Canada Carbon Inc.: Evans Analytical of Liverpool New York Certifies Miller Graphite is of Sufficient Purity for Nuclear Applications

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VANCOUVER, British Columbia, May 13, 2015 (GLOBE NEWSWIRE) -- Canada Carbon (the "Company") (TSX-V:CCB) (OTC:BRUZF) (FF:U7N1) is pleased to announce that the Company has obtained additional test results confirming that the Miller graphite from Canada Carbon's 100% owned property in Grenville, Quebec is suitable for nuclear applications. Dr. Karol Putyera (Vice President, Purity Survey Analysis Services) of Evans Analytical (Liverpool, N.Y.) stated, "I have been analyzing high-purity graphite for nuclear applications for many years at Evans Analytical, and these purity results for natural graphite are comparable to the purest natural graphite samples I have assayed, and compared to results published around the world." Dr. Putyera performed all of the Glow Discharge Mass Spectrometry ("GDMS") procedures reported herein, and in the referenced documents. Evans Analytical is the preferred laboratory, and GDMS is the preferred analytical method, for the Oak Ridge National Laboratory nuclear graphite assessment program, more fully described, below. These tests were based on a randomly selected 10 kilogram ("kg") run-of-mill sample of the flotation concentrate produced during pilot plant flotation trials conducted at SGS Canada (Lakefield) during 2014 and was directly upgraded to 99.9998% C(t) purity through thermal treatment alone by a commercial processor of synthetic nuclear graphite.

Canada Carbon has been in discussions with senior scientists at Oak Ridge National Laboratory (Oak Ridge, TN) since the fall of 2013, beginning shortly after Canada Carbon reported achieving nuclear purity for its Miller hydrothermal lump-vein ("HLV") graphite (see press release dated October 15th, 2013). These discussions provided Canada Carbon with targets and milestones, which helped Canada Carbon develop its research and development activities. Canada Carbon has successfully shown that its Miller HLV graphite can be concentrated by simple flotation at pilot-plant scale to greater than 99% C(t) and nuclear purity (see press release dated June 17th, 2014). As well, the Company believes that combining these results with the thermal upgrading of a randomly selected flotation concentrate sample produced from the pilot-plant program, conducted by a commercial nuclear graphite processing facility (first reported May 1st, 2015), it has achieved proof-of-concept for the suitability of the Miller HLV graphite for nuclear applications. Canada Carbon has available several tonnes of Miller HLV concentrate from the pilot-plant program to quickly provide large quantities of its graphite for further assessment.

Oak Ridge National Laboratory, along with Idaho National Laboratory and other government agencies, are working towards the design and development of high-temperature, gas-cooled, graphite-moderated nuclear reactors, under a program supervised by the U.S. Department of Energy's Office of Nuclear Energy. Parallel research programs are underway on both prismatic and pebble-bed designs.

A series of tests are currently underway to determine the optimal composition of nuclear fuel assemblies for this new generation of nuclear reactors. Both prismatic and pebble-bed designs utilize small discrete fuel assemblies that will be positioned in large numbers inside the reactor core. The individual fuel assemblies, called fuel compacts, contain a large number of very small (0.5 millimetre) uranium fuel particles, each individually coated in a graphite mixture, called the matrix. The graphite matrix-coated pellets are subsequently pressed into the desired shape (cylinders for prismatic designs, spheres for pebble bed designs), and then annealed to produce a solid fuel compact. Many-layered resilient coatings are then added to physically strengthen the fuel assemblies.

Decades of research to develop a suitable graphite matrix for the fuel compacts has settled on a mixture composed of natural graphite, synthetic graphite, and binding resin in the weight proportions of 64:16:20, respectively. The specific elemental impurity content in each of these components is a critical criterion. Tests of fuel compacts under actual reactor conditions conducted by Idaho National Laboratory have determined that nine elemental contaminants are of special concern, which they have defined in AGR-2 Specification SPC-923 (for further information, please access Reference 1, below). Oak Ridge National Laboratory is charged with determining the best available graphite products to address this specification. Numerous commercial and experimental graphite products (12 synthetic graphite samples and 7 natural graphite samples) were assessed for elemental impurities by GDMS (for further information, please access Reference 2, below). For comparison purposes only, the GDMS results for CCB's thermally treated graphite are included in the following table, which also includes data for the purest graphite samples of the 19 submitted, derived from the Oak Ridge report (Ref. 2). To calculate the total impurity content, the "less than" symbol is

ignored; i.e. <0.05 would be treated as if the measured content was 0.05.a critical criterion. Tests of fuel compacts under actual react

SELECTED NUCLEAR GRAPHITE CONTAMINANTS, AGR-2 SPECIFICATION SPC-923

ELEMENT	SYMBOL	CCB SAMPLE[1]	ASBURY RD13371[1]	GRAFTECH-D[2]	SGL KRB-2000[2]
ALUMINUM	Al	<0.01	8.3	<0.05	0.35
CALCIUM	Ca	<0.5	10	=<0.5	0.7
TITANIUM	Ti	<0.05	0.66	1.9	0.06
VANADIUM	V	<0.05	0.35	4.7	0.02
CHROMIUM	Cr	<0.05	<0.5	0.5	0.5
MANGANESE	Mn	<0.05	0.29	<0.05	<0.05
IRON	Fe	0.09	13	0.25	1.4
COBALT	Co	<0.05	<0.05	<0.05	0.25
NICKEL	Ni	<0.05	1.4	<0.1	1.2
TOTAL CONTAMINANTS		0.99	36.55	8.1	4.53

1. Natural graphite samples.

2. Synthetic graphite samples.

3. All reported values are parts per million, by weight ("ppm"), as determined by Glow Discharge Mass Spectrometry ("GDMS") analysis conducted by Evans Analytical, Liverpool NY.

As mentioned above, decades of research into the graphite matrix composition have led to a matrix "recipe" which includes four times the amount of natural graphite compared to synthetic graphite. Canada Carbon's thermally treated graphite compares very well against the Asbury RD13371 natural graphite selected for use in the fuel compact development program. For further background on the rationale for including such a high proportion of natural graphite in the fuel compact matrix, please refer to Reference 3, below.

Executive Chairman and CEO R. Bruce Duncan commented, "Canada Carbon's thermally treated Miller HLV graphite contains only a small fraction of the Specification SPC-923 elemental contaminants (0.99 ppm) when compared to the best natural graphite (Asbury RD 13371, at 36.55 ppm) assessed by Oak Ridge National Laboratory in 2011 for inclusion in their next generation nuclear reactor program. In fact, the Miller sample also had substantially lower contaminant levels than the best synthetic graphite samples (SGLKRB-2000 (4.53 ppm) and the experimental GrafTech-D (8.1 ppm).

As reported here, Canada Carbon has been in discussions for over eighteen months with senior U.S. scientists conducting research into the development of the next generation nuclear reactor designs. During that time, we have developed simple processing methods that surpassed the target purities provided to us by Oak Ridge National Laboratories. We have also developed relationships with nuclear graphite processing and fabrication facilities which will allow us to move forward expeditiously as graphite powder or resin-molded composites are required for further testing. The fuel compact graphite matrix discussed here is only one of many graphitic components in these next-generation reactor designs. These new types of reactors are also under development in countries other than the United States.

The ultra-high purity Miller HLV graphite produced through thermal processing is also suitable for other high-technology applications, including aerospace and military end-uses. This very pure graphite is also ideal for graphene research. Our research and development consultants are already working on full-scale exfoliation processes, to develop large amounts of ultra-high purity graphene."

References :

1. AGR-2 Fuel Compacts Information Summary: Prepared for the NRC MELCOR Project, Revision 1. John D. Hunn, November 2010. Available at: http://pbadupws.nrc.gov/docs/ML1033/ML103330379.pdf

2. Analysis of Natural Graphite, Synthetic Graphite, and Thermosetting Resins Candidates for Use in Fuel Compact Matrix. Michael P. Trammell and Peter J. Pappano, 2011. Available at: http://info.ornl.gov/sites/publications/files/Pub32010.pdf

3. A novel approach to fabricating fuel compacts for the next generation nuclear plant (NGNP). P.J. Pappano

et al, Journal of Nuclear Materials vol. 381 (2008), pp. 25-38. http://tinyurl.com/n4uhx22

About Oak Ridge National Laboratory (ORNL):

Oak Ridge National Laboratory (ORNL) is a multiprogramming science and technology national laboratory managed for the United States Department of Energy (DOE) by UT-Battelle the laboratory contractor. ORNL is the largest science and energy national laboratory in the Department of Energy system by acreage. ORNL is located in Oak Ridge, Tennessee, near Knoxville. ORNL's scientific programs focus on materials, neutron science, energy, high-performance-computing, systems biology and national security.

About Idaho National Laboratory (INL):

Idaho National Laboratory, in operation since 1949, is a science-based, applied engineering national laboratory dedicated to supporting the U.S. Department of Energy's missions in energy research, nuclear science and national defense. INL is the nation's leading center for nuclear energy research and development. Idaho National Laboratory's science-based approach to nuclear energy research yields technically achievable, economically competitive and environmentally sustainable options for the entire nuclear energy enterprise. The lab's experts are developing, testing and demonstrating new fuels and materials, reactor systems, plant monitoring and safety systems, and waste management options.

Dr. Charbonneau, Ph.D., P. Geo #290 (an Associate of Inlandsis Consultants s.e.n.c.) is an Independent Qualified Person under National Instrument 43-101, and has reviewed and approved the technical information provided in this news release.

Canada Carbon Inc.

"R. Bruce Duncan"
CEO and Director

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