Talga Presentation at Benchmark Week Graphite & Anodes 2020

Battery anode company Talga Group Ltd ("**Talga**" or "**the Company**")(**ASX:TLG**) is pleased to provide a copy of the presentation delivered by the Company's VP - Battery Strategy, Dr Sai Shivareddy, at Benchmark Week 2020: Graphite & Anodes as part of the ***Future Anodes: Solid State Batteries, Lithium Metal & Silicon*** session.

The presentation is available on the Company's website via the link below:

http://www.talgagroup.com/irm/content/presentations.aspx?RID=301

The Company advises that a recording of the session, including Dr Shivareddy's presentation, is now available on the Company's website via the link below:

http://www.talgaresources.com/irm/content/videos.aspx?RID=366

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About Benchmark

Benchmark Mineral Intelligence is the world's leading IOSCO-regulated price reporting agency (PRA), proprietary data provider, and market intelligence publisher for the lithium ion battery to electric vehicle (EV) supply chain. Benchmark's services are relied upon by major actors in the EV supply chain and their team have testified to the US Senate, advised The White House, The Pentagon, and government agencies around the world.

About Talga

Talga Group Ltd (ASX:TLG) is building a European battery anode and graphene additives supply chain, to offer advanced materials critical to its customers' innovation and the shift towards a more sustainable world. Vertical integration, including ownership of several high-grade Swedish graphite projects, provides security of supply and creates long-lasting value for stakeholders.

Company website: **www.talgagroup.com**

Talga Group Ltd (ASX:TLG)

Sustainable production of new generation anode materials

Graphite + Anodes 2020,
Benchmark Mineral Intelligence

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Our approach

Talga is building an integrated graphite anode facility in Sweden running on 100% renewable electricity, to produce ultra-low emission coated anode for greener Li-ion batteries

- High-performance anode products in qualification processes with battery manufacturers and automotive OEMs focusing on flagship graphite anode product Talnode®-C and silicon anode product Talnode®-Si
- Full mine-to-product ownership results in cost and quality advantages with maximum margins

SEE: ASX:TLG 23 MAY 2019, 24 JUNE 2020.

Battery Anode Product Range

Talga-developed range of active anode materials with high performance in Li-ion batteries:

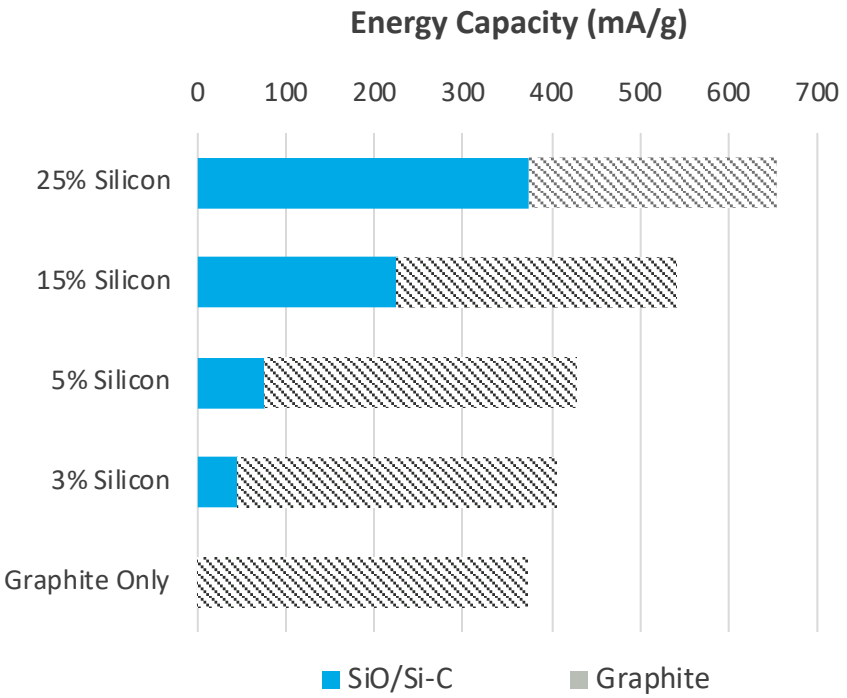
- Talnode®-C: For fast charge, high power, high capacity and outstanding low temperature performance
- Talnode®-Si (under scale-up): Graphene Silicon-anode for higher energy density (50% higher than standard)
- Talnode®-E (under development): Anode graphite-based materials for Solid State Batteries

Talga is actively growing its battery related IP portfolio with multiple anode material and production process patents pending

SEE: ASX:TLG 16 OCT 2018, 19 FEB, 21 MAR, 26 MAR and 2 OCT 2019, 14 OCTOBER 2020.

TESTING OF TALNODE® IN 'POUCH' LI-ION BATTERY

Higher capacity through silicon anode



The electric mobility industry needs higher capacity batteries for longer range

- Silicon anode is theoretically capable of >10x energy capacity of graphite anode in Li-ion battery
- But today, silicon is being blended into graphite in only small amounts (3-5% weight) due to major and fundamental issues
- Higher energy capacity can translate to longer range of electric vehicles or less weight (smaller batteries), so solving silicon issues can have big impact on EV use and cost

Higher capacity through silicon anode

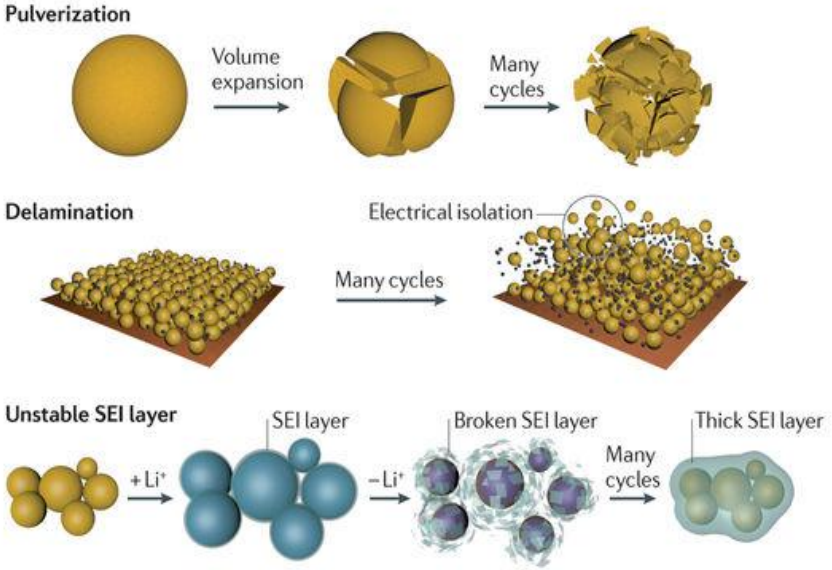
Silicon anodes have multiple profound issues to overcome in practical use

- Silicon changes volume by 300% in charge/discharge cycles (compared to graphite 10%)
- Volume change leads to a range of issues including:

  - pulverization/breakage

  - delamination from current collector

  - build-up of thick, solid electrolyte interface (SEI)
- Therefore: the more silicon - shorter battery life, greater ‘consumption’ of lithium and other issues (plus higher production costs).



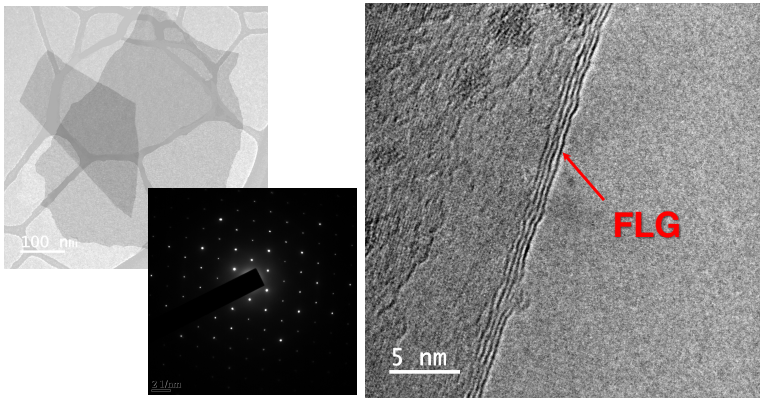
Source: Choi & Aurbach 2016 https://www.nature.com/articles/natrevmats201613#f2

Si-Carbon composite anodes

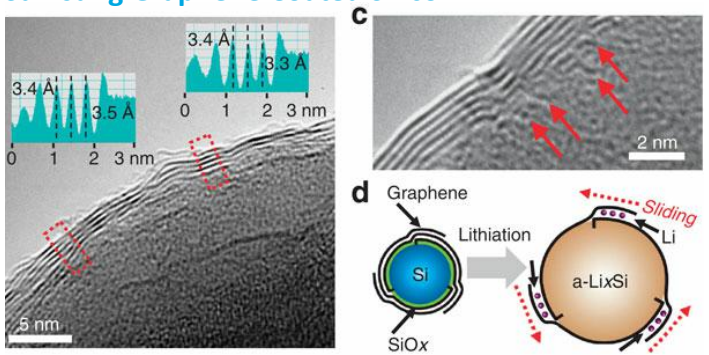
Ultra-thin carbon nanomaterial, graphene and nanographite, enabling practical silicon anodes

- Graphene additives or composites can enable silicon anodes to stabilize and extend cycle life
- Graphene can work in various modes including protective coatings and nano-structures to control pulverization during volume change, retain kinetics and moderate SEI formation

Talga Graphene

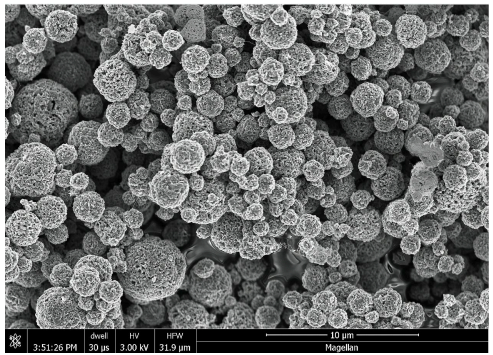


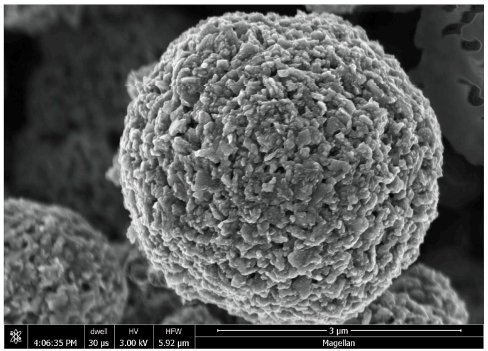
Samsung Graphene Coated Silicon



Samsung, Nature Communications 8:1561. Graphene balls for lithium rechargeable batteries with fast charging and high volumetric energy densities.

Talga's Silicon Anode Composite: Talnode®-Si



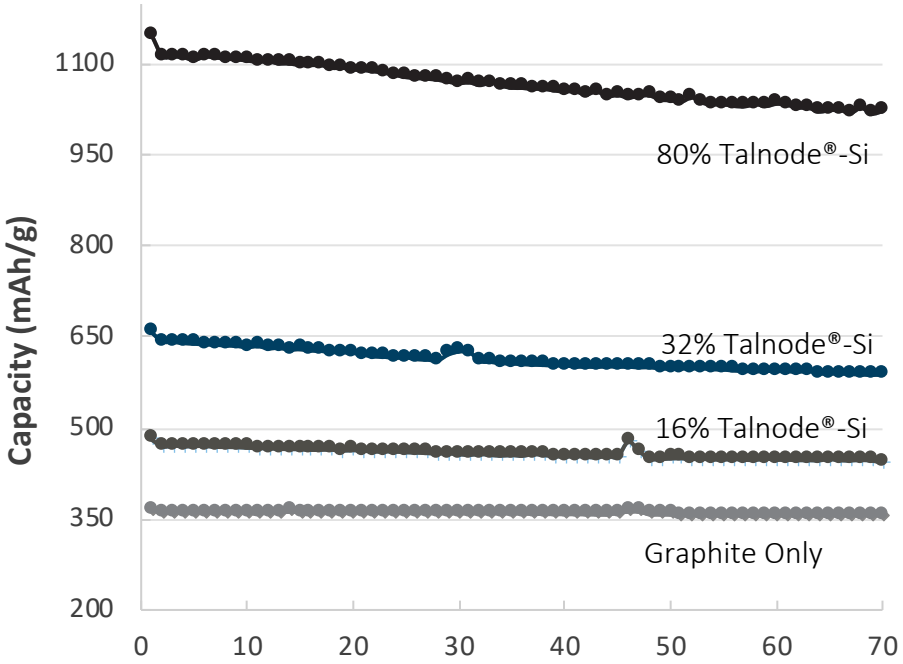


Nanostructured porous Graphene-Silicon composite additive for 'drop-in' blending to existing graphite anodes

- Targets practical energy density boost with nea-term mass producability potential
- Produced by chemo-mechanical method (not CVD) using external bulk silicon supply and Talga graphene
- Uses metallurgical-grade silicon for cost-effective production
- Production method utilises 'off-the-shelf' industrial technology for commercial scalability
- First cycle efficiency up to 91% depending on silicon loading, good cycle life and reversible coulombic efficiency in the range 99.7%-99.9%

SEE: ASX:TLG 19 FEBRUARY 2019, 14 OCTOBER 2020.

Talnode®-Si: Half cell results at different loadings



Reversible gravimetric capacity up to 1,100 mAh/g for the Si-Gr-C composite particles

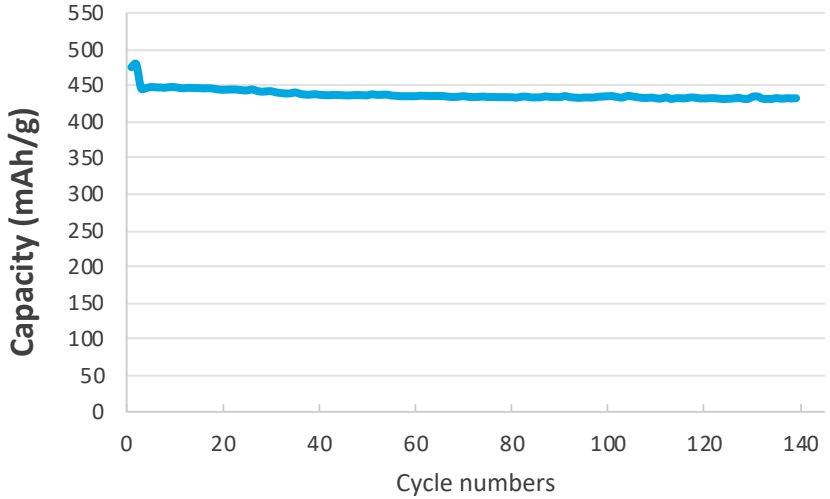
- Lithiation: 1st cycle: 0.1C to 5mV then stays at 5mV until 0.01C, other cycles: 0.2C to 5mV then stay at 5mV until 00.25 C.
- De-lithiation: 1st cycle: 0.1C to 1.0V, other cycles: 0.2C to 1.0V.
- The silicon content in Talnode®-Si range ~30-50%Wt optimised for customer specifications and performance targets.

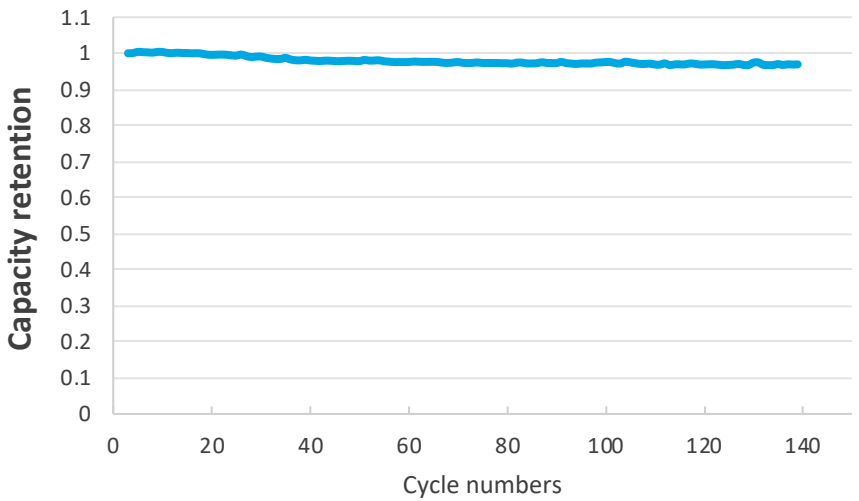
SEE: ASX:TLG 24 OCTOBER 2018

Talnode®-Si: Full cell results with NMC cathode

9% Talnode®-Si additive in graphite anode result in ~97% capacity retention after 140 cycles at 0.5C

- Charge: 1st & 2nd cycle: C/10 to 4.2V then stays at 4.2mV until C/100. Other cycles: C/2 to 4.2V then stay at 4.2V until C/10. Discharge: 1st & 2nd cycle: C/10 to 3.0V; other cycles: C/2 to 3.0V. N/P～1.05.





NOTE: COMMERCIAL GRADE ELECTROLYTES USED. NO PRE-LITHEATION. TESTWORK ONGOING/CYCLING TESTS TO BE RESTARTED AFTER COVID RESTRICTED LAB ACCESS.

Commercialising Talnode®-Si

- Customer testing of Talnode®-Si has been progressing under confidentiality and material transfer agreements with multiple battery manufacturers and auto OEMs in Europe and USA
- Positive results encourage Talga to fast-track Talnode®-Si development, with 10x scale-up of qualification samples underway and feasibility studies into commercial production options
- Talga awarded co-funding by Innovate UK, under the Automotive Transformation Fund, to define scale-up plans and support potential investment in establishing Talnode®-Si production in the UK
- Niska scoping study shows positive economics of producing ~8,500 tonnes per annum graphene-graphite precursors to be used in future production of Talnode®-Si

SEE: ASX:TLG 14 OCTOBER, 4 NOVEMBER and 7 DECEMBER 2020

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