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Electrolytes: The Key to Advancing Aqueous Battery Technologies

EMILY DICKENS | SODIUM ZINC BATTERY WORKSHOP| NOVEMBER 2025

AGENDA

01 The Aqueous Opportunity

02 Electrolyte as a Key to Innovation

03 Octet's Approach – Your Electrolyte Partners

04 Case Study

Deliver your most competitive battery with Octet's advanced electrolyte solutions.

Prove your tech at market readiness trials – no model rebuild necessary.

CLIENT RESULTS INCLUDE:

20%
CAPACITY INCREASE

10%
EFFICIENCY BOOST

2X
LONGER OPERATING LIFE

Octet's Philosophy: Aqueous Makes Electrolytes More Critical Than Ever

NEW CHEMISTRY FOR A NEW ERA.

- Reaction is in the electrolyte
- More components to optimize
- Green field moment

Octet makes new electrolyte additives to optimize tomorrow's water-based batteries.

ELECTROLYTE DEVELOPMENT

>400
TESTED MOLECULES

7
PATENTS

ELECTROLYTE MANUFACTURING

Multinational Manufacturing Footprint

OCTET'S SOLUTION

What Octet Solves

PARASITIC SIDE REACTIONS

- Gassing: on charge, discharge, or in a static state
- Corrosion
- Hydrogen Evolution
- Self-Discharge

METAL PLATING

- Dendritic Growth
- Shape Change
- Plating Morphology
- Plating Quality + Quantity: at bottom of charge

STABILITY

- Electrochemical Reversibility
- pH stability

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Small Molecular Changes, Significant Impact

	Dendritic Growth (Plating)	Anode Polarization	Hydrogen Evolution Overpotential (Parasitic Side Reaction – bonus feature)	Discharge Capacity Improvement (Plating)	Blinded Customer Cell Capacity Improvement
No Additive		0	0	0%	0%
Base Molecule		+190 (Better)	+100 (Good)	0%	Not Tested
+ a Methyl group ($-CH_3$)		+160 (Best)	+130 (Better)	22% (Good)	+18%
+ a Methoxy group ($-OCH_3$)		+210 (Good)	+190 (Best)	89% (Best)	+27%

OFFERINGS

Electrolyte Development

- Molecular-Level Design & Analysis
- Rapid Bench Scale Testing
- Battery Testing

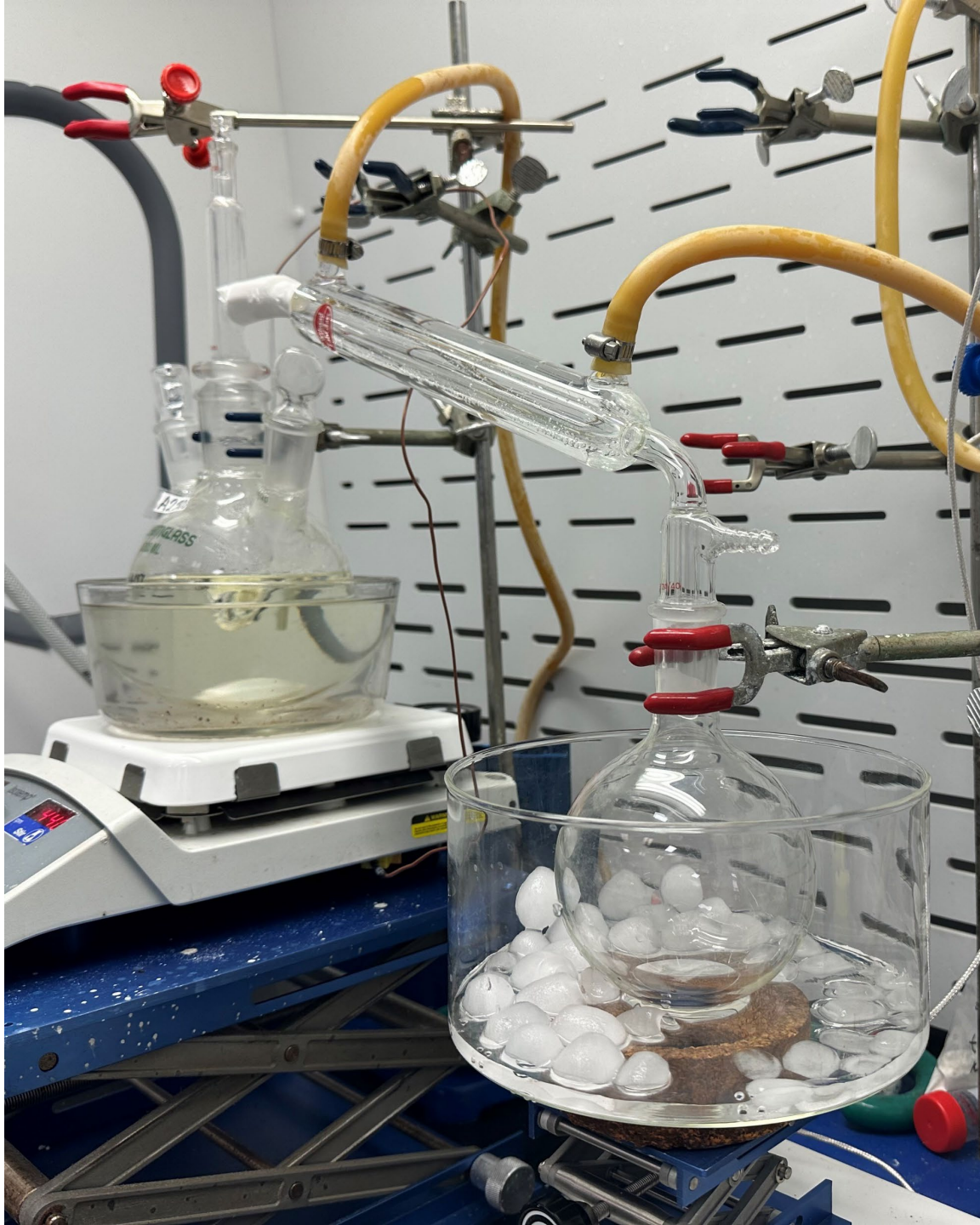
Molecular-Level Design & Analysis

FULL SYNTHETIC CHEMISTRY

- Small molecule & small-batch polymer synthesis

CHEMICAL ANALYSIS

- Structural: NMR, IR, MALDI
- Purity: GC, AA, GPC, IPC
- Stability: Aging, pH, CV
- Solubility & temperature ranges



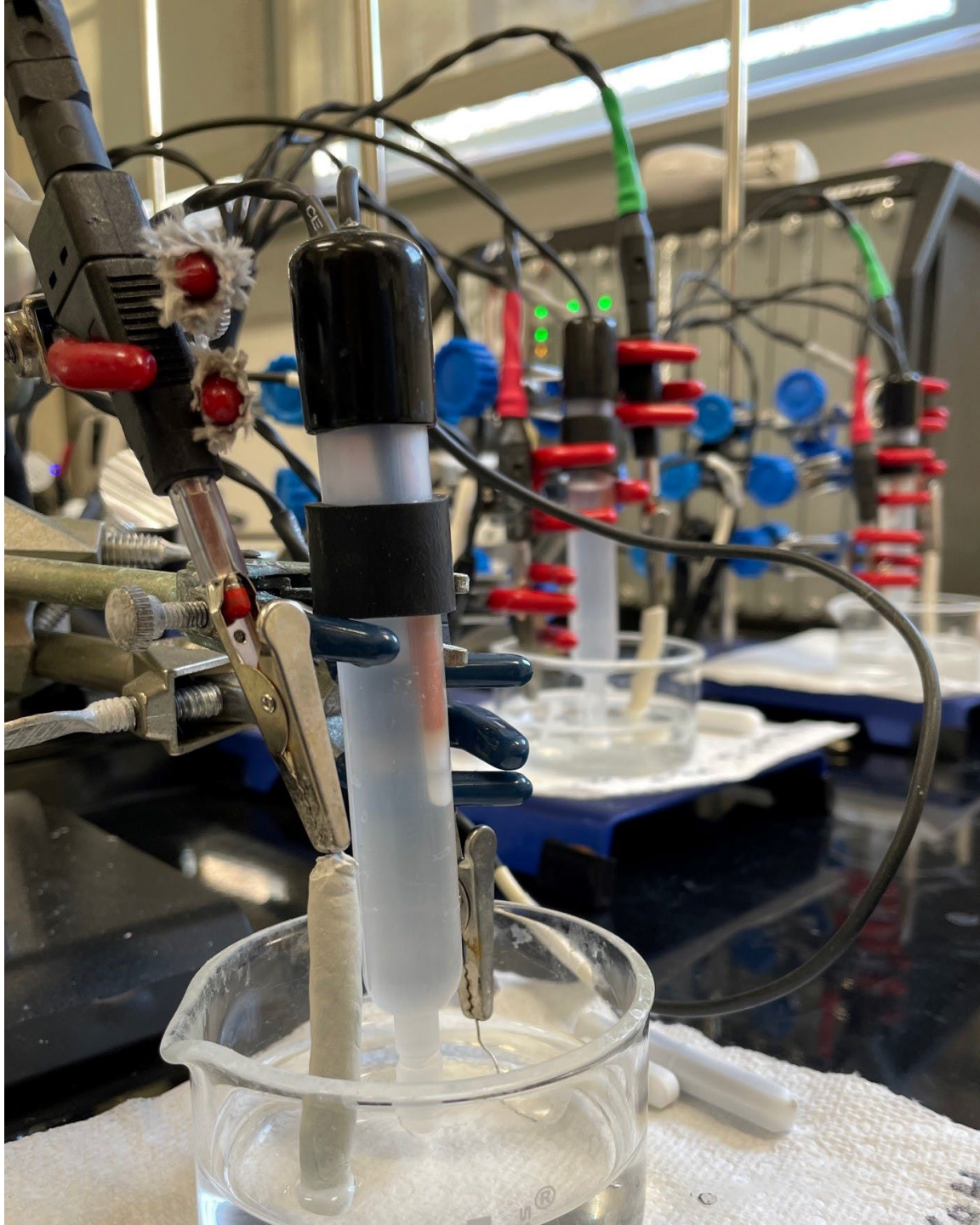
Rapid Bench Scale Testing

ELECTROCHEMICAL ANALYSIS

- EIS
- Linear scan voltammetry: Tafel analysis
- Coulombic efficiency
- Polarization on charge and discharge
- Plating quality (Hull cell)
- ..and more

ELECTROLYTE PHYSICAL ANALYSIS

- Static gassing at temperature
- Corrosion
- Material compatibility
- pH stability



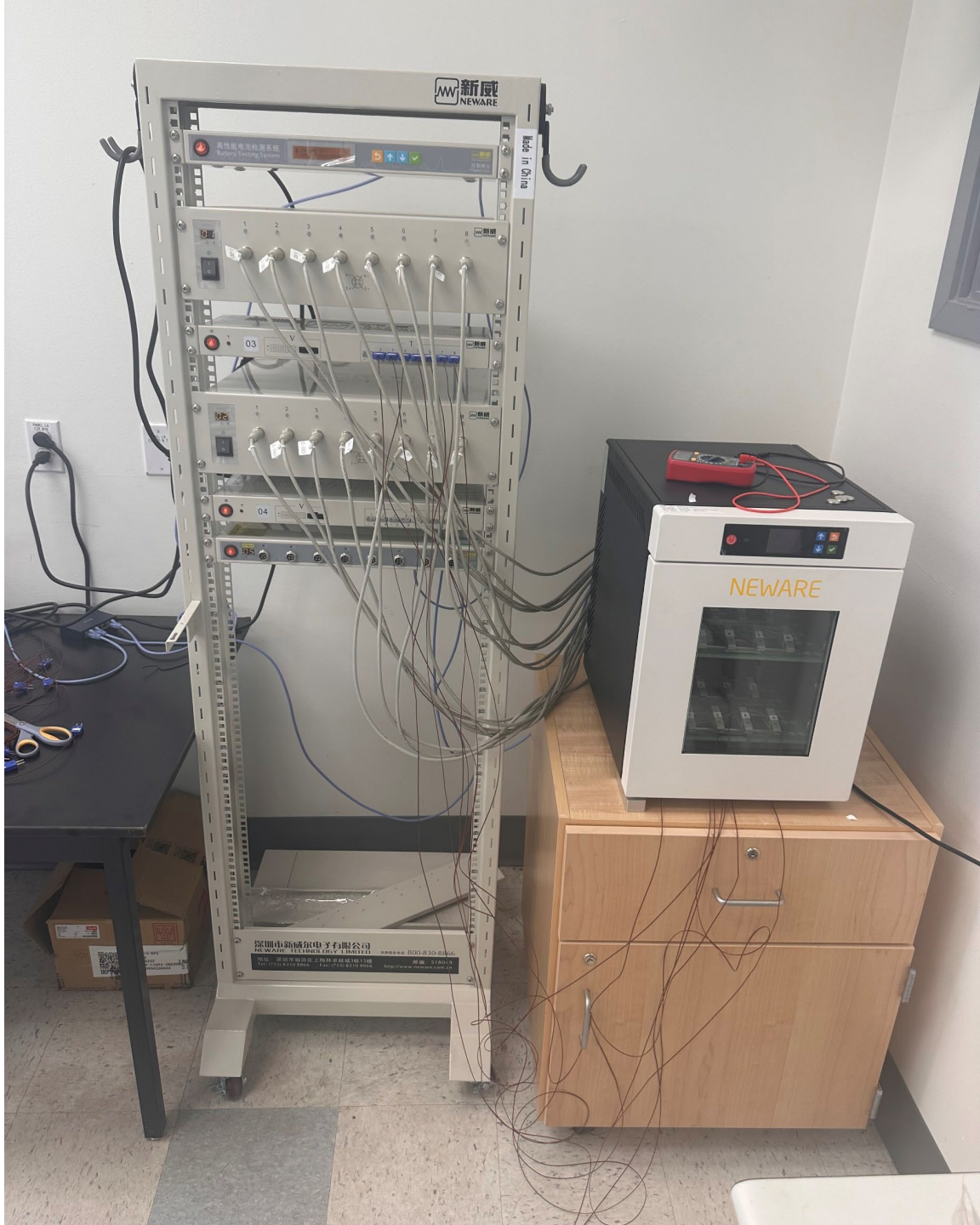
Battery Testing

HALF AND FULL CELL ANALYSIS

- Cycle life
- Coulombic efficiency
- Nucleation overpotential
- In situ EIS

POSTMORTEM ANALYSES

- Materials & Chemical characterization
- SEM / TEM
- XRD



OFFERINGS

Manufacturing

- International manufacturing partnerships 
- Eliminate supply chain uncertainties
  - ✓ Consistent Quality
  - ✓ Reliable Delivery
  - ✓ Streamlined Commercialization

CASE STUDY

Improve Capacity through better metal utilization

Detailed, Cooperatively Created Testing & Iterations

6 Months' Octet Lab Time

Over 75 Additive candidates and combinations explored

Room Temp and 50 °C

RESULTS

$86.5M

POTENTIAL SAVINGS

+20%

ENERGY DENSITY

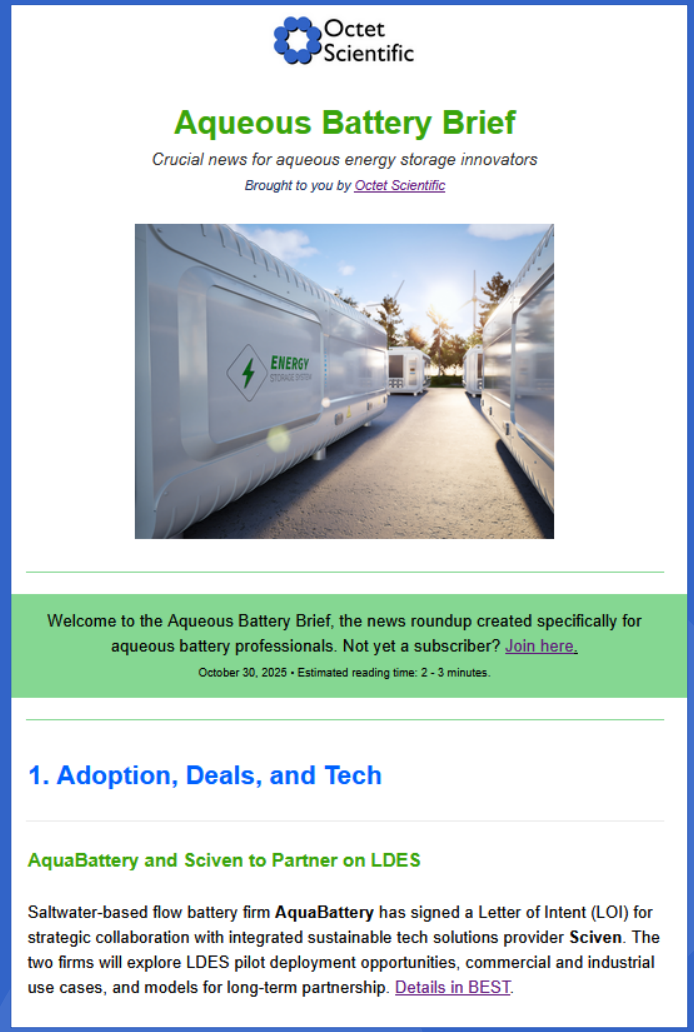
Sufficient material for pre-pilot tests at customer site

Be among the best-informed.

Aqueous Battery Brief

Sign up Now

www.OctetSci.com/Newsletter



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Aqueous Battery Brief

Crucial news for aqueous energy storage innovators

Brought to you by Octet Scientific

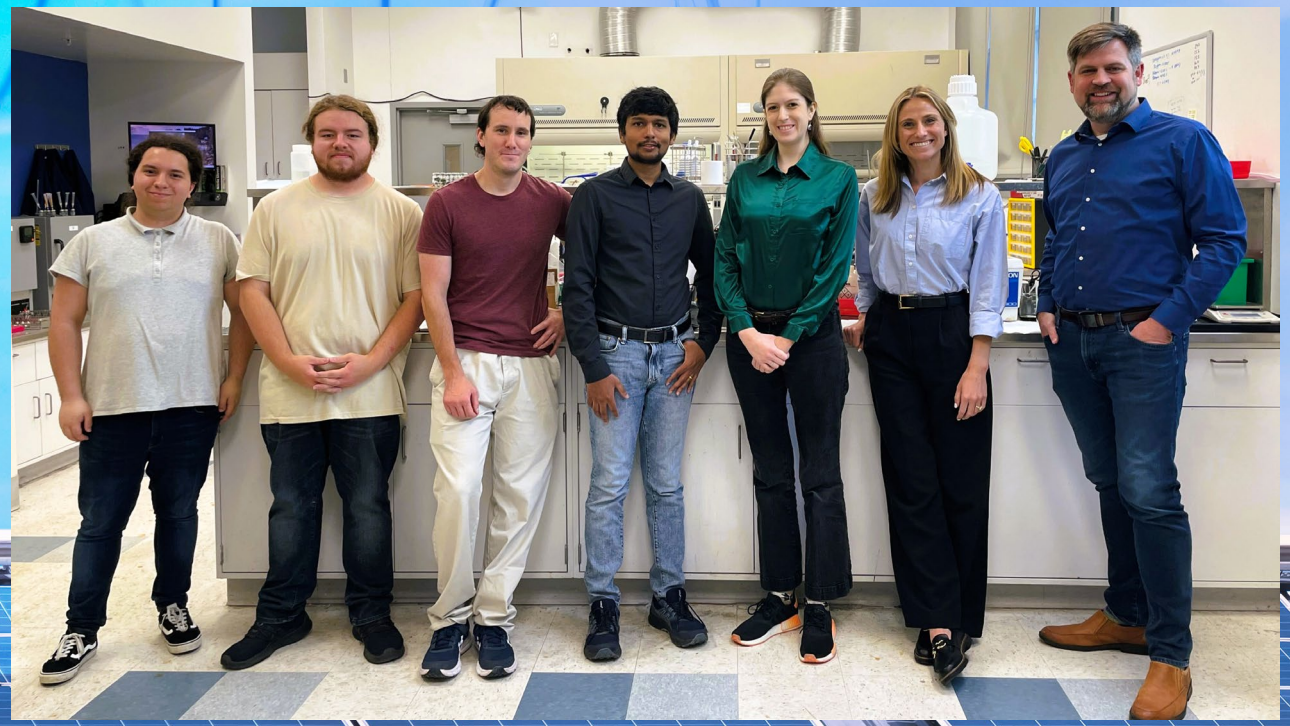
Welcome to the Aqueous Battery Brief, the news roundup created specifically for aqueous battery professionals. Not yet a subscriber? Join here.

October 30, 2025 • Estimated reading time: 2 - 3 minutes.

1. Adoption, Deals, and Tech

AquaBattery and Sciven to Partner on LDES

Saltwater-based flow battery firm **AquaBattery** has signed a Letter of Intent (LOI) for strategic collaboration with integrated sustainable tech solutions provider **Sciven**. The two firms will explore LDES pilot deployment opportunities, commercial and industrial use cases, and models for long-term partnership. Details in BEST.



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Thank you

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