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Gelion plc
("Gelion", the "Company" or the "Group")

Gelion Announces Strong Independent U.S. Validation of NEST™ Battery Technology

U.S. national laboratory independently validates NEST™ performance and exceptional high-power capability

Gelion is seeking to replace the critical minerals in current Lithium-ion battery cathode materials with the Company's Nano-Encapsulated Sulfur (NEST™), a material that is low cost and designed to drop-in to existing global manufacturing lines. Gelion's NEST™ is made from sulfur, which is abundant, mining-free, and free from supply chain constraints.

Gelion (LSE: GELN), the sulfur battery technology company, is pleased to announce strong preliminary results from independent testing of its Nano-Encapsulated Sulfur ("NEST™") Cathode Active Material ("CAM") by National Laboratory of the Rockies ("NLR") under the Cooperative Research and Development Agreement ("CRADA") announced on 30 June 2026. The results confirm reproducibility of Gelion's technology, with cells maintaining 92% of their reference capacity despite a 20-fold increase in cycling rate, supporting progression towards commercial qualification in defence, aerospace and drone applications. NLR is the U.S. Department of Energy's (DOE) primary national laboratory for critical minerals, energy innovation and energy security.

In the first phase of testing, NLR successfully fabricated electrodes from Gelion's NEST™ CAM, assembled coin cells using Gelion's baseline lithium-metal anode platform and independently reproduced key electrochemical characteristics observed in Gelion's own laboratories, demonstrating consistent cell behaviour, effective utilisation of the sulfur cathode material and comparable capacity retention through cycling.

Highlights

- **Independent validation:** NLR fabricated electrodes, assembled cells and reproduced key electrochemical characteristics observed by Gelion.
- **Exceptional high-rate performance:** The NEST™ cells built and tested by NLR retained 92% of their reference capacity despite a 20-fold increase in cycling rate from 0.1C to 2C.
- **Complementary independent validation:** NLR's capacity-retention result stands alongside QinetiQ's earlier demonstration that NEST™ pouch cells support repeated high-power cycling including sustained 3C drone-cruise operation and 6C VTOL pulses. A 6C rate is equivalent to a theoretical full charge or discharge in approximately 10 minutes, highlighting NEST™'s potential for next-generation EVs and other applications requiring rapid charging, high power and repeated cycling .
- **Application relevance:** the combined results support the potential of NEST™ for drones, defence, aerospace and other applications requiring both high energy and high-power delivery.
- **U.S. programme progression:** the results advance the CRADA programme towards pouch-cell prototyping, further validation and the longer-term objective of supporting qualification for U.S. government and defence procurement.

Independent reproduction of NEST™ performance

NLR fabricated electrodes from Gelion's NEST™ CAM and used the electrodes to assemble cells based on Gelion's baseline lithium-metal anode coin cell platform. Testing under standard cycling conditions produced results corresponding with Gelion's internal data, including matching voltage profile, sulfur utilisation and capacity fade.

The significance extends beyond the individual test results. For a cathode material intended for use by third-party manufacturers, performance must be reproduced outside the developer's own facilities. NLR has independently taken Gelion's material through electrode fabrication, cell assembly and testing, providing further evidence of the reproducibility and transferability of NEST™.

The results add to the growing body of testing undertaken through Gelion's laboratories and external programmes involving TDK, QinetiQ and NLR. While the programmes assess different aspects of NEST™, together they broaden the evidence base across multiple testing environments.

High-power performance and application relevance

NLR's testing showed that NEST™ cells retained 92% of the capacity achieved at 0.1C when cycled at 2C, representing a 20-fold increase in cycling rate.

This result provides a quantitative measure of the ability of NESTTM to retain a high proportion of capacity under sustained higher-rate operation.

It complements QinetiQ's application-focused testing of independently built NESTTM lithium-sulfur pouch cells. That programme demonstrated continuous 3C performance representative of drone cruise and repeated 6C pulses representative of VTOL. The drone-representative duty cycle also produced closely aligned voltage profiles over 50 cycles incorporating 6C take-off, 3C cruise and 6C vertical take-off and landing (VTOL) phases.

Progression of the U.S. validation programme

The CRADA is intended to advance NESTTM through materials development, pouch-cell prototyping and further testing at NLR's facility in Golden, Colorado. The next stage of the programme includes the planned development and validation of larger-format commercial pouch-cell prototypes, with the longer-term goal of supporting qualification for U.S. government and defence procurement and the development of domestic U.S. manufacturing capability.

Continued successful progression will move NESTTM from material-level validation towards larger-format cells, further application testing and potential qualification within U.S. supply chains.

Matthew Keyser, Electrochemical Energy Storage lead at NLR, commented, *"These are very encouraging results, demonstrating both the reproducibility and strong high-rate performance of Gelion's NESTTM material. They provide a solid basis for progressing NLR's validation programme and support the broader objective of developing secure U.S. battery supply chains based on domestically available materials and reduced reliance on foreign critical-mineral sources".*

Matt Wood, Gelion CEO, commented, *"We're incredibly pleased with these preliminary results from our program with NLR. Having independent validation of both our internal capacity results and such exceptional rate performance supports the already-strong case for deploying Gelion's NESTTM in applications that require both high energy and high-power delivery, such as drones, defence, and aerospace. It also demonstrates the value of working with a partner as capable and credible as NLR. I am really excited to see where the future phases of our collaboration take us!"*

For more information, please visit [Next-Generation Sulfur Battery Technologies | Gelion](#) or contact:

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Market Abuse Regulation

This announcement contains inside information for the purposes of Article 7 of EU Regulation No. 596/2014, which forms part of United Kingdom domestic law by virtue of the European Union (Withdrawal) Act 2018, as amended.

About Gelion

Gelion plc (LSE: GELN) is an advanced battery materials company developing next-generation cathode technologies for lithium-ion and lithium-sulfur batteries. Its proprietary Nano-Encapsulated Sulfur (NESTTM) cathode active material is designed to replace conventional critical-mineral cathodes with abundant sulfur, delivering higher energy density while remaining compatible with existing battery manufacturing infrastructure.

The Company's strategy is to commercialise NESTTM through partnerships with leading industrial companies and battery manufacturers, enabling adoption within established global supply chains across automotive, defence, device and other high-performance applications. Gelion works with Tier One industrial partners including TDK and Mitsui Kinzoku (Japan), QinetiQ and Nissan (UK), Top 15 Global Automotive Manufacturer, Top 5 Global Automotive Manufacturer, and National Laboratory of the Rockies (NLR) (US), and Max Planck Institute of Colloids and Interfaces (MPI) (Germany).

For more information, visit www.gelion.com

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