HALIFAX, NOVA SCOTIA / ACCESSWIRE / October 20, 2016 / Elcora Advanced Materials Corp. (TSXV: ERA) (FSE: ELM), (the "Company" or "Elcora"), is pleased to announce that it is starting full cell testing and qualification of its graphite material in industry standard 18650 lithium ion batteries (LIBs). After successfully demonstrating that Elcora thermally purified graphite could meet all of the standard requirements for LIBs using coin cells with lithium reference electrodes, Elcora has contracted with Coulometrics, LLC, to complete full cell assembly and final qualification of their graphite anode material. Coulometrics, LLC is a leading advanced energy consulting company with full LIB assembly and state-of-the-art testing capabilities.

"Elcora's graphite has performed well in half-cell testing, demonstrated good manufacturing characteristics with respect to electrode coating and adhesion, and has been successfully wound into high quality cylindrical 18650 LIBs, the same format used by automakers such as Tesla. We have now started full cell characterization testing and we are starting accelerated life testing on the finished cells. This will provide the necessary comprehensive information that will allow battery companies to use Elcora's graphite in the near future," says Dr. Edward Buiel, President and CEO of Coulometrics, LLC.

The battery assembly process to produce industry standard 18650s including, electrode coating, electrode calendaring, cell winding, and cell assembly are shown in Figure 1, 2, and 3 below. The properties of the individual Elcora graphite anode electrodes are shown in Table 1 below. These electrodes were used to assemble 10 18650 LIBs for testing and qualification purposes. The results show that Elcora graphite can be use to produce high quality electrodes with correct coating weight and with respectable densities of 1.5 g/cm^3.

Table 1: Anode Characteristics

	Active Mater.	Total Wt	Ave Thick	Foil Wt	Foil Thick	Coating Weight	Active Weight	Single Sided Load	Active Density
Anode ID	[%]	[g]	[mm]	[g]	[mm]	[g]	[g]	mg/cm2	g/cm3
EW16-0117-001	93.1	10.219	0.132	3.635	0.012	6.584	6.130	9.413	1.465
EW16-0117-002	93.1	10.145	0.126	3.635	0.012	6.510	6.061	9.307	1.523
EW16-0117-003	93.1	10.155	0.132	3.635	0.012	6.520	6.070	9.321	1.451
EW16-0117-004	93.1	10.177	0.121	3.635	0.012	6.542	6.090	9.352	1.595
EW16-0117-005	93.1	10.189	0.122	3.635	0.012	6.554	6.102	9.370	1.586
EW16-0117-006	93.1	10.207	0.125	3.635	0.012	6.572	6.118	9.395	1.545
EW16-0117-007	93.1	10.065	0.126	3.635	0.012	6.430	5.986	9.192	1.501
EW16-0117-008	93.1	10.094	0.125	3.635	0.012	6.459	6.013	9.234	1.527
EW16-0117-009	93.1	10.112	0.121	3.635	0.012	6.477	6.030	9.260	1.588
EW16-0117-010	93.1	10.104	0.124	3.635	0.012	6.469	6.023	9.248	1.543
Average	93.1	10.147	0.125	3.635	0.012	6.512	6.062	9.309	1.532

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Figure 1: Elcoragraphite coating (left) and roll pressing (right) for electrode production prior to full 18650 lithium ion battery assembly.

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The appropriate sized Elcora graphite anodes were combined with a standard Coulometrics NMC cathode and wound into the cell winding (Figure 2) and the final battery (Figure 3).

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Figure 2: Rolled components of the 18650 lithium ion battery

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Figure 3: Completed 18650 battery
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The 18650 cells produced as a result of this process are being cycled between 3.0 and 4.2V. An example of one of these cells is shown below in Figure 4.

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Figure 4: Lithium ion battery voltage vs capacity relationships over repeated cycles using Elcora graphite anodes.

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Initial cycle results show that the capacity and efficiency of the cells are within normal parameters for good quality LIBs (see Figures 5 and 6). Dr. Buiel further commented that "Although significantly more cycles need to be completed, this level of performance and ease of use of Elcora graphite in the cell assembly process is a very good indication that Elcora processed graphite is very well suited for LIB applications. We plan to continue to work with Elcora to ensure that any issue that may arise during upcoming customer evaluations is addressed quickly."

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Figure 5: Capacity change with usage is essentially flat showing that Elcora anodes are stable with usage.

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Figure 6: Early cell efficiency results for Elcora cells that will later be measured precisely with high precision coulometry (HPC) and compared with high quality automotive cells.

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"This work is another positive step in Elcora's goal of producing top quality lithium ion battery anodes using ecological process at a competitive cost. It also confirms the anode performance for potential clients." said Troy Grant, Elcora's President and CEO."

Information about the Company can be found at http://www.elcoracorp.com.

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SOURCE: Elcora Advanced Materials Corp.