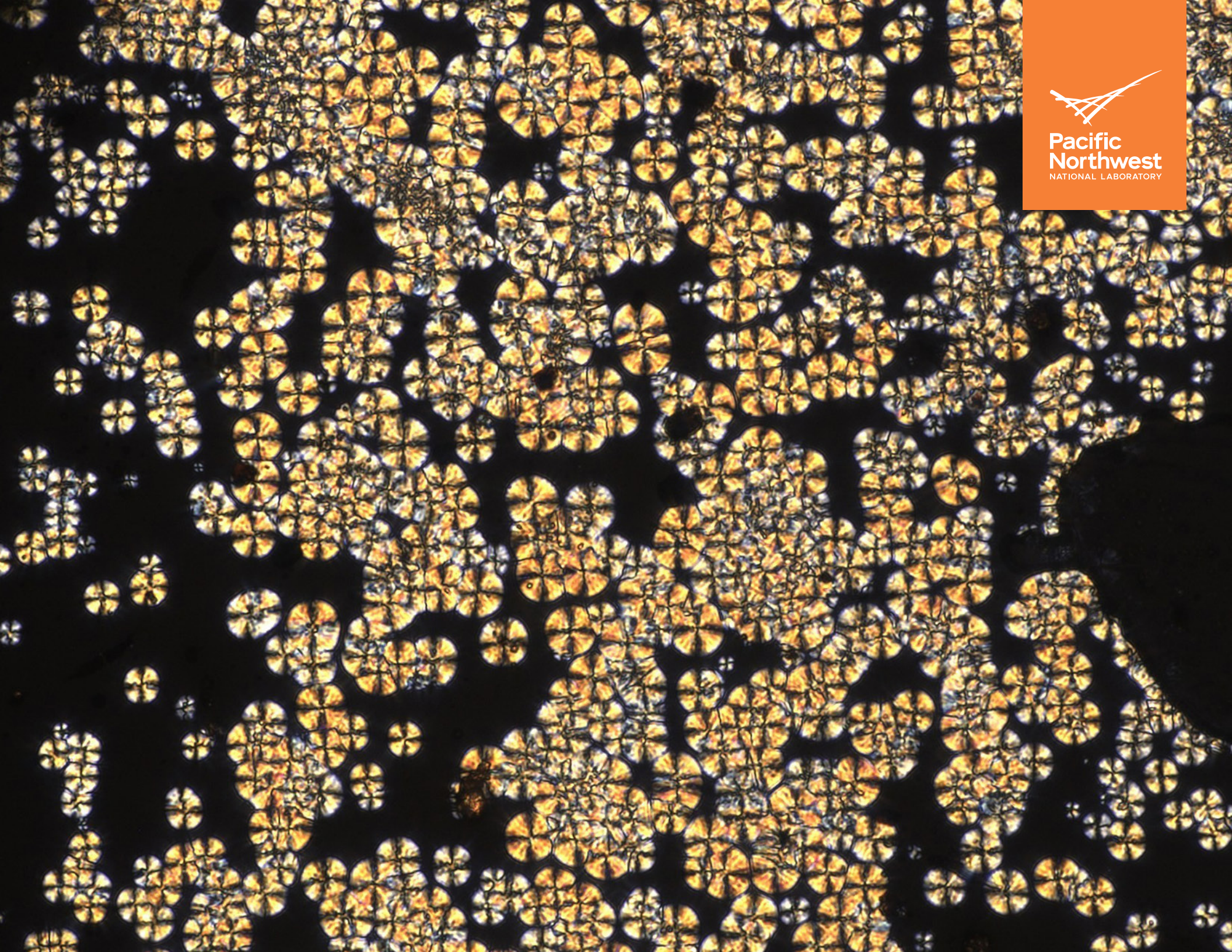


SCIENCE as ART
2027

Pacific Northwest
NATIONAL LABORATORY



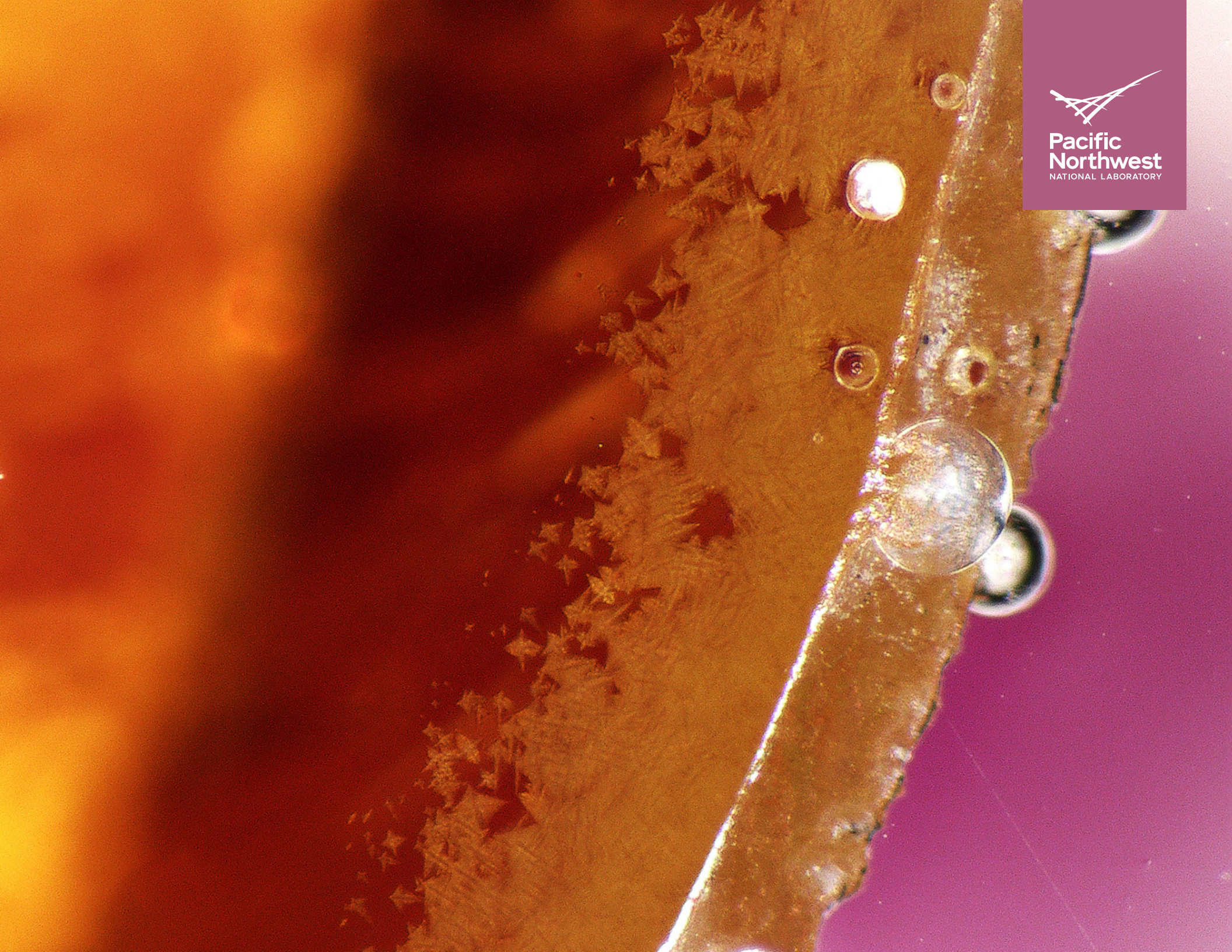
Pacific Northwest
NATIONAL LABORATORY

JANUARY 2027

A Golden Landscape of Crystallinity

Polarized optical microscopy reveals spherulitic structure as polyphenylene sulfide crystallizes. Understanding this process links polymer-processing conditions and microstructure to advanced materials performance for researchers. *(**Credit:** Cassandra Reese, Dhanashree Shinde, Wenbin Kuang, Kevin Simmons | **Sponsor:** DOE Office of Critical Minerals and Energy Innovation, Alternative Fuels and Feedstocks Office)*

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

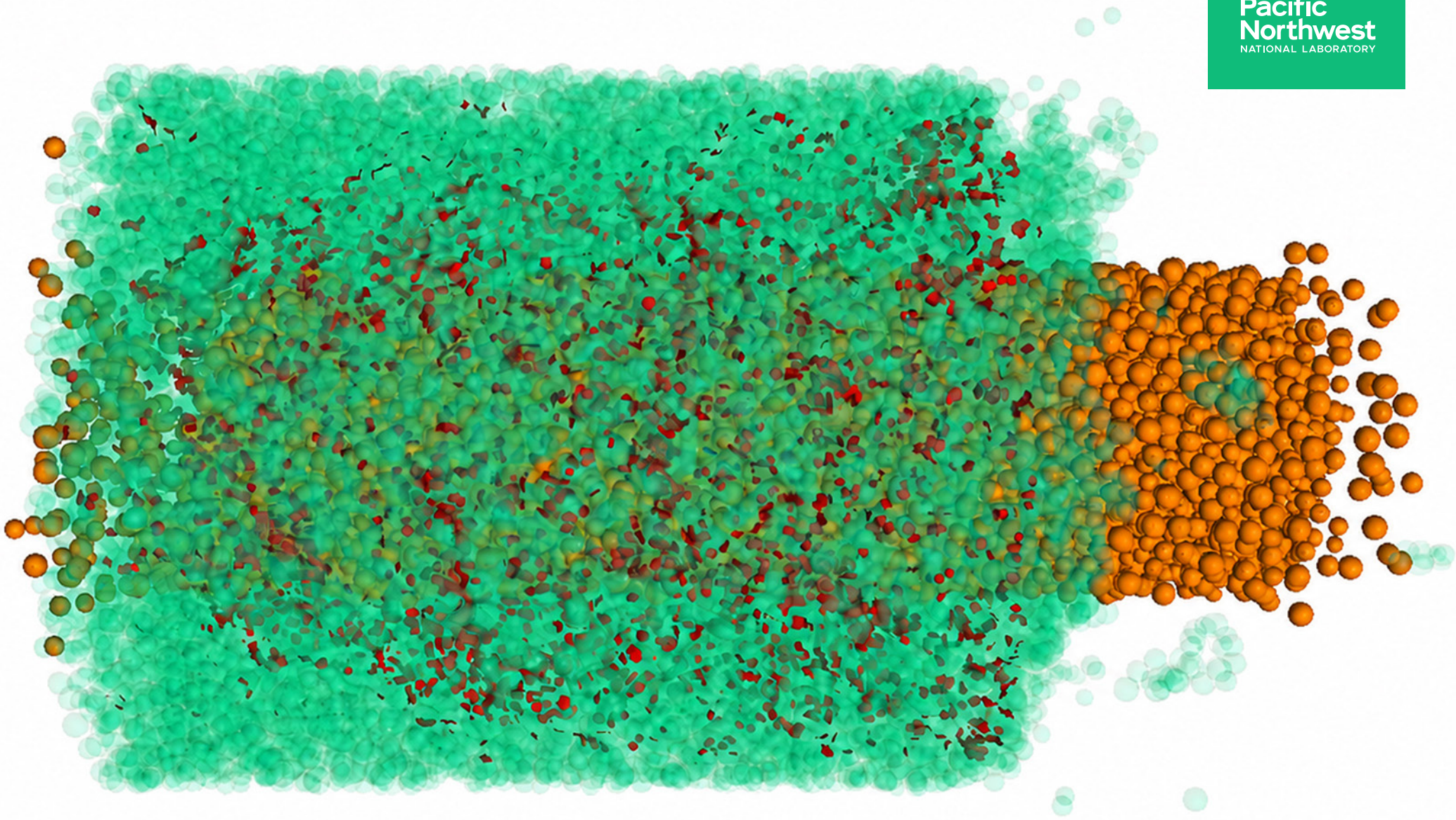

Pacific
Northwest
NATIONAL LABORATORY

FEBRUARY 2027

Halide Horizon

Crystals formed at the edge of a molybdenum bismuth tellurite glass containing chloride salts. This glass composition is being studied for the safe disposal of halide-containing nuclear waste.
*(**Credit:** Harmony Werth, Jincheng Bai, Brian Riley | **Sponsor:** DOE Office of Nuclear Energy)*

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						



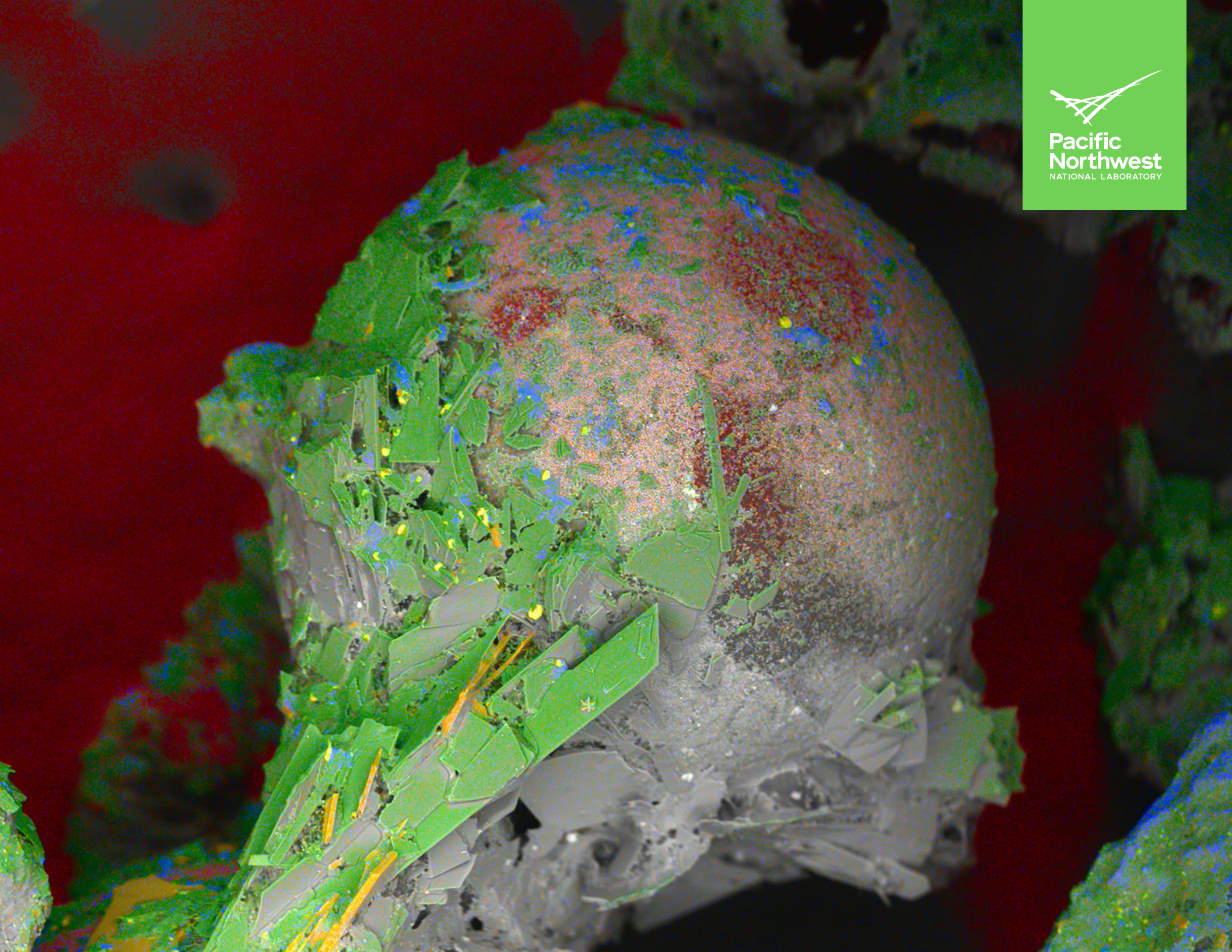
Pacific Northwest
NATIONAL LABORATORY

MARCH 2027

Fruit of Fiber Pull-Out Fracture

PNNL uses modeling to investigate fiber-reinforced composites. Resembling a sideways tree bearing fruit, this image illustrates fiber being pulled from a polymer matrix and the distributed damage that develops in the surrounding material. *(**Credit:** Yao Qiao, Fazlay Md Alam, Kevin Simmons | **Sponsor:** DOE Office of Critical Minerals and Energy Innovation, Transportation Technologies Office; Energy and Environment Internship Program)*

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			


Pacific
Northwest
NATIONAL LABORATORY

APRIL 2027

Salty Sundae

Scanning electron micrograph with elemental overlay shows manganese-functionalized resin bead surrounded by precipitated salts. Ion exchange resins are being tested for radionuclide removal from nuclear waste. *(**Credit:** Harmony Werth, Gemma Clark, Mirka Peterson, Matt Asmussen | **Sponsor:** DOE Office of Environmental Management)*

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

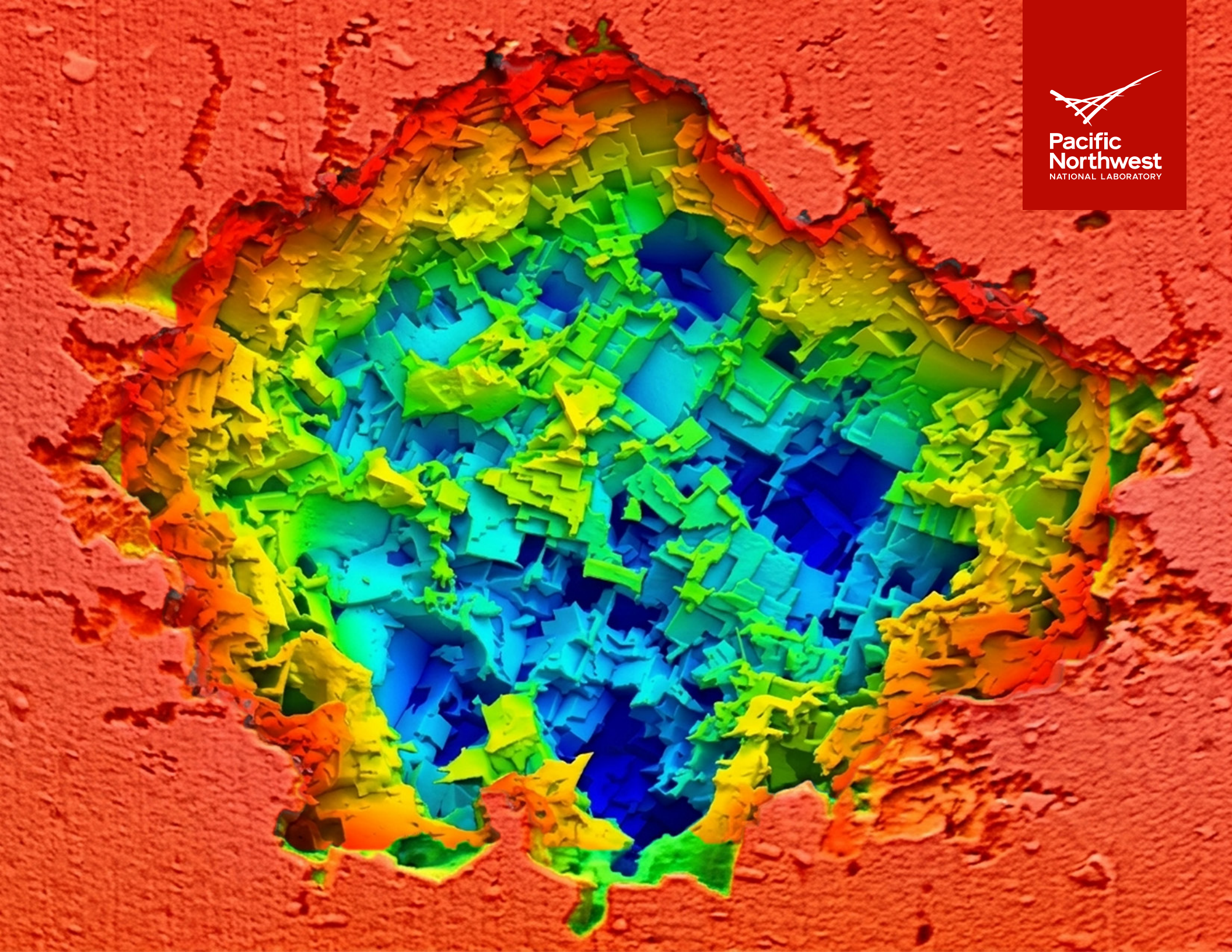

Pacific
Northwest
NATIONAL LABORATORY

MAY 2027

Jonesy at Sunset

PNNL's autonomous surface vehicle, Jonesy, collecting oceanographic measurements in Hood Canal, Wash., with Mt. Rainier in the background. Measurements are delivered in near real time to numerical forecasting systems to improve model accuracy, a capability that can support marine energy planning and operations, as well as coastal environmental monitoring. *(**Credit:** Rob Cavagnaro | **Sponsor:** Office of Naval Research)*

Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					


Pacific
Northwest
NATIONAL LABORATORY

JUNE 2027

Metropolis Beneath the Metal Surface

This image illustrates crystallographic pitting on an aluminum surface, where dissolution occurs along preferred crystallographic planes within the aluminum microstructure. The resulting geometric micro-architectures emphasize dynamics vital for forecasting long-term degradation in alloys, helping to inform materials selection and service-life planning for both nuclear energy infrastructure and the transportation industry. *(**Credit:** Swapnil Sawalkar, Sridhar Niverty, Vineet Joshi) | **Sponsor:** DOE National Nuclear Security Administration, Office of Material Management and Minimization)*

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			


Pacific
Northwest
NATIONAL LABORATORY

JULY 2027

Veins of Interaction

A new phase is venously formed by the diffusion of aluminum into the uranium silicide at high temperature. This interaction helps identify processing conditions that govern phase evolution, informing materials development for nuclear energy and nuclear security. *(**Credit:** Steven Livers, Ben Lund, Shalini Tripathi | **Sponsor:** DOE National Nuclear Security Administration, Office of Material Management and Minimization)*

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

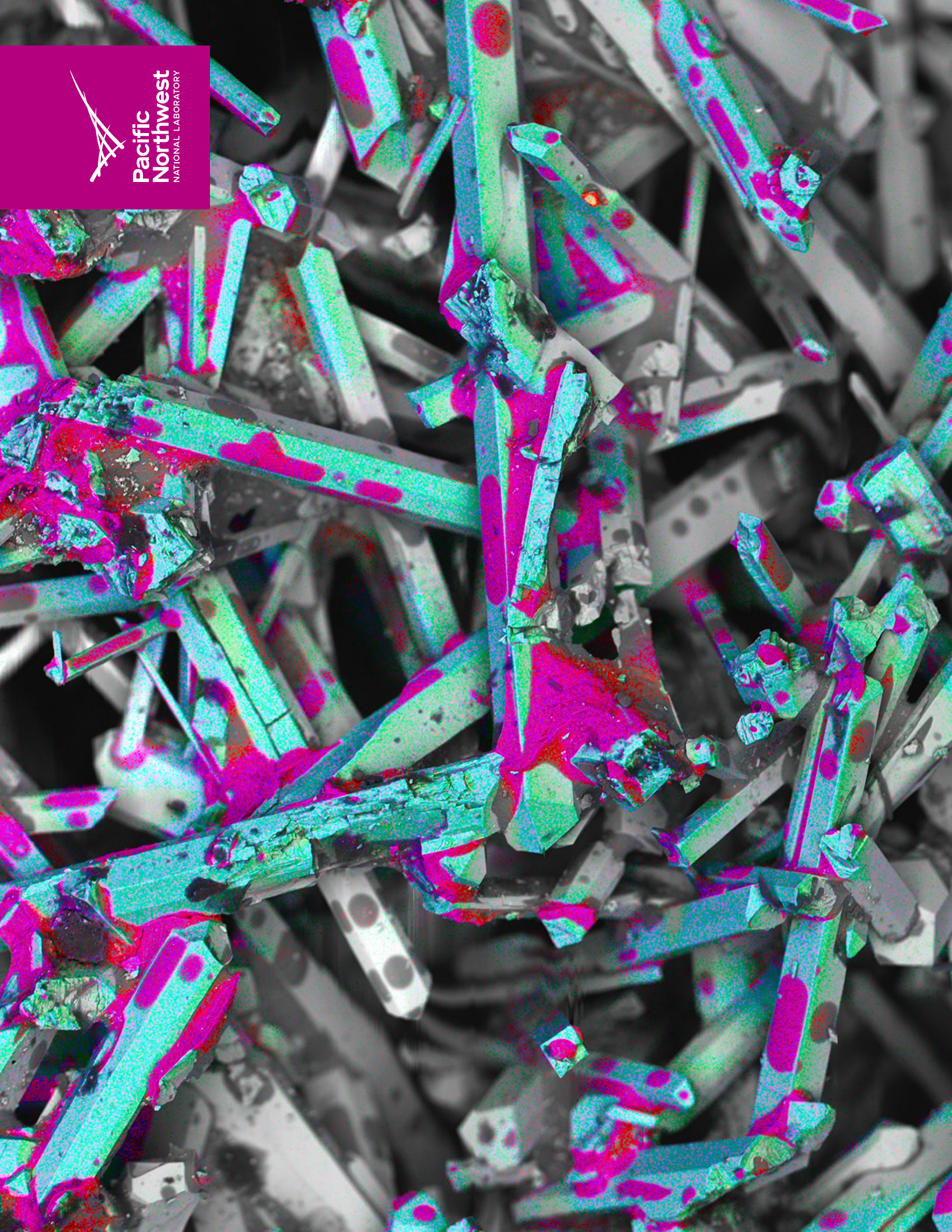

Pacific
Northwest
NATIONAL LABORATORY

AUGUST 2027

Camel in the Desert

Artificially colored scanning electron microscopy image showing the as-compacted structure of secondary scrap prepared for solid-phase alloying: magnesium fragments (orange) settle into the spaces between compacted aluminum scrap (dark yellow). *(**Credit:** Julian Escobar Atehortua, Xiao Li, Benjamin Klusemann, Jorge dos Santos | **Sponsor:** Laboratory Directed Research and Development)*

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

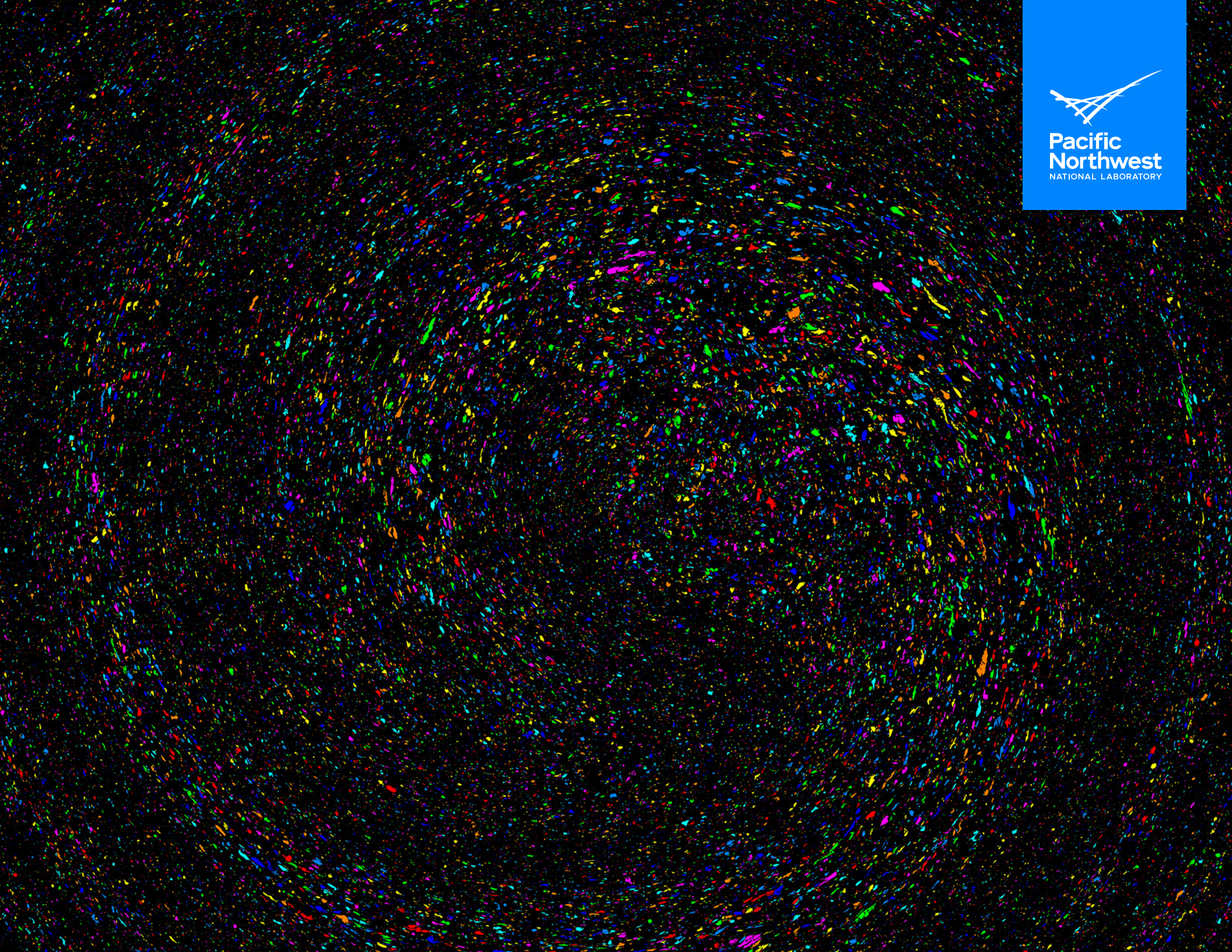

Pacific
Northwest
NATIONAL LABORATORY

SEPTEMBER 2027

Rare Prisms in the Rough

Scanning electron micrograph with elemental overlay of prismatic monazite crystals in an iron phosphate matrix. This sample demonstrates rare-earth fission product immobilization from salt-based nuclear waste streams. *(**Credit:** Harmony Werth, Mirka Peterson, Brian Riley | **Sponsor:** DOE Advanced Research Projects Agency–Energy)*

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		



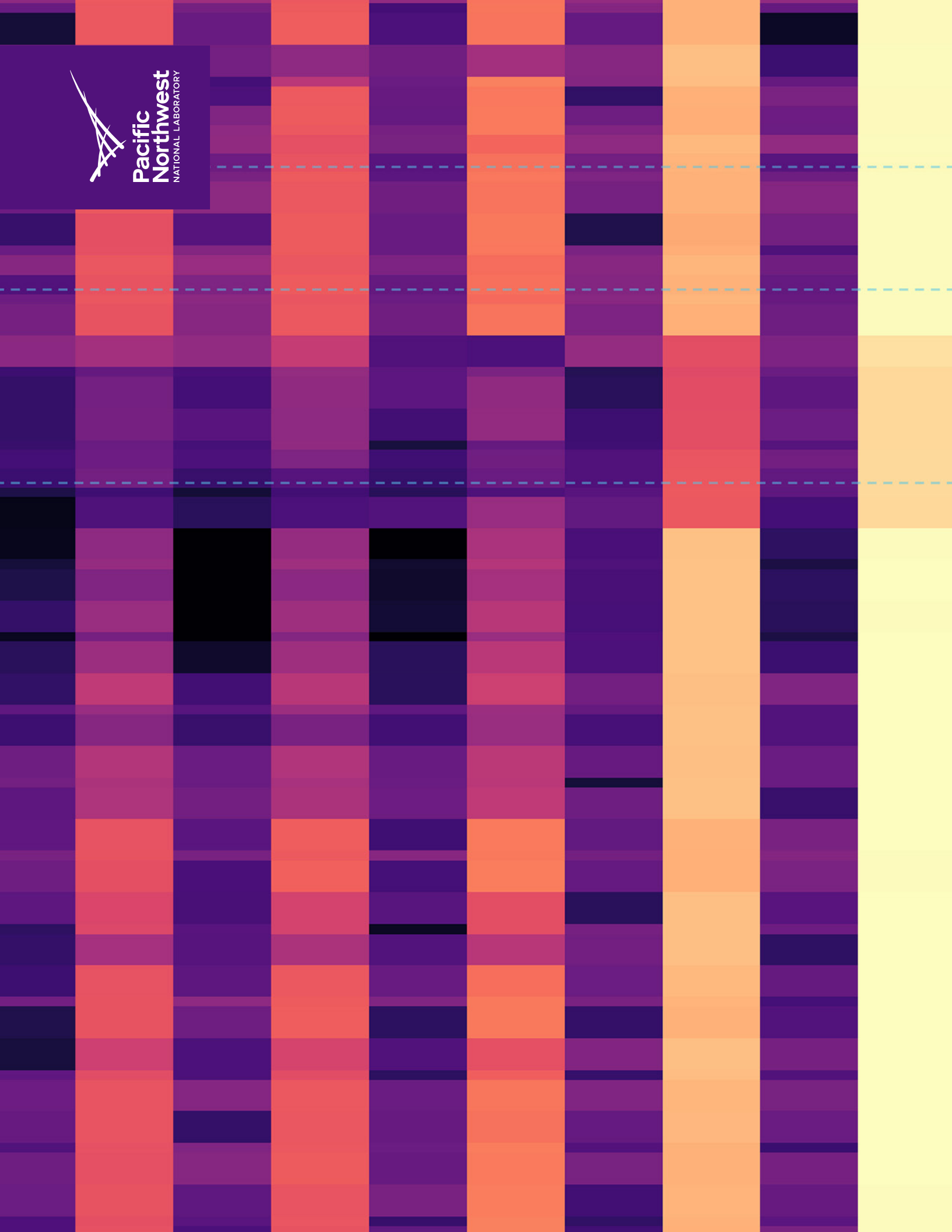
Pacific Northwest
NATIONAL LABORATORY

OCTOBER 2027

The ShAPE Galaxy

Magnified transverse section of a copper-niobium wire extrudate shows niobium particles in a spiral pattern. The wires, with exceptional strength and conductivity, are fabricated using PNNL's Shear Assisted Processing and Extrusion 2 machine. *(**Credit:** Tanvi Ajantiwalay, Sridhar Niverty | **Sponsor:** DOE Office of Critical Minerals and Energy Innovations, METALLIC)*

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						


Pacific
Northwest
NATIONAL LABORATORY

NOVEMBER 2027

Harmonics Reveal What a Single Frequency Hides

Current measurements over a 45-minute period reveal that fundamental frequency stays constant, but the upper harmonics shift sharply with real load changes—revealing time-dependent signatures missed by basic monitoring. *(**Credit:** Bhaskar Mitra, Soumya Kundu | **Sponsor:** DOE Office of Electricity)*

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

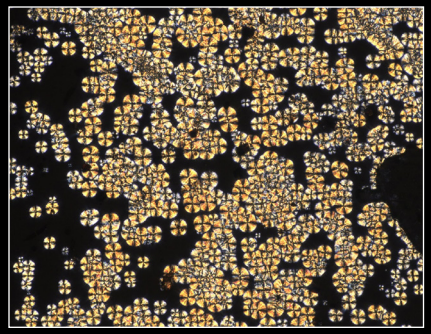
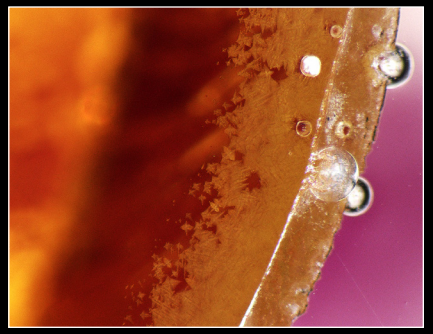
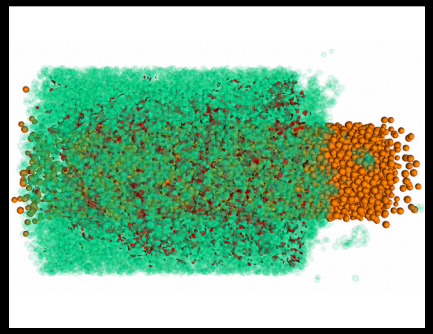
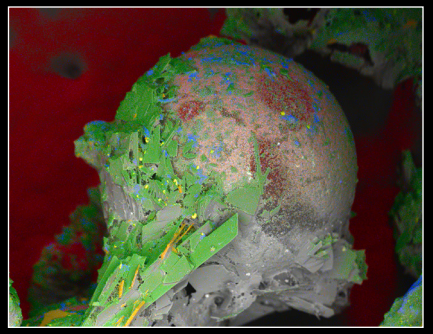

Pacific
Northwest
NATIONAL LABORATORY

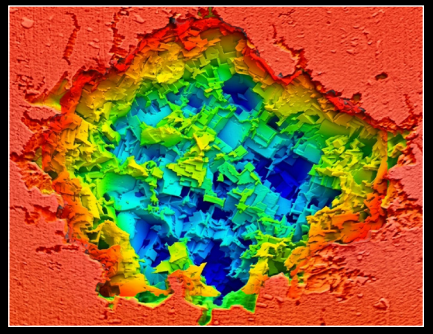
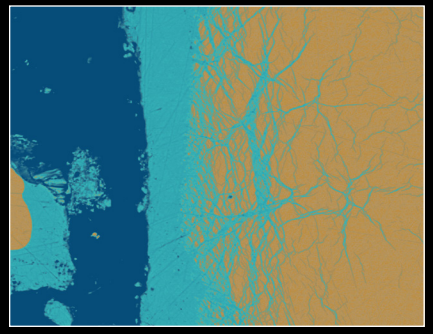
DECEMBER 2027

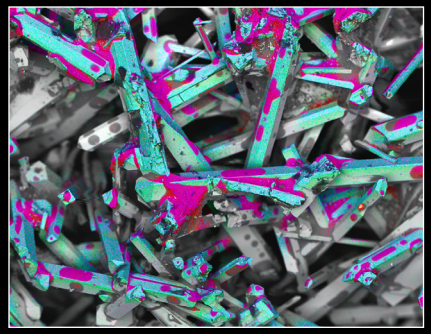
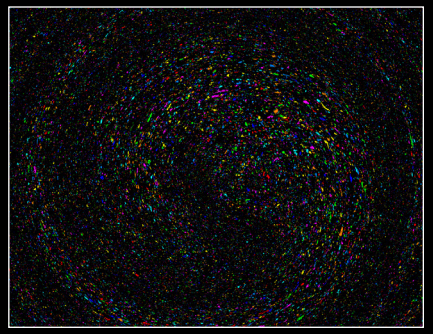
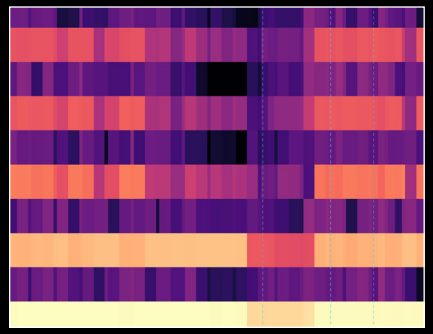
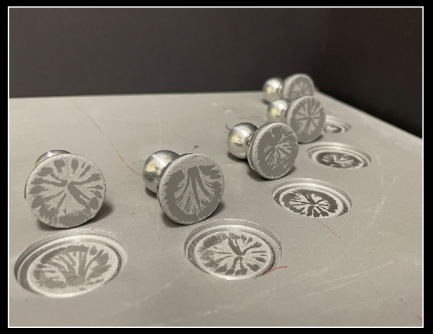
Tensile Snowfall

Epoxy coating pull-off tests on stainless steel leave unique, snowflake-like residue patterns. Pull-off strength provides a key performance benchmark for fixatives that immobilize radiological contamination. *(**Credit:** Molly Cragin, Alex Kugler | **Sponsor:** DOE Office of Environmental Management)*

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

As one of the Department of Energy's 17 national laboratories, Pacific Northwest National Laboratory (PNNL) advances scientific knowledge and addresses challenges in energy and national security. This calendar features work from PNNL's Energy and Environment Directorate, which has a broad research portfolio focused on delivering innovations for energy production and reliability as well as developing environmental management solutions.

FRONT COVER: Satellite View of Nuvuk Point, Alaska – From floods to fire and ice, PNNL is automating satellite image analysis. In this Sentinel-2 satellite image of ice breakout in the Arctic Ocean, the tundra is red, water black, ice blue, and clouds white. *(**Credit:** Jerry Tagestad, Rachel Michaels, Ruth Branch | **Sponsor:** Office of Naval Research, Arctic PISCES)*

PNNL-SA-228156