Nano One Provides Progress Update on Its Alliance with Worley and Cost Comparison Demonstrating the Case for One-Pot(TM) Enabled LFP Cathode Production

written by Raj Shah | December 4, 2024

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- Detailed pre-license package now being offered to target customers.
- Cost comparison confirms economic advantages of One-Pot process.
- “Design-one-build-many” plant layouts completed.
- Further engineering underway to scale-up and de-risk technology delivery.

Nano One® Materials Corp. (“Nano One” or the “Company”), a clean technology company with a patented process for the low-cost, low-greenhouse gas (GHG) production of lithium-ion battery cathode active materials (CAM), is pleased to report on the progress of the Worley Chemetics – Nano One Strategic Alliance (“Alliance”), including a jointly conducted cost comparison confirming the economic advantages of Nano One’s patented One-Pot™ process for lithium iron phosphate (LFP). In addition, the preliminary design and full-scale layout of the modular “design-one-build-many” plant is complete and being marketed with the

cost comparison study to prospective clients.



Figure 1. Preliminary design and layout of the modular One-Pot-enabled LFP cathode production line.
Image Source: Worley and Nano One.

The comparative analysis showed that One-Pot could enable at least 30% lower costs in total invested capital and up to 30% lower operational costs, using up to 80% less energy than the incumbent method. One-Pot also eliminates sodium sulphate wastewater and as reported on December 6, 2023, could use up to 80% less process water and reduce GHG emissions by up to 50% depending on energy sources and jurisdiction.

Laura Leonard, Worley Group President of Technology Solutions, said, *"As we continue marketing the One-Pot process, it's compelling to see data demonstrating our competitive edge. We are working collaboratively with Nano One on initial sales efforts while developing a detailed LFP CAM technology package for potential licensees. Nothing is more validating than the interest we are seeing from our mature customer base."*

The benefits of One-Pot mainly attribute to the elimination of the iron and phosphate precursor steps (pCAM) by integrating them with the lithium addition step (CAM), high efficiency thermal processing and the elimination of sodium sulphate wastewater. These factors reduce complexity, costs, footprint and energy consumption and are a credible benchmark for sustainable, scalable and highly competitive CAM production with facilities that should be easier to site, permit, construct and operate.

The Strategic Alliance has also completed a layout of the modular plant with operability and maintainability in mind and is accelerating engineering and qualification of vendor equipment to complete the LFP CAM Technology Package and support customer ambitions in this market. Worley Chemetics, a wholly owned subsidiary of Worley, who develop, design, fabricate and sell chemical processing technology packages globally, has had 60 years of proven success with this approach.

Nano One CEO Dan Blondal said, *“The economic rationale and business case for licensing One-Pot enabled LFP CAM technology packages are rapidly coming together due in part to Worley’s industry-leading expertise and Nano One’s advanced work on LFP. The Alliance is increasingly well positioned to provide a leading, cost-competitive and environmentally focused solution for the production of LFP.”*

The analysis estimated and compared the cost of two 25,000 tonne per annum (tpa) North American CAM production facilities that convert iron, phosphate and lithium sources into LFP, one enabled with One-Pot technology from Nano One, and the other using incumbent high-volume production technology from China. The operating and capital cost estimates of the incumbent technology were done to a Class 5 level in accordance with the Association for the Advancement of Cost Engineering (AACE) and

included the treatment of sodium sulphate wastewater in North America. Comparisons were made with Nano One's One-Pot process from a previously completed FEL-2 pre-feasibility study and an ongoing FEL-3 feasibility study. Nano One and Worley are confident with the cost estimates which are based on equipment quotes from various major vendors, installation factors, indirect costs, and best practices in engineering, procurement and construction management (EPCM). The specifics on the analysis are commercially sensitive and are being held in confidence so they may be leveraged effectively by the Alliance in marketing and technology licensing discussions with potential customers.

Background

Worley and Nano One entered into a Strategic Alliance Agreement and a License Agreement on May 2, 2024, and are jointly developing, marketing and licensing a process engineering design package (CAM Package) to produce LFP CAM. The CAM Package incorporates Nano One's patented One-Pot processing technology and reduces cost, energy intensity, GHG emissions, and permitting risk by reducing process complexity and eliminating sodium sulphate wastewater.

Nano One made a pivotal acquisition in Q4 2022 of North America's only LFP production facility in Candiac, Québec and has integrated its highly experienced team. This led to transformative strategic partnerships with Rio Tinto, Sumitomo Metal Mining and Worley.

The Candiac facility is crucial for providing target end customers and licensees with samples for qualification and is serving as a launchpad for Nano One and Worley's "design-one-build-many" licensing growth strategy. Capacity expansion at the plant is supported in part by a US$12.9M award from the US

Department of Defense, as announced on September 26, 2004, while the design and construction of proprietary equipment are being supported in part by a C$2.8M award from Next Generation Manufacturing Canada (NGen), as announced on August 13, 2024.

Explore more about Nano One's sustainable One-Pot process and its environmental benefits at nanoone.ca/technology.

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About Worley

Worley is a global professional services company of energy, chemicals and resources experts. We partner with customers to deliver projects and create value over the life of their assets. We're bridging two worlds, moving towards more sustainable energy sources, while helping to provide the energy, chemicals and resources needed now. Worley Limited is headquartered in Australia and listed on the Australian Securities Exchange (ASX: WOR).

About Nano One®

Nano One® Materials Corp. (Nano One) is a clean technology company changing how the world makes cathode active materials for lithium-ion batteries. Applications include electric vehicles (EVs), stationary energy storage systems (ESS), and consumer electronics. The Company's patented One-Pot process reduces costs, carbon intensity (lower GHGs), environmental footprint, and reliance on problematic supply chains. Scalability is proven and being demonstrated at Nano One's LFP (lithium-iron-phosphate) pilot production plant in Québec-the only facility and expertise of its kind outside of Asia. Strategic collaborations and partnerships with international companies like Sumitomo Metal Mining, Rio Tinto, and Worley are

supporting a global growth strategy via technology licensing and joint ventures. Nano One has received funding from the Government of Canada, the Government of the United States and the Government of British Columbia. The company is leveraging deep industry expertise and plans to license and deploy cleaner cathode manufacturing plant design packages-delivering cost-competitive and faster-to-market battery materials solutions world-wide.

For more information, please visit **nanoOne.ca**

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Cautionary Notes and Forward-Looking Statements

Certain information contained herein may constitute "forward-looking information" and "forward-looking statements" within the meaning of applicable securities legislation. All statements, other than statements of historical fact, are forward-looking statements. Forward-looking information in this news release includes but is not limited to: the success of the Alliance, streamlining operations, LFP production, joint ventures, contracted projects, revenue generation, operational growth, licensing, offtakes, capacity expansion through use of funding from the Department of Defense, funding from Sustainable Development Technology Canada, the development of technology, supply chains, and plans for construction and operation of cathode production facilities and Development Project; the Company's current and future business and strategies; estimated future working capital, funds available, and uses of funds, future capital expenditures and other expenses for commercial operations; industry demand; incurrence of costs; competitive

conditions; general economic conditions; the intention to grow the business, operations and potential activities of the Company; the functions and intended benefits of Nano One's technology and products; the development and optimization of the Company's technology and products; prospective partnerships and the anticipated benefits of the Company's partnerships; the Company's licensing and, the scalability of developed technology to meet expanded capacity; and the execution of the Company's stated plans – which are contingent on access to capital and grants. Generally, forward-looking information can be identified by the use of terminology such as 'believe', 'expect', 'anticipate', 'plan', 'intend', 'continue', 'estimate', 'may', 'will', 'should', 'ongoing', 'target', 'goal', 'potential' or variations of such words and phrases or statements that certain actions, events or results "will" occur. Forward-looking statements are based on the current opinions and estimates of management as of the date such statements are made are not, and cannot be, a guarantee of future results or events. Forward-looking statements are subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of the Company to be materially different from those expressed or implied by such forward-looking statements or forward-looking information, including but not limited to: general and global economic and regulatory changes; next steps and timely execution of the Company's business plans; the development of technology, supply chains, and plans for construction and operation of cathode production facilities; successful current or future collaborations that may happen with OEM's, miners or others; the execution of the Company's plans which are contingent on support and grants; the Company's ability to achieve its stated goals; the commercialization of the Company's technology and patents via license, joint venture and independent production; anticipated global demand and projected growth for LFP

batteries; and other risk factors as identified in Nano One's MD&A and its Annual Information Form dated March 27, 2024, both for the year ended December 31, 2023, and in recent securities filings for the Company which are available at www.sedarplus.ca. Although management of the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking statements or forward-looking information, there may be other factors that cause results not to be as anticipated, estimated or intended. There can be no assurance that such statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements and forward-looking information. The Company does not undertake any obligation to update any forward-looking statements or forward-looking information that is incorporated by reference herein, except as required by applicable securities laws. Investors should not place undue reliance on forward-looking statements.