“Meredith” Meeting – Fall 2026 Agenda

OneNano Midwest Chapter

Rose-Hulman Institute of Technology, Terre Haute, IN

Pre-Conference Social Event – Thursday, October 29, 2026

6:00 PM–9:00 PM	Networking Reception (optional) M. Mogger’s Restaurant & Pub 908 Poplar St, Terre, Haute, IN	

Symposium Agenda – Friday, October 30, 2026

8:00 AM–9:00 AM	Light Breakfast and Networking	Kahn Room (MU233), 5500 Wabash Ave, Terre Haute, IN
9:00 AM–9:10 AM	Welcome, Opening Remarks and Announcements	Vishva Ray University of Michigan
9:10 AM–9:30 AM	Undergrads in Nanofab	Nicole Pfiester RHIT
9:30 AM–10:00 AM	Sponsor Presentation – Atomic Layer Etching (ALE): The next evolution in fabricating high electron mobility transistor devices	Robin Klause Sentech Instruments GmbH
10:00 AM–10:20 AM	Coffee Break	
10:20 AM–11:05 AM	Scheduling and Billing in a User Facility	Justin Wirth Purdue University
11:05 AM–11:50 AM	RHIT Ventures and Discussion of Funding Models	Brian Doughtery RHIT
11:50 AM–12:50 PM	Lunch and Group Photo	
12:50 PM–1:35 PM	Lab Accessibility	Mercedes Clay RHIT
1:35 PM–2:20 PM	Tool Interlocks in a User Facility	Myles McKenna University of Michigan
2:20 PM–3:20 PM	Best Kept Secrets in Fab Panel	Serkan Butun Northwestern University
3:20 PM–3:40 PM	Wrap-Up and Discussion of Future Topics	
3:40 PM	Optional Lab Tours	

Atomic Layer Etching (ALE): The next evolution in fabricating high electron mobility transistor devices

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Atomic Layer Etching (ALE) is an advanced etching technique that enables atomic-level control of material removal, opening new possibilities in semiconductor manufacturing. Unlike conventional etching methods, ALE removes, in a highly controlled, layer-by-layer manner, a single atomic layer at a time. This approach delivers exceptional precision, repeatability, and selectivity, making it possible to fabricate increasingly complex nanoscale structures and devices.

As devices continue to shrink, pushing the boundaries of Moore's Law, the demand for smaller, more powerful, and energy-efficient devices has driven the need for new atomic-scale etch processes. ALE is and will continue to play a crucial role in the miniaturization of semiconductor devices for the future. This capability is especially critical as the demand for sub-10 nm devices is increasing.

SENTECH has over thirty years of experience in developing and manufacturing plasma process systems and thin-film metrology tools for the R&D and industrial production communities. Our flexible, modular and robust systems focus on thin-film deposition, dry etching, and characterization in semiconductor technology, microsystems technology, photovoltaics, nanotechnology, and materials research.

Within the scope of this talk, we will demonstrate the fabrication of normally-on GaN-based high-electron-mobility transistors (HEMTs). [1,2] For this kind of application, ALE plays a crucial role in fabricating damage-free high-performance devices. Furthermore, we will discuss ALE processes for other materials such as SiO_2 [3] and Al_2O_3, all of which are widely used as passivating layers or gate oxides, respectively. We will clearly demonstrate the strength of ALE processing as a pivotal technology for the continued advancement of plasma processing.

In-situ monitoring is a cornerstone for the time-efficient development of many types of processes. In particular, we will focus on ellipsometry, due to its non-invasive measurement technique and high precision in the sub-nm range, making it an option for precision thin-film characterization. This talk will elaborate on the potential of in-situ ellipsometry for understanding surface reactions during the ALE process, process setup and process monitoring.

[1] Miersch et al., J. Vac. Sci. Technol. A 42, 022604, 2024
[2] Miersch et al., J. Vac. Sci. Technol. A 43, 042603, 2025
[3] Venugopal et a., J. Mater. Chem. C, 14, 1009, 2026