



Canatu Ltd.
Konalankuja 5, 00390
Helsinki Finland
Phone: +358 50 344 4204
www.canatu.com

Issue:
August 13, 2012
All rights reserved!
ceocfointerviews.com

CEOCFO Magazine - The Most Powerful Name In Corporate News and Information

Bringing to Market their Game Changing Carbon Nanomaterial Based Platform Technology and NanoBud® Products that has a Total Market in Excess of \$1 Trillion, Canatu Ltd. is Well Positioned for Future Growth as they Initially Target Transparent Conductive Films and Components for Touch and Displays

**Cleantech
Nanotechnology
Carbon/Electronics
(Private)**

**David Brown, PhD
CTO /VP of Business Development,
Founder, Board Member (USA)**

BIO:

Dr. Brown has been the CEO of Teicos Pharma, Particle Stream Technologies and StreamWise Finland, a Senior Research Scientist at the Helsinki University of Technology, a Fulbright Fellow and an engineering consultant to companies and research institutes worldwide. He is a leading expert in the modeling, design and scaling of synthesis reactors and deposition and characterization systems. He has a PhD in Environmental Engineering and an M.S. in Aerospace Engineering and Engineering Mechanics from the University of Cincinnati and a B.S. in Aerospace Engineering from the University of Michigan.

Company Profile:

Founded in 2004, Canatu Oy is a spin-off from the Aalto University School of Science and Technology (formerly known as Helsinki University of Technology, HUT). Canatu's business is the production and sales of a new class of carbon nanomaterial based transparent conductive and semiconductive films and components based on its novel NanoBud® nanomaterial. These components improve the performance and reduce the cost of optical, energy generation and storage and electrical devices

while, simultaneously reducing their environmental footprint.

Canatu develops components with industry transforming qualities. Based on our three key innovations (our novel NanoBud® nanomaterial having outstanding physical and chemical properties, our low cost Direct Dry Printing® process, and our superior proprietary methods for cost effective production of high-quality carbon NanoBuds®), Canatu is actively transforming cutting edge research into cutting edge business.

**Interview conducted by:
Lynn Fosse, Senior Editor
CEOCFO Magazine**

CEOCFO: Dr. Brown, what is the vision at Canatu?

Dr. Brown: Canatu is planning to change the electronic industry by using carbon based materials, which replace traditional materials such as metal oxides and metals like gold and silver. We will be making flexible, stretchable and formable electronic components in roll-to-roll production similar to printing newspaper. That is the long term vision.

CEOCFO: What is the advantage of carbon?

Dr. Brown: We are entering a few key markets which are essentially "low hanging fruit". The very first thing we're commercializing is transparent electrodes: replacing current materials using the ceramic indium tin oxide which are used in, for instance, displays and touch sensors and solar cells today, with our carbon nanomaterial based alternative. That

means better performance, reduced cost, reduced environmental impact, and more robust, more functional devices.

CEOCFO: What is involved in using carbon as opposed to other materials? What has been the challenge and what is it that you've figured out?

Dr. Brown: Carbon nanomaterials have been under investigation for about two decades now. Viable commercial applications are few and far between so far. Mostly carbon nanomaterials have been used in composite materials, also in some volume, for instance in electrodes for batteries. Electronics, taking advantage of carbon's unique electrical properties is new and that is what Canatu is focused on. We plan to be the first company in the world to make carbon nanomaterials based consumer electronics in high volume.

CEOCFO: What have been the main obstacles?

Dr. Brown: The main obstacles have been the ability to, A) synthesize good enough material, B) the ability to deposit the material on low temperature and flexible substrates and, C) the ability to make more complex devices. Canatu has solved all of those problems.

CEOCFO: What is it that you are able to do that other people are not?

Dr. Brown: We: 1) have developed a new material with better properties. Just the material itself can achieve many of the goals that replacement materials need to achieve. 2) We developed a new process to synthesis

materials and then directly deposit them in the a process we call Direct Dry Printing. We keep everything in the gas phase and we deposit directly on the surfaces as a dry aerosol. This avoids all the problems with trying to get nano materials to disperse in the liquid phase, which is very difficult, expensive and potentially hazardous. We basically, bypass that problem by going directly from a gas to a solid phase.

CEOCFO: Where are you in the process of development and commercialization?

Dr. Brown: We have now developed all the key processes, all the material manufacturing and film manufacturing, and the patterning techniques, and the roll-to-roll deposition. All of these are in-house developed technologies and these are done. We are now scaling that to full production and we are actually in the process of fundraising now to be able to buy the final roll-to-roll equipment, so we can do large scale film and component manufacturing. This are mostly off-the-shelf, standard tools, so little new development is needed.

CEOCFO: Has the industry been paying attention?

Dr. Brown: Oh, definitely. Many people are waiting for our success. We already have sales cases in the pipeline worth over 10M\$ in 2013 and 100M\$ in 2014.

CEOCFO: How do you get people to know about you and buy into the concept?

Dr. Brown: It is a lot of ground work, a lot of talking, a lot of interviews. We had the first ideas in 2004 and those were tested in cooperation with the Helsinki University of Technology. Over the years we've been patenting and publishing results in scientific journals and then giving talks in industry summits and business summits and trade fairs, and getting ourselves published in popular magazines and newspapers, technical magazines and newspapers; wherever it's relevant. We are now, I would say, known by almost all the

big players in the electronics market today.

CEOCFO: Does your scientific and patent background help in getting attention?

Dr. Brown: Technical communication is different than business communication. I can talk to the technical people on the other side of the table in a common language, so that is a lot of credibility on the technical side. Communication is not necessarily the same on the business side. I was not a business man before. I have learned to be a businessman now. I can definitely get my foot in the door on the technical level based on technical communication and the reputation on Canatu now allows me to get in the door at the business level.

“Canatu offers the platform (materials and manufacturing) technology that is game changing in many industries. The total market for our possible NanoBud products is easily in excess of the trillion dollar mark. As a small company, of course, we cannot pursue all of the applications that we see in the pipeline, so we have chosen a very simple, low-hanging fruit option (transparent conductive films and components for touch and displays). This market alone is on the order of ten Billion dollars.” - David Brown, PhD

CEOCFO: Has the industry actively been looking for a better way?

Dr. Brown: We are focusing on a specific submarket to anchor the company: the indium tin oxide replacement market. This is our first application of our material. More specifically we are doing this for targeted applications. Our films and components are applicable in, for instance, displays, in solar cells, and touch screens, and haptic interfaces and many, many other devices. We chose to enter in one of the *niche* markets to be our first and that was touch sensing. We chose touch was for a number of reasons. One, the industry is suffering from the cost of the, of the current product, the ITO based product, where the yield is very low for this process, the cost is high

and the design flexibility is low. The sources of the raw material are unsteady. Basically the raw material is owned by China and China has been restricting exports and many people are frightened by this and are looking for alternatives. Then, if you want to make very robust devices with high optical clarity and good visual properties, you need a new material. There are a number of factors that are driving the industry this way. One thing that we are offering that none of our competitors can, is the ability to make flexible and formable devices; which the industry has not even imagined or been able to do until now. Just take the mobile phone industry; everything looks now like an iPhone. Producers are having trouble distinguishing their products. A Samsung looks like a Sony, looks like

an Apple. Nothing distinguishes the products from each other except its software. However, the industry is looking for ways to make their products look and feel and act differently. Our material offers a way to do that, so phones made from our materials, films and components are flexible and formable, which then means you can, for instance, have a bendable, stretchable, foldable phone and even can have touch all over the device, not just on the touch screen. Therefore, there are a whole

new form factors, whole new functionality that the industry had not even contemplated before. You can imagine it takes time for the industry to get their minds around these kinds of capabilities, but that's happening very rapidly.

CEOCFO: When you get the funding, what are the next steps that you will be taking?

Dr. Brown: The very first thing is to build up our production capacity. Right now we have sample production in a small scale pilot production plant. Customers can order samples and we can deliver up to 1,000 or a few thousand sheets of our material or touch sensors at a time. We can produce sufficient material for many millions of devices, but we do not yet have the deposition process fully

automated. Of course, if we are going to be going to commercial production with one of the big electronics manufacturers, we need to produce on the order of millions of devices a month. That is what this money is mostly for, to finish the scaling of our automated roll-to-roll production.

CEOCFO: Is the team in place to take Canatu to commercialization?

Dr. Brown: We have our full management team in place, except for a COO, who we will be hiring once we get the funding. Then we will be building up the production. Our development team is complete and I can say, the main components of our production team are complete. Now we just need to hire more operators

and technicians.

CEOCFO: Why should investors pick Cantau out of the crowd?

Dr. Brown: Canatu offers the platform technology that is game changing in many industries. The total market for our possible NanoBud products is easily in excess of the trillion dollar mark. As a small company, of course, we cannot pursue all of the applications that we see in the pipeline, so we have chosen a very simple, low-hanging fruit as our first option. This market alone is on the order of ten billion dollars, i.e., just our entry market is a ten billion dollar market. We are very close to being able to meet the market requirements in terms of

volume, in terms of repeatability, and basic performance. This funding will take us into that market and will allow us to develop our first followup market-So this is a very low risk, high return investment. We have already been evaluated by a large number of industries and a large number of industrial players. We have many customers in the pipeline and as you can imagine, it is a standard “chicken-and-egg” problem now. The customers want to make sure that we have production capacity before we sign a deal with them. The investors want to be sure we have enough signed customers before we can sign a deal with them and build the production capacity. But everything is now in place to make that happen.

Canatu Ltd.
Konalankuja 5, 00390
Helsinki Finland
Phone: +358 50 344 4204
www.canatu.com