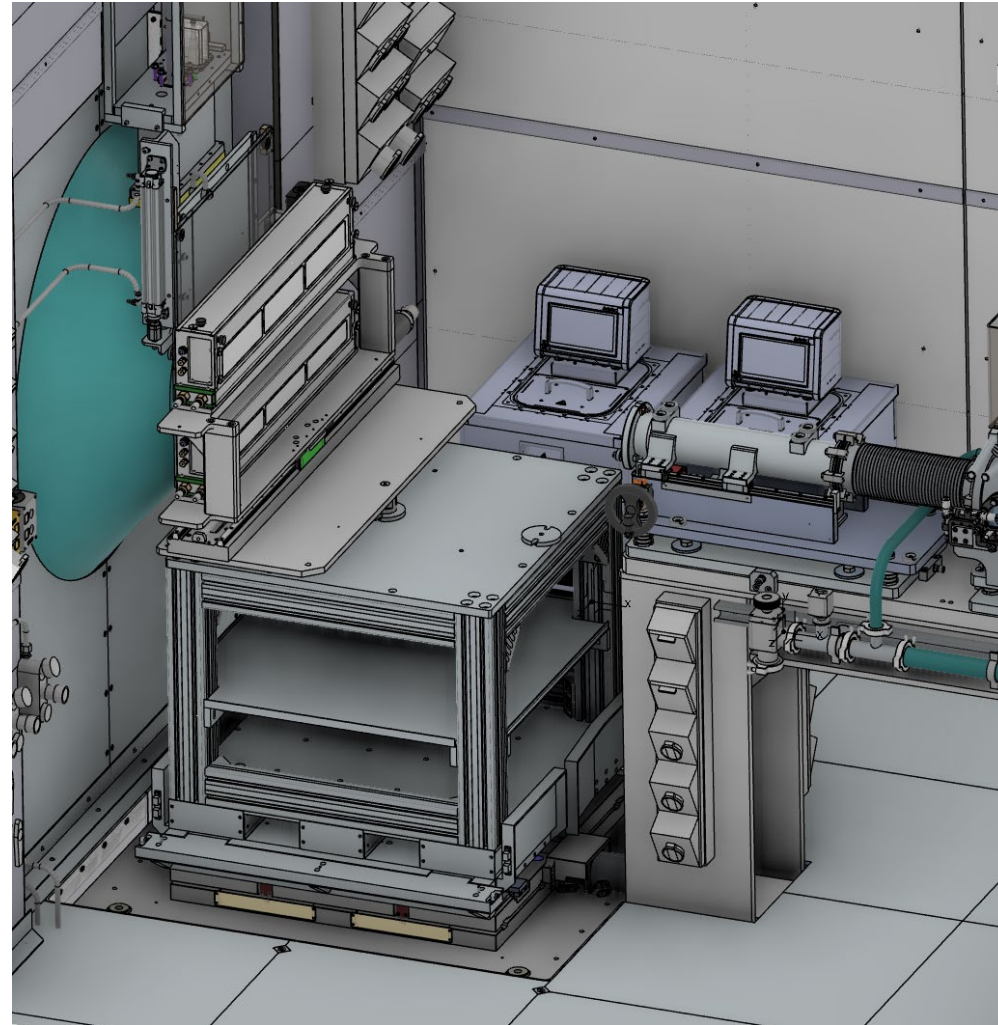
Sample Cell Holder – Linear and Rotational

System Overview



Sample Cell Holder – Linear and Rotational

System Overview





Sample Cell Holder – Linear and Rotational

System Integration & Readiness

- ✓ **Motion integration:** Two axes completed and fully integrated into NICOS
- ✓ **Mechanical integration:** Sub-system successfully mounted on sample stack
- ✓ **Temperature monitoring:** Eight sensors integrated and operational in NICOS
- 🔄 **Water circulation:** NICOS integration of two water circulators currently in progress
- 🔄 **Automation:** Full commissioning of user macro ongoing

Overall, the system is operational in manual mode and well on track for full automated readiness for Hot Commissioning (HC).

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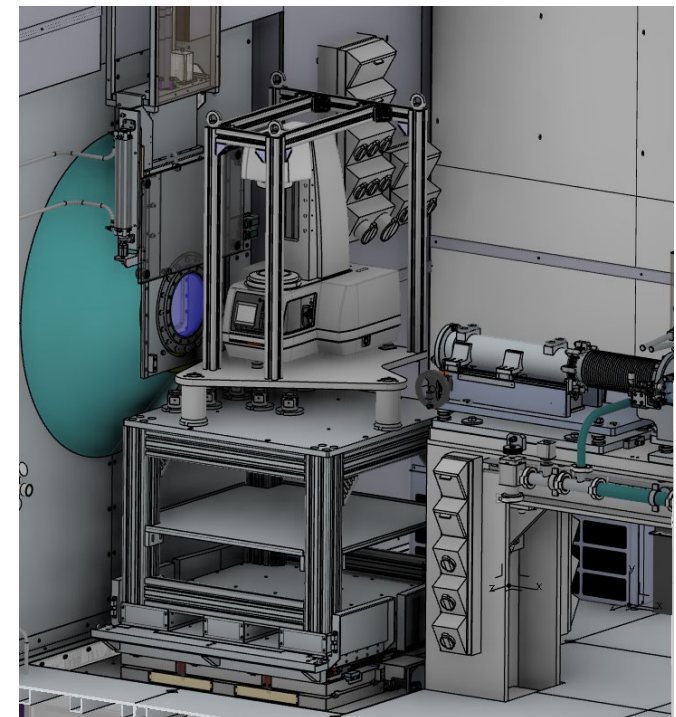
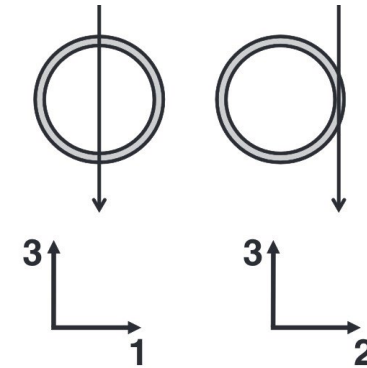
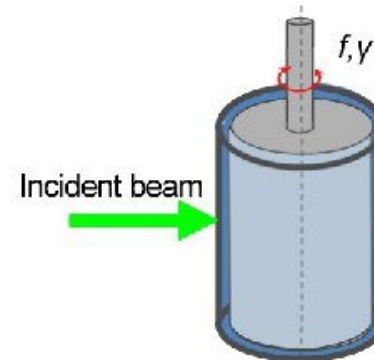
Rheometer (SE Pool Equipment)



Rheometer

System Overview






- Anton Paar MCR 702e: Modular compact rheometer for precise rheological measurements; supports cup-and-bob and cone-plate geometries, temperature control, and automated viscometry experiments.
- Two cup-and-bob systems (quartz cup & titanium bob, aluminum cup & bob) and one cone-plate setup procured and tested.
- Lab operational and in use



Rheometer



System Integration & Readiness

-  **Mechanical integration:** Mounting interface and lifting frame designed and produced; testing on instrument scheduled for next week (w39).
-  **Sample Handling:** Two cup-and-bob systems (1 quartz, 1 aluminum) and 1 cone plate procured and tested.
-  **Rheometer Controls:** Basic integration complete; capable of running two types of viscometry experiments. NICOS control not yet deployed on LoKI instrument network.
-  **Temperature monitoring:** Eight sensors integrated and operational in NICOS
-  **Water circulation:** NICOS integration of two water circulators currently in progress

Overall, the system is fully operational in the lab. On track to complete final integrated testing by HC.

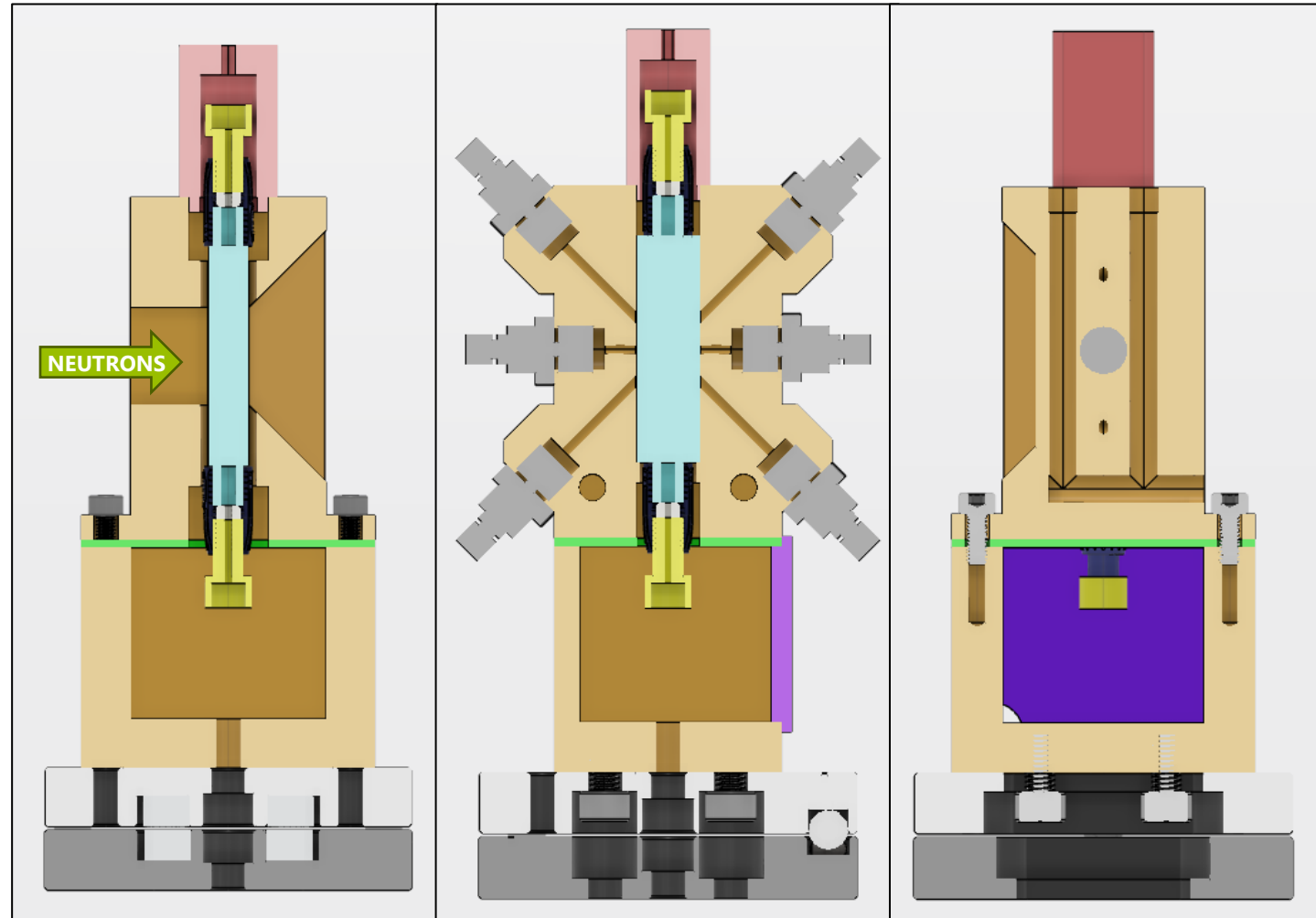
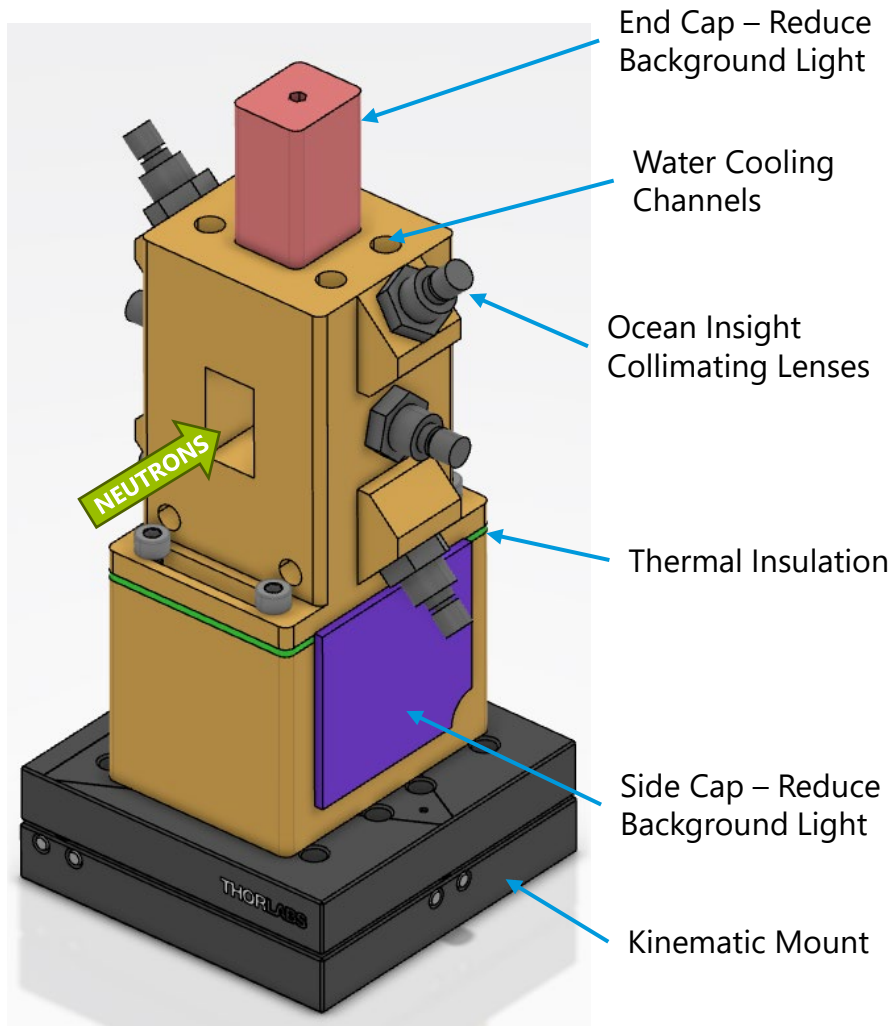
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NURF
(in situ
spectrometers
and continuous
flow cell)



NURF







System Overview



NURF



System Integration & Readiness

-  **Mechanical integration:** Components mounted on prototype; final sample holder in production
-  **Sample Handling:** HPLC and syringe pumps integrated in NICOS test environment; deployment to instrument network pending
-  **Spectrometers:** Device integration complete in NICOS test environment; deployment and on-instrument testing to follow
-  **Temperature monitoring:** Eight sensors integrated and operational in NICOS
-  **Water circulation:** NICOS integration of two water circulators in progress
-  **Data Acquisition:** Development ongoing

Overall, the system has been locally tested in the lab. On track to complete final integrated testing by SOUP.

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Summary



Integration of Sample Environment

Status at SAR



Sample Environment System	Sub-System / Auxiliary Equipment	Mechanical Integration (On LoKI)	EPICS Integration	NICOS Integration (Test Network)	NICOS Integration (LoKI Network)	Full System Integrated Testing
1. Sample Cell Holder	---	Complete	Complete	Ongoing	Incomplete	Incomplete
	2 Motion Axes	Complete	Complete	Complete	Complete	Complete
	8 Temperature Sensors	Complete	Complete	Complete	Complete	Complete
	2 Water Circulators	Complete	Complete	Ongoing	Incomplete	Incomplete
	Control Macro	N/A	N/A	Ongoing	Incomplete	Incomplete
2. Rheometer	---	Ongoing	Complete	Complete	Incomplete	Incomplete
	2 Water Circulators	Complete	Complete	Ongoing	Incomplete	Incomplete
3. NURF	---	Incomplete	Complete	Ongoing	Incomplete	Incomplete
	Spectrometer	Incomplete	Complete	Complete	Incomplete	Incomplete
	HPLC Pump	Incomplete	Complete	Complete	Incomplete	Incomplete
	Syringe Pump	Incomplete	Complete	Complete	Incomplete	Incomplete
	Selector Valve	Incomplete	Complete	Complete	Incomplete	Incomplete
	2 Water Circulators	Complete	Complete	Ongoing	Incomplete	Incomplete

Integration of LoKI sample environment systems at SAR is actively ongoing, and we are confident all systems will be ready for Start Of User Program (SOUP).

Thank You!

