
INVESTIGATIVE RESEARCH REPORT

Nano One Materials & LG Energy Solution

A Silent Partnership? Evidence, Timelines and Strategic Analysis

Version 3.3 · Updated August 2026

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TSX: NANO | OTC: NNOMF | Frankfurt: LBMB

This document was prepared based exclusively on publicly available sources and is intended solely for informational purposes. It does not constitute investment advice. All conclusions and interpretations are working hypotheses and are not established facts. No official confirmation of a collaboration between Nano One Materials Corp. and LG Energy Solution / LG Chem exists at the time of writing.

1. Executive Summary

This analysis examines, based exclusively on publicly available sources, whether a silent, long-term strategic collaboration exists between Canadian cleantech company Nano One Materials Corp. (TSX: NANO) and South Korean battery giant LG Energy Solution / LG Chem. The research was built over several months through an investigative process. The result is a remarkably dense chain of circumstantial evidence spanning several independent areas.

CONFIRMED

LG Chem mass production of LPF (precursor-free) cathode material confirmed as of H1 2025. Nano One + Worley ISBL engineering package complete H1 2026. Korean Patent KR 10-2791544 (Nano One M2CAM NMC, sulphate-free) granted April 2025 — in LG's home market. Nano One–Worley alliance signed May 2024 (up to 20 years). LG Energy Solution signed a further LFP cathode supply deal with China's Lopal Tech worth >5 trillion won (up to 27 billion yuan), reported 10 August 2026.

Source: Nano One Corporate Update 2026; LG Chem InterBattery 2025; KIPO; The Elec, 10 Aug 2026

ANALYTICAL ASSESSMENT

All publicly known criteria of the anonymous JDA partner (Aug. 2020) match LG Chem. LG's LFP process deficit (wastewater, sulphate, conventional kilns) makes Nano One's One-Pot attractive for *new* plants via the ISBL package (H1 2026). Pulead termination (Nov. 2021) coincided with the anonymous JDA timeline. Seoul trade missions 2022 and 2024: Nano One and LG at the same table at the highest political level. The Lopal deal shows LG running a two-track LFP strategy — Chinese mass supply now, a Western FEOC-free option in preparation — not a retreat from China.

Source: Nano One press releases; canada.ca; ImportGenius; The Elec 10 Aug 2026

THESIS / SPECULATION

LG is the anonymous 2020 JDA partner (leading candidate; see Appendix A). Commercial licensing of One-Pot: Medium — Korean patent, Worley alliance and Candiatic scaling point to it, but LG is meeting its *current* LFP demand through Chinese suppliers. The most defensible framing is no longer "LG needs One-Pot now" but "One-Pot is LG's FEOC-hedging option, whose relevance rises with every tightening of §45X / PFE / MACR rules." Nano One as a direct LFP supplier to NextStar/Windsor: Low–Medium.

2. LG's Two-Track LFP Strategy — the Leading Read

The single most important update since v3.2 is a supply agreement that, at first glance, appears to undercut this report's thesis — and on closer reading, reframes it more defensibly. On 10 August 2026 it was reported that LG Energy Solution signed a further large LFP cathode supply deal with China's Lopal Tech. Rather than explain this away, this section places it at the centre of the analysis, because it reveals the actual shape of LG's LFP strategy: two parallel tracks that do not contradict each other but are staggered in time.

Track 1 — Chinese mass supply · CONFIRMED, operating now

- Lopal Tech (Jiangsu): LFP cathode purchase of >5 trillion won / up to 27 billion yuan; three-year contract 1 Jan 2026 – 31 Dec 2028; annual cap 9 billion yuan (The Elec, 10 Aug 2026).
- Reciprocal leg: LG *supplies* Lopal with lithium carbonate and other feedstocks (cap 6 billion yuan/yr, 18 billion total) — a toll-conversion structure: LG provides the raw materials, the Chinese partner provides the process technology.
- Builds on the Changzhou Liyuan supply contracts (160 kt Feb 2024, 260 kt Dec 2024) and LG's 20% stake in the Indonesian subsidiary PT LBM (Feb 2025).
- Character: low-cost, fast, process-conventional (sulphate, wastewater), and — via the toll structure and the North-American destination — FEOC-exposed.

Track 2 — Western clean supply · THESIS, in the starting blocks

- Nano One One-Pot via the completed Worley ISBL licence package (25,000 tpa LFP design, complete H1 2026): FEOC-free, sulphate-free, wastewater eliminated.
- Candiak ramping (pilot ~200 tpa; ~800 tpa demonstration target H1 2027); Sumitomo invested; Rio Tinto iron and lithium available as feedstock.
- Not yet an established LG decision — but an option that is engineered, permitted-ready and deployable through a single turnkey package.

ANALYTICAL ASSESSMENT

More than 80% of LG's LFP battery capacity sits in North America, so a substantial part of the Lopal material is expected to be supplied there. That is precisely where the tension lies: LG is covering immediate North-American ESS demand with Chinese-processed cathode *now*, while the clean, FEOC-free route stands ready but unused. The two tracks are not rivals in LG's planning; they answer different time horizons — cost and speed today, regulatory resilience tomorrow. This is the honest form of the licensing thesis: One-Pot is not LG's primary LFP strategy, it is the hedge.

Source: The Elec, 10 Aug 2026; Nano One Corporate Update 2026

THESIS / SPECULATION

Framed as an image: cheap, "dirty" LFP runs at volume through the Chinese track, while a clean supply chain via Nano One stands in the starting blocks. This is an analytical framing by the author, not a claim of an existing LG–Nano One contract. Its strength is that it survives the obvious counter-attack — "but LG keeps buying in China" — because the framing predicts exactly that.

3. The FEOC Status — Not Conclusively Resolved

The pivot of the whole two-track logic is a single, deliberately un-resolved question: is the Chinese/Indonesian LFP route eligible under the U.S. clean-vehicle and manufacturing-credit framework (§45X, and the Prohibited Foreign Entity / Material Assistance Cost Ratio tests that replaced the earlier §30D regime)? This report does not assert an answer, because the primary documents do not settle it.

CONFIRMED

The Lopal contract does not disclose shipment volumes or delivery regions. Jiangsu Lopal is a China-organised entity; the LG–LBM shareholder agreement (SSE Announcement 2025-021, 22 Feb 2025) contains a FEOC-triggered put option with a cure mechanism, a 10% U.S.-tariff-differential termination right, an offtake-linked put, and a supply-failure exit — i.e. the parties contractually anticipated FEOC/eligibility risk.

Source: *The Elec* 10 Aug 2026; SSE Announcement 2025-021 (Shanghai Stock Exchange / *cninfo*)

ANALYTICAL ASSESSMENT

The toll-conversion structure (LG-supplied lithium, China-supplied process) and the Indonesian/Chinese production base make the route not demonstrably FEOC-compliant for the North-American market — but also not demonstrably disqualified: the underlying contracts are not public and the IRS guidance is still moving. This report treats the eligibility question as legally unresolved rather than decided in either direction.

THESIS / SPECULATION

It is exactly this *unresolvedness* that is the strategic opening for Track 2. As long as FEOC eligibility of the Chinese route is open, a clean parallel source is not a luxury but a rational hedge — and its value increases with every tightening of the rules. The report does not claim the Chinese route is illegal; it claims the FEOC status is open, and that this openness is what makes the clean supply chain worth building.

4. The Anonymous JDA of August 2020 — the Origin

On 10 August 2020, Nano One announced a Joint Development Agreement (JDA) with an Asian cathode producer that deliberately remained anonymous. The publicly stated criteria of that partner are the backbone of the LG hypothesis.

Criterion	Nano One's stated requirement	Does LG Chem fit?
Origin	Asian, outside China	Yes — South Korean
Company size	Multi-billion-dollar corporation	Yes — global battery giant
Focus material	LNMO (high-voltage spinel)	Yes — LNMO patents since 2012
Anonymity	Competitive protection	Yes — consistent with LG culture
Technology area	One-Pot for LNMO	Yes — LPF precursor-free since 2025
Alternative: Sumitomo?	Would need LNMO focus	No — no LNMO research

CONFIRMED

JDA phase progression: August 2020 — JDA signed (LNMO, outside China, anonymous partner). April 2021 — Phases 1 and 2 successfully completed and validated by both parties. Next steps: scaling, economic analysis, commercialisation planning.

Source: Nano One press release, 10 Aug 2020; Nano One update April 2021

ANALYTICAL ASSESSMENT

LG Chem holds LNMO electrode patents since 2012 (e.g. US 9,780,359 B2, transferred to LG Energy Solution in 2021) and the world's largest LMR portfolio (200+ patents, first filed 2010). Sumitomo Metal Mining — the other plausible candidate — has no demonstrable LNMO research, which removes it as the 2020 partner and strengthens the LG reading. A fuller candidate screen is in Appendix A.

Source: USPTO; LG Chem / LG Energy Solution filings

5. Technological Convergence — One-Pot and LPF

LG Chem states it began precursor-free LPF development in 2023 "at customer request" — to reduce dependency on the Chinese-dominated precursor chain. Nano One's One-Pot and LG's LPF share the same fundamental architecture (direct synthesis from metal feedstocks, no separate precursor stage), but differ on completeness.

Feature	Nano One One-Pot	LG Chem LPF
No precursor stage	Yes — direct from metal salts	Yes — direct from metals
Wastewater	Eliminated	Reduced, not eliminated
Sulphate byproduct	Eliminated (oxalate path)	Still present
CO2 footprint	Up to 50–60% lower (quantified)	"Substantially reduced"
Process patent	52 granted / 54 pending	No LPF process patent found

ANALYTICAL ASSESSMENT

The sequence — Nano One's One-Pot JDA (2020–2021), then LG announces precursor-free technology (2023), then LG starts mass production (March 2025) — is consistent with building on an existing technological foundation. LG developed LPF in roughly 19 months; conventional cathode-process development typically takes 3–5 years. The remaining gap is completeness: LPF still carries sulphate and residual wastewater; One-Pot removes both. That gap is the market the Worley ISBL package is built for.

Source: Hankyung (Korea) Aug 2023; LG Chem InterBattery 2025; Nano One patents WO2018132903A1, US 12,319,590 B2

6. Realistic Scenarios — Recalibrated

A critical detail unchanged since earlier versions: LG's retooled or newly planned plants are without exception cell plants — they purchase cathode material as feedstock; they do not produce cathode. Against LG's North-American ESS cathode demand, Cadiac's pilot (~200 tpa) and demonstration target (~800 tpa, H1 2027) cannot make Nano One a direct mass supplier in the foreseeable future. The scenarios below are therefore about *technology*, not tonnage.

THESIS / SPECULATION

1. Technology licensing (2026–2028, most probable of the three, conditional on the partnership hypothesis). LG licenses One-Pot via the ISBL package and builds its own large-scale FEOC-free LFP cathode plant (Morocco, Korea or USA). Nano One earns licence fees. This is the natural Track-2 realisation and does not conflict with the Lopal supply on Track 1.
2. Qualification supplier (possibly already under way). Nano One's pilot line supplies A/B/C sample material into LG's qualification process.
3. LMR technology partner (pre-production end 2027, mass 2028). One-Pot LNMO/LMR expertise for the LG + GM Ultium LMR programme — the chemistry of the 2020 JDA.

ANALYTICAL ASSESSMENT

The Lopal deal lowers the *urgency* of Scenario 1 for ESS/LFP — LG has secured near-term volume — without removing its *logic*: the toll structure keeps the FEOC question open, so the FEOC-free option retains strategic value and gains value with each regulatory tightening. Probability of near-term commercial licensing is therefore held at Medium; Nano One as a direct LFP supplier to NextStar/Windsor is lowered to Low–Medium.

7. Master Timeline — Updated Tail

Date	Event	Relevance
Aug 2020	Anonymous JDA: Asian producer outside China (LNMO)	LG hypothesis core
Apr 2021	Anonymous JDA: phases 1 & 2 validated	Hypothesis strengthened
Nov 2021	Nano One terminates Pulead; pivot to NA/Europe	Strategic pivot
Nov 2022	JMBM Cadiac acquired (LG was JMBM customer)	Direct LG connection
Aug 2023	LG Chem announces precursor-free LPF	Convergent architecture
Sep 2023	Nano One + Sumitomo: JDA + CAD 16.9M	Sumitomo ruled out as 2020 partner
May 2024	Nano One + Worley: alliance + licence (20 yr)	Commercialisation
Feb 2025	LG takes 20% of PT LBM (Indonesia); FEOC put	Track 1 / FEOC hedge
Mar 2025	LG Chem LPF mass production (sulphate remains)	One-Pot = clean upgrade
Apr 2025	Korean patent KR 10-2791544 (M2CAM, sulphate-free)	Protection in LG home mkt
Jun 2025	Worley ISBL FEL-2 package complete	Track 2 deployable
Aug 2025	Proprietary agitator, 20,000 L reactor (DoD-funded)	Scaling platform
10 Aug 2026	LGES–Lopal LFP deal >5 tn won (toll structure)	Track 1 confirmed; two-track read
2027–28	LG + GM: LMR cell mass production (USA) planned	Scenario 3 relevant

8. What Changed in Versions 3.1 - 3.3

v3.1

Integrated the LG–Lopal Indonesia transaction (20% PT LBM stake, FEOC-triggered put). Added a "LG's revealed LFP sourcing strategy" passage; introduced the two-sided reading (against the licensing thesis: LG covers global LFP volume cheaply in China; for it: the FEOC put is a contractual acknowledgement of a North-American eligibility gap). Lowered "Nano One as LFP supplier to NextStar/Windsor" to Low–Medium.

v3.2

Rebuilt the Lopal chapter from the primary SSE Announcement 2025-021: FEOC put with cure mechanism and price ladder, 10% tariff-differential termination right, offtake-linked put, supply-failure exit, side-letter guarantee. Withdrew the earlier over-strong "contractually cannot serve" wording with credit. Re-based the FEOC chapter on the post-OBBA §45X / PFE / MACR framework (§30D regime ended) and flagged that it is not presented as legally decided. Added Appendix A (JDA candidate screen; only LG passes all criteria) and recalibrated the probability table.

v3.3 (this version)

Added the confirmed LGES–Lopal supply deal (The Elec, 10 August 2026) and made LG's two-track LFP strategy the leading read (Section 2). Reframed the FEOC status explicitly as not conclusively resolved — neither confirmed nor refuted (Section 3). De-escalated the licensing urgency from "LG needs One-Pot" to "One-Pot is the FEOC-hedging option whose relevance rises with every FEOC tightening." Added the 10 Aug 2026 timeline row and this changelog entry.

ANALYTICAL ASSESSMENT

A note on sourcing discipline for this version: a widely circulated commentary framing (the "use China's cheap batteries and build value on top" argument) is a general U.S.-industrial-strategy thesis about leapfrog-versus-copy-paste; it does not name Nano One and is not used here as evidence for LG's two-track LFP sourcing. The two-track reading in this report rests solely on the confirmed Lopal deal and the open FEOC status, not on third-party commentary.

Appendix A. JDA Candidate Screen

The anonymous 2020 partner had to be an Asian, non-Chinese, multi-billion-dollar cathode producer with an LNMO focus and a culture of anonymity. Screened against that profile:

Candidate	LNMO focus?	Verdict
LG Chem / LGES	Yes — patents since 2012	Passes all criteria — leading candidate
Sumitomo Metal Mining	No	Fails — NCA/solid-state, no LNMO
POSCO Future M	Not evidenced	Weak — no LNMO signal
EcoPro BM	Not evidenced	Weak — high-nickel focus
L&F	Not evidenced	Weak — high-nickel focus
Nichia	No	Fails — no LNMO cathode line
Mitsubishi Chemical	Not evidenced	Weak

THESIS / SPECULATION

LG is the leading candidate rather than a proven one: it is the only screened entity meeting every stated criterion. This is a probabilistic conclusion from public criteria plus ImportGenius customs data and the Seoul missions — not an established fact, and no official confirmation exists.

Falsification Criteria

This thesis would be weakened or refuted by: (1) publication of an LG LPF patent using fundamentally different, non-oxalate chemistry that demonstrably avoids Nano One's IP; (2) an official LG announcement sourcing cathode technology from a different Western supplier; (3) LG scaling its own LPF internally to full FEOC-free LFP without external process IP; (4) a durable political softening of the §45X / PFE / MACR regime that removes the FEOC anchor for a clean parallel source; (5) faster delivery of qualified FEOC-free western LFP cathode by L&F / EcoPro / Aleees, closing the window before Nano One. As long as none of these fires, the two-track reading holds.

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