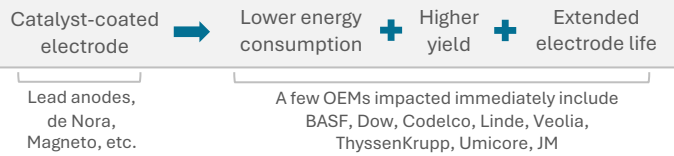


1. Catalyst discovery has immense potential but remains physically stuck.

Catalysts – specially-engineered chemical compounds – are **coated onto electrodes** to make specific chemical reactions happen efficiently, at scale, and at industrial speed. In other words, catalysts allow the world's largest industries to **produce more with less**.



Despite these incentives, **no improved or new electrochemical catalyst family has reached commercial scale since the 1960s**, while pharmaceutical drug discovery has thrived for decades — both fields rooted in the same inorganic chemistry. **Two reasons why:**

- 1) The Discovery Problem**
The catalyst design space, exceeding **10²⁰** combinations, is **far too vast** for human-led discovery efforts.
- 2) The Validation Problem**
Traditional coating methods, needing **2-3 days** per candidate, are **too slow and expensive** for testing feedback to scale.

2. The existing value chain is ineffectively slow...

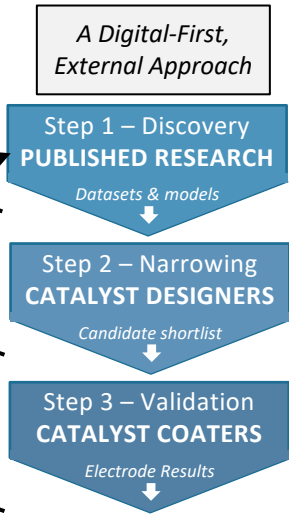
Existing catalyst design platforms prioritize AI first, physical coating second.

AI models search published data that lack breadth and contain errors, corrupting input before candidate design ever begins.

Catalyst designers like CuspAI and Lila Sciences are **held hostage** by their validators' **contract terms, turnaround capacity, and cost of proprietary information**.

Catalyst validators like de Nora and Magneto complete the coating process in **2-3 days, an ineffectively slow feedback loop** for testing the right candidates at scale.

A disconnect in discovery and validation creates a feedback loop that is victim to the slowest partner: the catalyst coater.



3. ... because the industry's focus is AI-centric.

Catalyst discovery is **attracting serious capital** because artificial intelligence has opened a **new frontier** for breaking into the nearly endless combinations of catalyst innovation that could create **immense industrial impact**.

Company	Total Raised	Valuation
Cusp.AI	\$216M	~\$800M
Lila Sciences, Inc.	\$550M	~\$1.3B

The challenge, however, is turning extensive and flawed data sets and AI predictions into **real, industrial-scale electrodes fast enough** for the model to learn and improve and repeat the process.

- 1) Discovery = Partially Solved
- 2) Validation = The Problem

AI-first models accelerate the search with powerful compute but **cannot close the loop**; because discovery and validation are inextricably connected, accelerating one without solving the other only **creates a backlog** of candidates waiting to be tested and looped back.

An AI-first catalyst platform, no matter its compute power, cannot effectively identify and test its catalyst candidates because the physical bottleneck – coating speed – remains.

4. Jolt's catalyst discovery model, JoltLab, solves the disconnect through Sparkfuzé's production speed

ICIQ/Jolt Model: 2017 - 2026

Nine years proprietary solution combustion data from ICIQ and Jolt. No data corruption. No outside access.

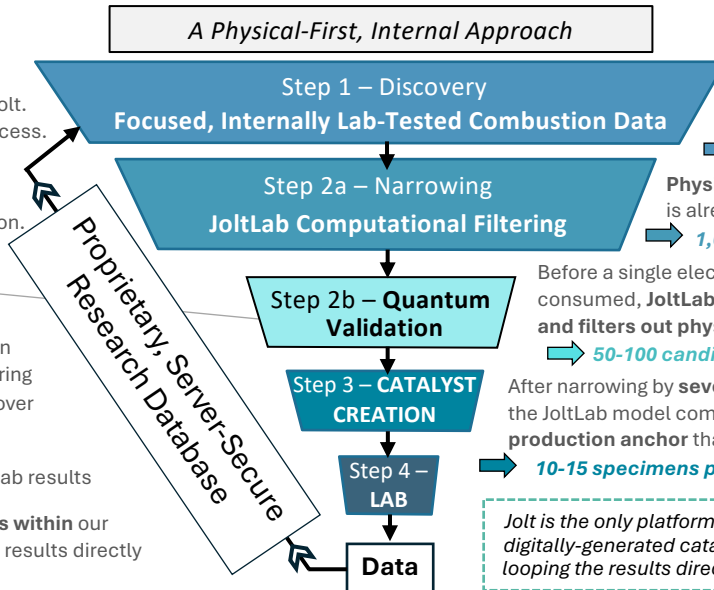
Candidates are generated and filtered internally by JoltLab. **No external handoff**. No IP negotiation. No waiting on partner capacity.

*Quantum validation capability in development

Sparkfuzé coats each candidate in **one minute, not 2-3 days**, delivering a **200:1 speed advantage** over competing wet labs.

Faster catalyst creation → more lab results

Lab-validated **catalyst data stays within** our proprietary database, looping the results directly back into our discovery engine.



JoltLab Model: 2026 -

A **reinforcement learning (RL) swarm** searches the **complete 10²⁰** space of catalysts with 1,500 parallel agents.

→ **100,000 candidates per second**

Physics-informed models eliminate what is already known to fail.

→ **1,000 candidates per second**

Before a single electrode is coated or lab time/budget is consumed, **JoltLab simulates atomic level performance and filters out physical failures** via quantum validation.

→ **50-100 candidates per day – the key physical filter**

After narrowing by **seven orders of magnitude** every cycle, the JoltLab model compounds via Sparkfuzé, **the physical production anchor** that no competitor can replicate.

→ **10-15 specimens per week – testing only the best**

Jolt is the only platform that immediately reproduces digitally-generated catalyst candidates in the real world, looping the results directly back into our discovery engine.