



HALF-YEAR UPDATE

23 FEBRUARY 2018



*accelerating the global development and adoption of Lithium Ion Battery technologies
for a cleaner energy future*

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NOVONIX HALF-YEAR HIGHLIGHTS

- **On-track for execution of strategy** to deliver the world's highest-performance battery anode materials and battery testing technology
- **Pilot manufacturing plant now operating** and our first product is looking very good
- **Strong sales growth** for battery testing services (BTS), 5X bigger building & staffing-up
- **Strengthening of the Board** with Admiral Robert Natter and pending appointment of Andrew Liveris, AO
- **A\$5m in placements** undertaken, including A\$1m from Mr Liveris and Admiral Natter
- **Strengthening of the balance sheet** with 100% early conversion of A\$16.1m loan notes
- **Strong growth and outlook** for the global Lithium Ion Battery market

First high-purity graphite anode material produced at the PUREgraphite pilot plant in USA is exhibiting results that exceed competitors' products and our expectations

- Physical characteristics of product from the Pilot Plant are the best we have seen of any material
- Electrochemical testing underway
- expected to be very good

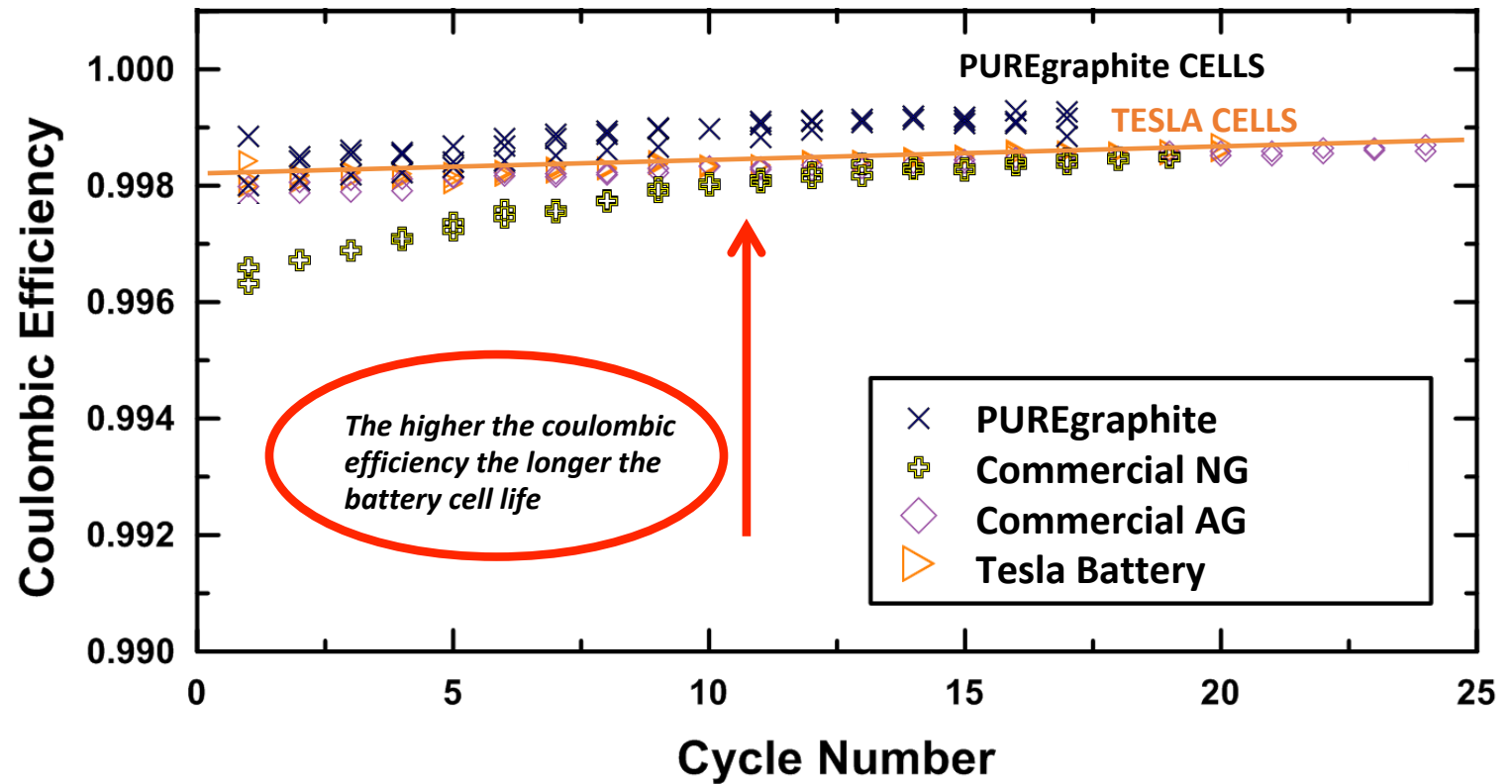


Image: Furnace Section of PUREgraphite Pilot Plant, Chattanooga, Tennessee, USA

PUREgraphite anode material exceeding benchmarks

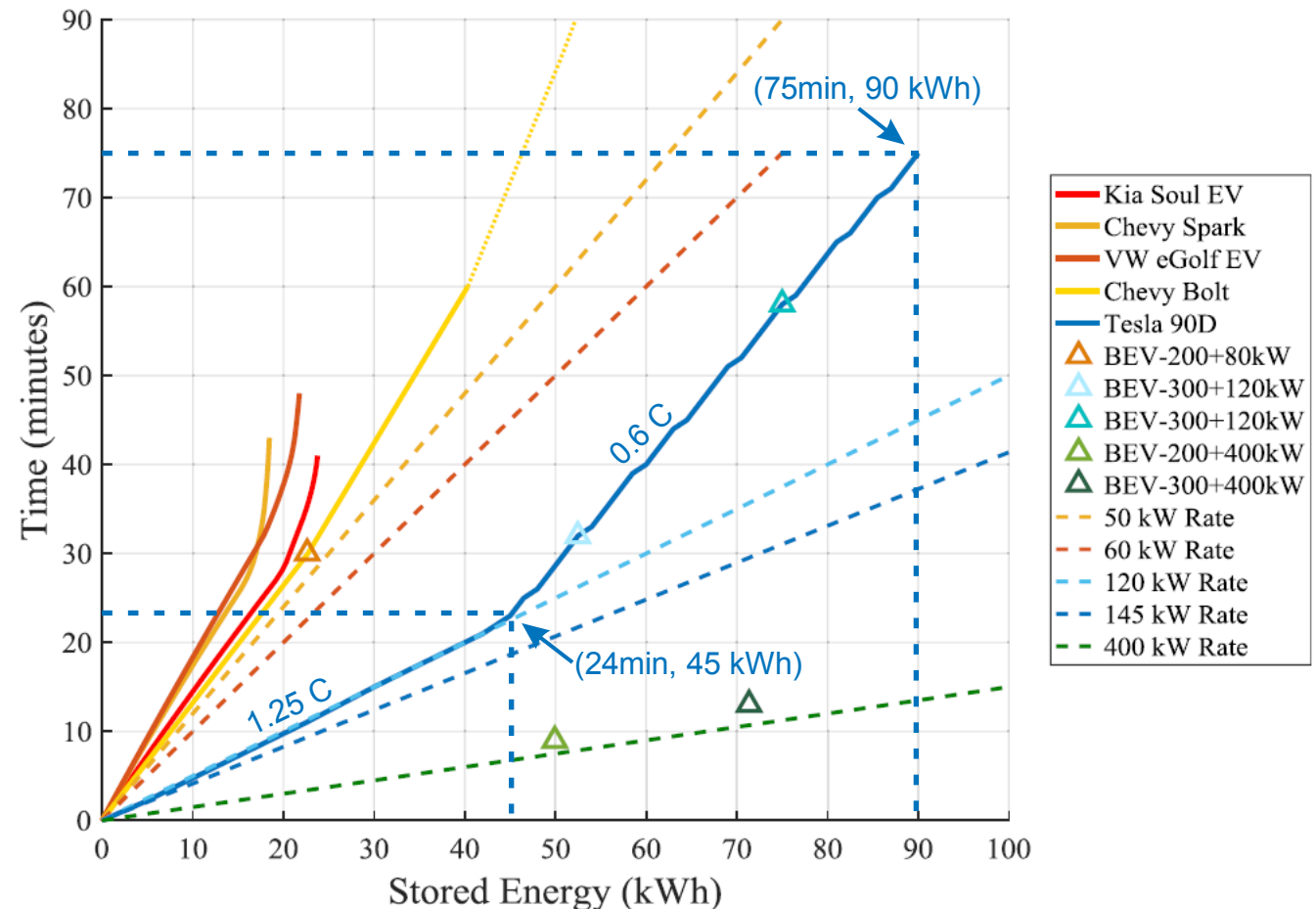
PUREgraphite's high-performance anode material:

- consistently demonstrating very high electrochemical performance above benchmarks for commercially-available natural and artificial graphite anode materials, and
- exceeds performance of what we regard as the industry best benchmark - PANASONIC/TESLA EV cell (sourced from the vehicle)



PUREgraphite now focused on Extreme Fast Charging (XFC)

- Charge rates for all EV batteries is a major issue today for the industry
- Graphite is a critical factor in achieving maximum charge rate
- Fast charging is restricted **by lithium plating** on graphite anode electrode, resulting in rapid capacity loss
- Thinner electrodes can be used to address the problem, but with 2X increase in cost and 2X decrease in volumetric energy density, this will not solve the EV challenge
- PUREgraphite now focused on optimizing graphite anode materials for **XFC**



PUREgraphite has expertise and IP in both artificial graphite (AG) and natural graphite (NG) anode materials, now biased to artificial graphite – why?

- Our extensive research shows that AG consistently and significantly outperforms NG in terms of electrochemical efficiency (cell life)
- Battery cell life is paramount for EV and ESS markets (as opposed to consumer electronics)
- NG consistently and marginally outperforms AG in capacity (energy density)
- A blend of AG and NG can optimise performance characteristics but overall our view is that there will be a bias to AG for battery life and safety benefits for EV and ESS
- PUREgraphite IP and capability across both AG and NG is a strength aligned with industry trends for Electric Vehicles (EV) and Energy Storage Systems (ESS)

Note: Artificial graphite (AG), also known as synthetic graphite, is manufactured from petroleum feedstock whereas natural graphite is extracted from the earth (mining activity)

Independent research also predicts that artificial graphite anode material will dominate

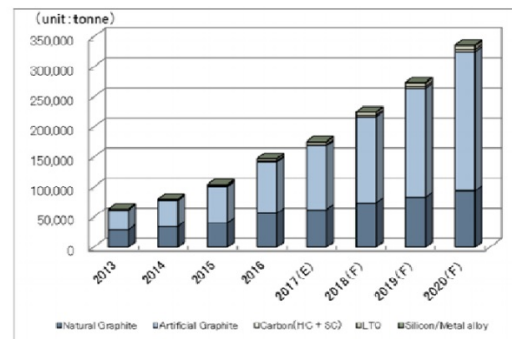
Transition of LiB material market size : Anode



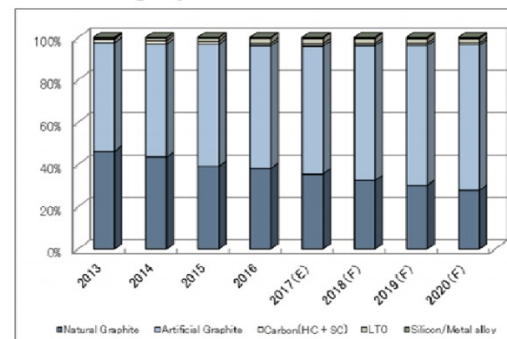
Changes in Global LiB Anode materials Market (Unit Sales:2013-2020 Forecast)

	2013		2014		2015		2016		2017 (Estimated)		2018 (Forecast)		2019 (Forecast)		2020 (Forecast)	
	Unit Sales	Share	Unit Sales	Share	Unit Sales	Share	Unit Sales	Share	Unit Sales	Share	Unit Sales	Share	Unit Sales	Share	Unit Sales	Share
Natural Graphite	29,230	46.3%	34,740	43.5%	40,680	39.1%	56,303	38.2%	62,304	35.5%	73,103	32.5%	82,838	30.2%	93,781	27.8%
YoY	-	-	118.9%	-	117.1%	-	138.4%	-	110.7%	-	117.3%	-	113.3%	-	113.2%	-
Artificial Graphite	32,498	51.4%	42,740	53.6%	60,270	57.9%	85,585	58.0%	106,287	60.5%	143,545	63.7%	181,381	66.1%	231,293	68.7%
YoY	-	-	131.5%	-	141.0%	-	142.0%	-	124.2%	-	135.1%	-	126.4%	-	127.5%	-
Carbon(HC+SC)	960	1.5%	1,200	1.5%	1,400	1.3%	1,800	1.2%	2,180	1.2%	2,595	1.2%	3,095	1.1%	3,660	1.1%
YoY	-	-	125.0%	-	116.7%	-	128.6%	-	121.1%	-	119.0%	-	119.3%	-	118.3%	-
LTO	414	0.7%	1,029	1.3%	1,621	1.6%	3,567	2.4%	4,339	2.5%	5,115	2.3%	5,880	2.1%	6,540	1.9%
YoY	-	-	248.6%	-	157.5%	-	220.0%	-	121.7%	-	117.9%	-	115.0%	-	111.2%	-
Silicon/Metal alloy	77	0.1%	103	0.1%	161	0.2%	290	0.2%	601	0.3%	824	0.4%	1,121	0.4%	1,557	0.5%
YoY	-	-	134.5%	-	155.6%	-	180.1%	-	207.2%	-	137.1%	-	136.0%	-	138.9%	-
Total	63,179	100.0%	79,813	100.0%	104,132	100.0%	147,545	100.0%	175,711	100.0%	225,182	100.0%	274,315	100.0%	336,831	100.0%
YoY	-	-	126.3%	-	130.5%	-	141.7%	-	119.1%	-	128.2%	-	121.8%	-	122.8%	-

Changes in Global LiB Anode materials Market
(Unit Sales:2013-2020 Forecast)



Changes in Global LiB Anode materials Market
(Percentage by Unit Sales:2013-2020 Forecast)



[Source: Yano Research Institute]

NOVONIX technology continues to be embraced by tier one global companies with new and repeat sales

- Strong sales for the half year with many new and repeat customers from around the world including 10 companies on the Fortune 500 list including world leading consumer electronics and battery manufacturing companies
- Customer relationships help position NOVONIX for the introduction of future products and services
- Note: Many of these companies cannot be named due to confidentiality terms agreed by NOVONIX



Image: NOVONIX Ultra High Precision Chargers

And NOVONIX BTS is expanding, recruiting new expert staff



***Image: Kathlyne Nelson PhD
NVX Sales Representative
Started in January 2018***

- PhD graduate from the Jeff Dahn Research Group at Dalhousie University (sponsored by TESLA Motors/Energy)
- In-depth research experience on lithium-ion batteries with the goal of improving energy density, safety, lifetime and cost of batteries



***Image: Ken Broom
Lithium-ion Battery Industry Expert
Starts in April 2018***

- 26 years in lithium-ion battery industry
- COO for China BAK Battery in Shenzhen for six years (2007 to 2013) and they are now No 5 in China with 1.5 GWh production in 2017
- Formerly responsible for 4 battery plants
- Experience in large scale battery plant business development, operations, research and development, sales, marketing, China and North America

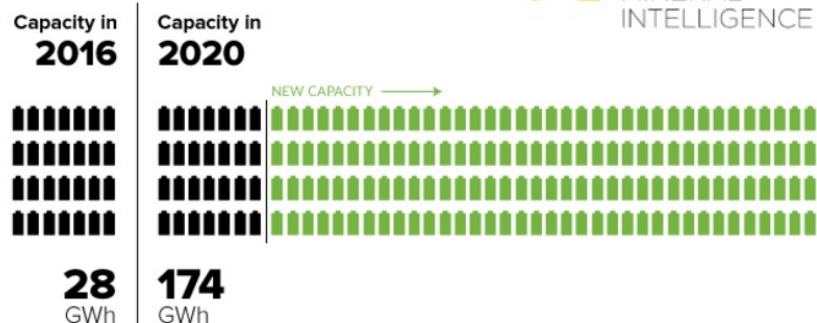
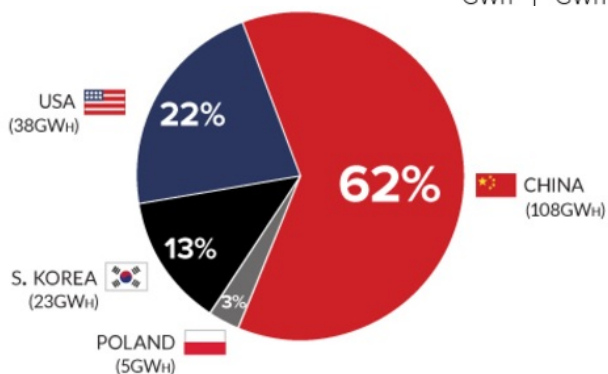
Strong Market Dynamics: Rapid growth in production of lithium-ion batteries...

6X growth in Lithium-ion megafactories by 2020 – Source: BENCHMARK MINERALS

CHINA IS LEADING THE CHARGE

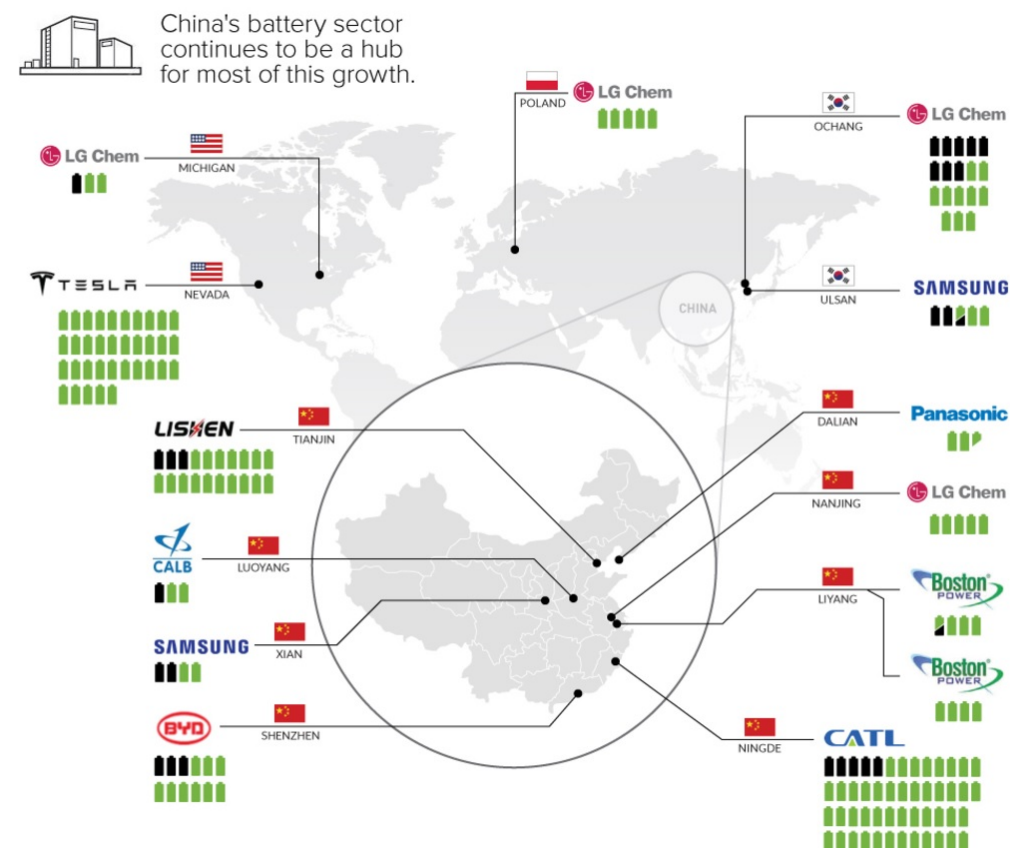
Lithium-ion megafactories in China to grow capacity 6X by 2020

Global lithium-ion battery production capacity will increase by **521%** between 2016 and 2020.



By 2020, mass production of lithium-ion batteries will still be concentrated in just **four countries**.

Data by:
BENCHMARK MINERAL INTELLIGENCE



...being driven by ambitious EV targets by governments and auto-makers

Exhibit 89: Governments have announced ambitious EV targets...

Key government targets for EV adoption

Country	Target	Time range
UK	Ban ICE sales	from 2040
	60% of car and van sales	by 2030
	100k EVs in London	by 2020
Germany	1 million by 2020	by 2020
	6 million by 2030	by 2030
France	Ban ICE sales	from 2040
	2mn EVs	by 2020
	400k EVs in Paris	by 2020
Netherlands	7mn charging points	by 2030
	200k EVs	by 2020
	1mn EVs	by 2025
China	8% of sales	by 2018
	5mn NEVs	by 2020
	7mn NEV sales p.a.	by 2025
India	6-7mn NEV sales p.a. (as of 2015)	by 2020
	100% EV sales	by 2030
Quebec (Canada)	15.5% of sales	by 2025
California (US)	15% of sales	by 2025

Source: IEA, Country governments, Goldman Sachs Global Investment Research

Exhibit 90: ...which automakers are racing to meet

Key automakers' EV/PHEV sales targets government targets for EV adoption

Carmaker	Target	Time range
Tesla	500,000 vehicles sold p.a.	by 2018
	1 mn vehicles sold p.a.	by 2020
Volvo	1mn electrified cars (cumulative)	by 2025
VW	1mn EV sales p.a. (25% of total)	by 2025
	30 EV models	by 2025
BMW		2017
	15-25% of sales	by 2025
Daimler	10 new EV models	by 2022
Ford	40% of nameplates to have an electrified version	by 2020
	70% of sales in China to be electrified	by 2025
GM	2 new EV models	in 2018
	>18 additional EV/FCV models	by 2023
Nissan	20% of sales in Europe	by 2020
Chinese OEMs	4.52mn p.a. (in China)	by 2020

Source: ICCT, Company data, Goldman Sachs Global Investment Research

NOVONIX INVESTMENT HIGHLIGHTS

Established brand in the rechargeable lithium-ion battery industry

- NOVONIX is an established brand name known for making the most accurate battery cell test equipment in the world

Global footprint of blue-chip customers and sales in 12 countries

- Our battery cell test equipment now used by leading battery, auto and equipment makers and researchers including PANASONIC, CATL, TESLA, BOSCH, Dyson, 3M, Alcatel-Lucent, DALHOUSIE University, Pacific Northwest National Laboratory, Helmholtz Institute and many others

Innovative new products and process being commercialised

- Developing and commercialising new innovations in battery anode materials, anode manufacturing processes, battery cell test equipment and electrolytes

Backed by a world-class natural graphite resource in Australia

- NOVONIX owns a high grade, long-life natural graphite deposit in Queensland, Australia

Backed by a board experienced in building and running billion dollar businesses

- Extensive experience in BD, resources, energy, advanced materials, battery industry, project financing, project delivery, operations and scaling

Highly-incentivised Board and Management

- The Board and Management hold ~45% of the equity in the company

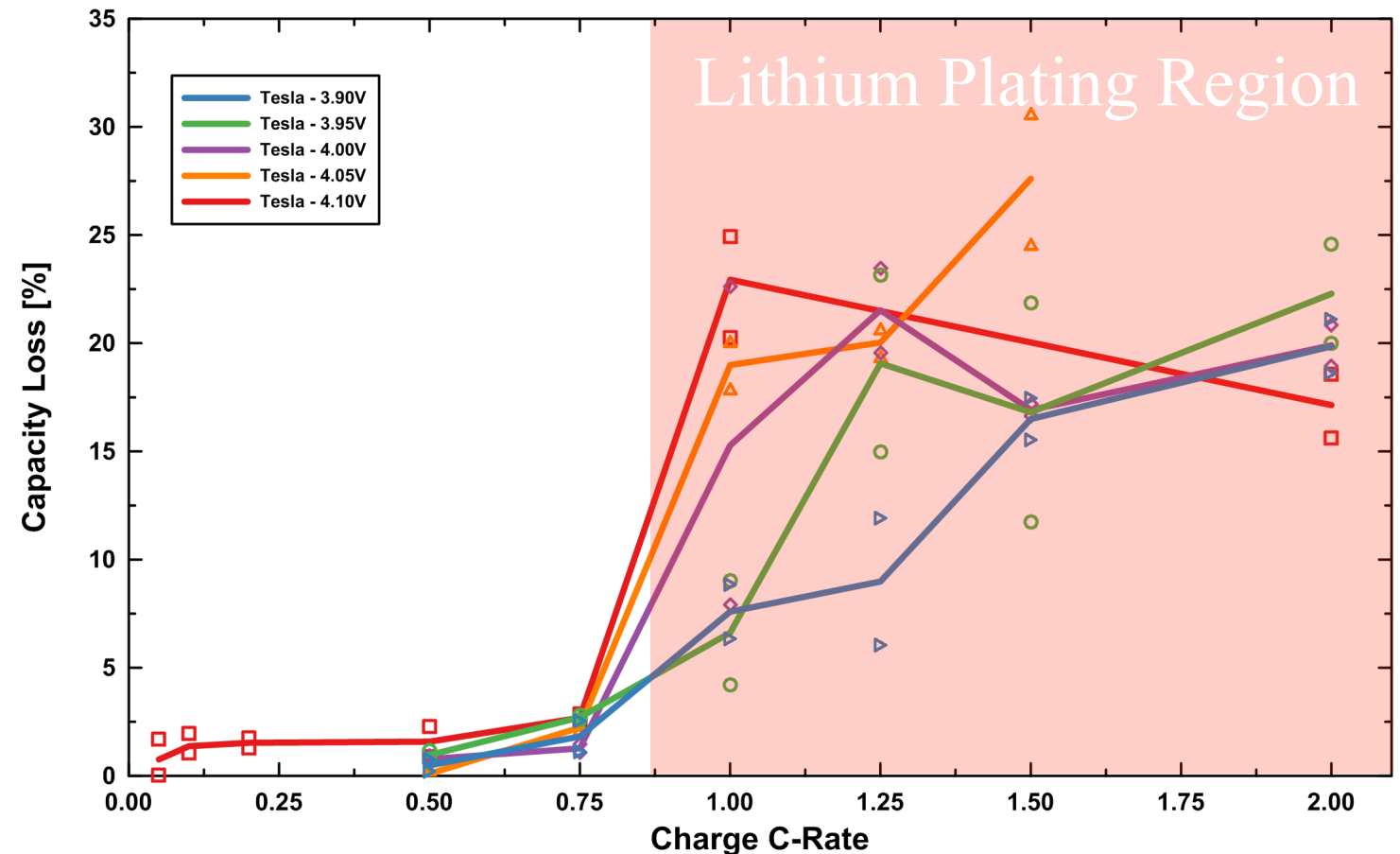
Great opportunity to position at an early stage in a global market with exponential growth

- Exponential demand for rechargeable lithium-ion batteries being driven by EV and energy storage demand growth

And for the technically minded – here is some of our PUREgraphite data

How good are current EV battery cells?

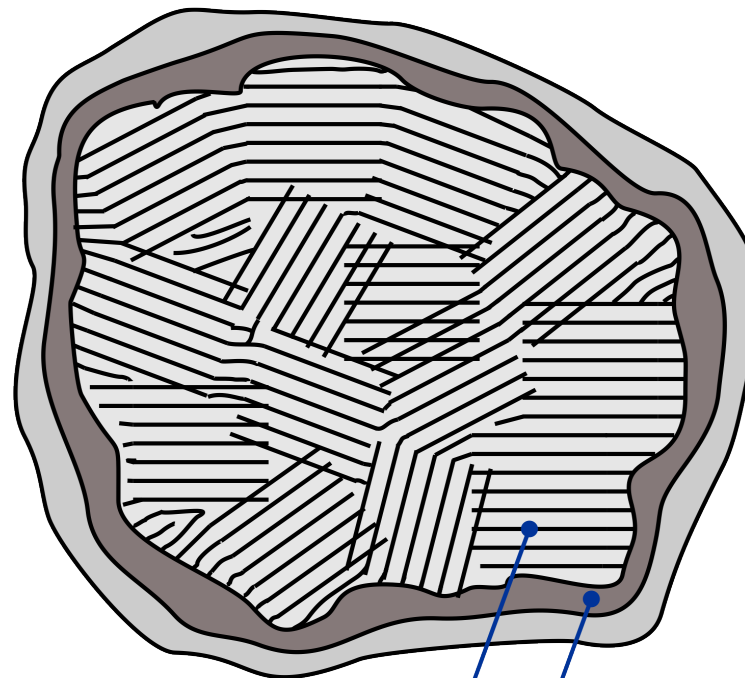
- Tesla Model S batteries
- Charge CC to different cutoff voltages
 - 3.90-4.10V
 - 80-100%SOC
- All cells start to plate lithium at 1C



For those who know anode materials – here is the challenge

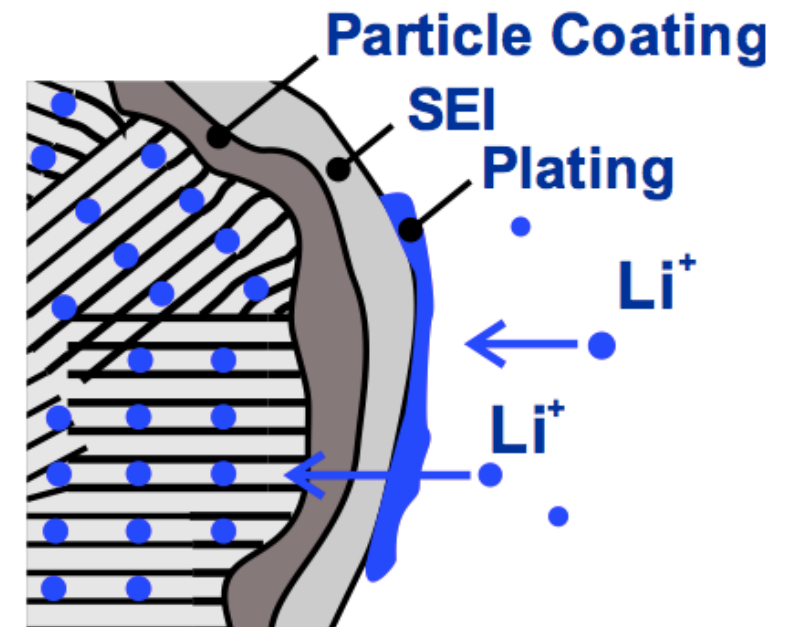
Optimisation of Lithium intercalation

- Particle coating:
 - CVD
 - Pitch
- SEI coating
 - Increased by additives such as VC, LiBOB, etc.
 - Resistance can change over time
 - Needed for life



Graphite Layers

Pitch or CVD coating that is calcined or graphitized



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BTS FACILITY

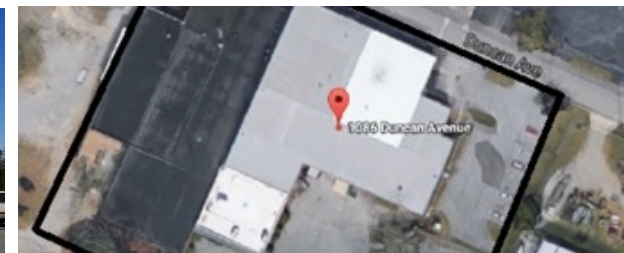
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