

HALIFAX, NOVA SCOTIA / ACCESSWIRE / August 24, 2016 / Troy Grant, President and CEO of [Elcora Advanced Materials Corp.](#) (TSXV: ERA) (OTCQB: ECORF) (Frankfurt: ELM) (the "Company" or "Elcora"), is pleased to present the successful initial test results of Elcora's proprietary graphite processes for lithium ion battery anodes.

The purpose of the tests was to validate Elcora's processes using grade, size analysis, BET surface area, calendar density and eChemistry.

"Elcora's high purity 99+% flake concentrate is significantly above the industry standard of 95-98%. This will have important implications for thermal processing which is the preferred method of purification for long-life automotive cells. Elcora graphite also exhibits a very high level of crystallinity and therefore reversible capacity consistent with the top 20% of graphite materials we have tested from junior graphite companies. The combination of high purity and high reversible capacity could prove to make Elcora a preferred graphite sources for LIB anode materials", states Dr. Edward R. Buiel, CEO and President of Coulometrics, LLC.

An example of the material tested is shown in Figure 1.

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*Figure 1: SEM Electron microscope picture of Elcora process graphite reduced in size for use in anodes.*

#### Particle size distribution

Elcora has developed a proprietary process to reduce the size of graphite crystals to those best suited for anode production. This process was developed in order to combine different sizes of particles so that anode packing density can be optimized and to minimize the use of spherical graphite. An example of the size distribution of Elcora process graphite is shown in Table 1.

*Table 1: Size comparison between grinding energy inputs ranging from the primary grind of 7 kWhr/t to 440 kWhr/tonne*

Power (kWhr/tonne)	7	110	220	440
Fraction Smaller	Size (µm)	Size (µm)	Size (µm)	Size (µm)
10%	90	44	21	16
25%	125	86	44	27
50%	210	144	86	44
75%	310	220	144	70
90%	470	330	211	100

#### BET surface area

For better anode performance the BET surface area of graphite is minimized. As an example for under 20 micrometer particles the target surface area is between 3-5 m<sup>2</sup>/g. This target is usually met by reducing the surface area through coatings. The Elcora process has achieved and surpassed this target without coatings as shown in Table 2.

*Table 2: BET Surface area of Elcora process graphite*

Flake Size Mesh	BET Surface Area (m <sup>2</sup> /g)
-120	1.10
-64	1.22
-32	2.35
-20	3.20

#### Calendar density

The calendar density is the density of the anode. This characterizes how much graphite can be added to a battery. The target is between 1.5 and 1.8 g cm<sup>-3</sup>. Initial tests, without optimization of the particle size distribution or spheronization, have resulted in Elcora densities as high as 1.46 g/cm<sup>3</sup>.

#### Graphite purity

The Elcora process uses multiple steps to produce high purity graphite. The results of both the primary and secondary purification stages are shown in Table 3. The repeatability of the results gives confidence in the results. PIXE, or proton induced x-ray emission tests, are currently being conducted to confirm these results and to accurately determine the contaminants at the ppm level.

*Table 3: Graphite assays after purification*

Primary stage over all	98.80%	99.13%	99.10%
2 <sup>nd</sup> +64 &mdash; 128 µm	99.98%	99.99%	99.98%
2 <sup>nd</sup> +32 &mdash; 64 µm	99.98%	99.98%	+99.99%
2 <sup>nd</sup> +20 &mdash; 32 µm	99.99%	99.99%	+99.99%
2 <sup>nd</sup> -20 µm	99.94%	99.99%	+99.99%

#### eChem tests

c20 cycling tests were done with Elcora process graphite using different binders, additives, and electrolytes. Examples of battery test using Elcora anodes is shown in Figure 2. In these results, the reversible capacity increased to 371 mAh/g in the first 4 cycles which is very close to the theoretical maximum of 372 mAh/g. The capacity was calculated based on the mass of graphite in the electrode only and does not include the small mass of carbon black that is added to the electrode to maintain conductivity. Notwithstanding, the reversible capacity of the Elcora Graphite is very high and well suited for lithium ion battery applications.

The first cycle efficiency is 93.2%. These results were achieved without spheronization or coating. Most battery manufacturers specify 93-95% first cycle efficiency which must be balanced with cathode materials that do not exceed 95%.

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*Figure 2: Example of battery cycle tests using Elcora graphite anodes.*

Troy Grant, President and CEO: "These results are the next successful step in Elcora's goal of value-added graphite production which is able to produce cleaner batteries for electric vehicles. These anode and battery test results demonstrate that Elcora's anodes show excellent potential for use in lithium ion batteries. It further confirms, at the bench scale, Elcora's vertical integration strategy of value added transformation using our own proprietary process".

Ian Flint, Ph.D., P.Eng., is the Qualified Person as defined under NI 43-101 who has reviewed and is responsible for the technical information presented in this news release.

#### About Elcora Advanced Materials

*Elcora was founded in 2011 and has been structured to become a vertically integrated graphite & graphene company that mines, processes, refines graphite, and produces both the graphene and end user graphene applications. As part of the vertical integration strategy, Elcora has secured high-grade graphite and graphene precursor graphite from its interest in the operation of the Ragedara mine in Sri Lanka which is already in production. Elcora has developed unique low cost effective processes to make high-quality graphite and graphene that are commercially scalable. This combination means that Elcora has the tools and resources for graphite and graphene vertical integration.*

For further information please visit the company's website at <http://www.elcoracorp.com>

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SOURCE: Elcora Advanced Materials