

Q&A with Jeffrey Draa, CEO of Grolltex, Inc. providing Graphene Materials and Equipment for Electronics Manufacturers



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CEOCFO: Mr. Draa, what is the concept behind Grolltex?

Mr. Draa: Grolltex is a graphene materials and equipment company. We leverage unique discoveries and research in the area of graphene, which is a new advanced electronic material. We try to create unique value not only in the optimized production of the raw material graphene but also from specific products made of this futuristic material.

CEOCFO: What do you understand about graphene that others might not have recognized yet?

Mr. Draa: There are many different forms of graphene. The most sought after, the highest quality and most expensive is called large area, single layer graphene manufactured via a process called ‘chemical vapor deposition’ or CVD. Electronics manufacturers, to design and produce the most advanced products, are really looking for this CVD made graphene. To date, this material has been too expensive to produce for it to proliferate. We at Grolltex, have come up with a methodology to manufacture CVD graphene in a sustainable and inexpensive way. We hope to introduce this material to a much broader user base.

CEOCFO: What is the difference in how you are able to accomplish what you do?

Mr. Draa: To make graphene via CVD, it has to be grown on copper as a substrate. It can be thin copper like foil or it can be thicker like plates, but when you are done making graphene this way, today you have to destroy the copper to get to the graphene. Most people acid etch the copper. Some others use an electrolytic solution to get the graphene off of the copper. But both of those techniques render the copper unusable, essentially destroying it. So today, if you are going to make CVD graphene, you have to destroy a lot of copper. We have come up with a methodology to remove graphene from copper and not destroy any copper. In fact, we reuse that copper, putting it right back in to our manufacturing schema. We have actually engineered or optimized copper substrates for our process to be used again and again.

CEOCFO: How much of a difference does that make in cost?

Mr. Draa: It is on the order of 10x to 100x, depending on how much copper you are destroying today. Additionally, there are two other things we are optimizing about the current state of the art in CVD graphene production. First, acid etching copper creates a really toxic residue. Environmentally it is one of the worst effluents one can manufacture. We do not do that -we reuse all the copper and create no copper related effluent. The second thing is, regarding both acid etching copper or removing graphene with the electrolytic solution method, both of these processes take hours to perform versus our process that is done in minutes. Our process is much faster, we do not create the extra costs of destroying copper and we do not emit any copper related toxic residue.

CEO CFO: *Is the industry embracing Grolltex?*

Mr. Draa: Well, we are a very new company. We recently introduced our first product just eight weeks ago. So far, we have had a good response to our product introduction and in fact, the key players in graphene, the big electronic manufacturers are very interested. We have already been asked about licensing our process and some of those talks are ongoing.

CEO CFO: *For people who understand graphene, is it easy to recognize what you are doing and the value or are there some challenges or an “aha” moment when someone talking with you understands?*

Mr. Draa: The aha moments come when you can talk with people in particular use cases where they easily understand. Imagine that you had a solar panel the size of a football field and when you were done with that, you could fold it up, put it in your pocket and walk away. Graphene provides the characteristics of being one atom thick, being 200 times stronger than steel, being the most conductive substance that we know of at room temperature. It is transparent and it is flexible. You combine all those things and there are really some amazing applications for graphene. Another use case people identify with very quickly is, imagine you pull your Tesla into the garage for the night's charge and instead of it being charged in the morning, it is fully charged in eight seconds. These are some of the, admittedly theoretical, things that can be done and someday will be done with graphene but these kinds of use cases are going to take a while to unfold.

CEO CFO: *Has the difficulty of producing the graphene stopped people from looking at it for some of the other applications? What is the state of the industry surrounding graphene?*

Mr. Draa: There are many use cases that are waiting for just graphene raw material to become practical. Once manufacturing CVD graphene can be done easily and inexpensively, then you will start to see it in many areas. And this is our forte. Specifically, now, I am talking about single layer CVD graphene, the kind that is used in electronics manufacturing. Once that is widely available, you will start to see a lot of these use cases that I've described become commonplace. One of the first applications that you will see is flexible smart phones. Today smart phones are brittle. The displays are made of glass. This characteristic comes from a basic material called Indium tin oxide (ITO). Graphene will begin to replace ITO in smart phones, I think within the next three to five years and maybe even sooner. Samsung for example, has already made flexible smart phones made of graphene. They have very high performance; high resolution screens, good touch to signal capability. The problem is just that they had to destroy a lot of copper to make those phones and it was too expensive, but they are very close.

CEO CFO: *Would you tell us about the research that went into what you have developed?*

Mr. Draa: My partner and co-founder, Alex Zaretski did some amazing research at UCSD and he came up with this idea of being able to remove graphene from copper without destroying the copper. Alex's whole focus was not that he wanted to reinvent something or create something new from whole cloth, but he wanted to take this incredible advancement, this discovery of graphene as synthesized by CVD, and make it manufacturable, taking something that is already here and making it practical. That was his whole focus.

CEO CFO: *What are your next steps? Do you have a strategy laid out yet or will it depend on the response you get as you move forward?*

Mr. Draa: I can answer yes to both of those questions. Today as most people know, there is not a wide market for the material graphene. Especially high quality, single layer CVD graphene. There is not a huge industry making one thing or another yet out of graphene. Our phase one strategy is to go where there actually is demand. And today there is demand with research material and product design labs. There are university labs, industrial labs, and small commercial labs that need and buy graphene on the open market. We are in the phase one part of our business are making graphene material for sale and available to these research labs worldwide. We just started doing that eight weeks ago and the response has been very good. So that is 'phase one'. We implemented this and it is rolling along nicely. Phase two will be to introduce specific products made of graphene, some of those we have patented already such as sensors. Some other new products are starting to come to us via these new contacts that we are making by supplying research graphene to people worldwide. We are seeing new use cases and people coming forward saying they want to make a business out of their advancement and make it out of graphene and they are looking to us to help them engineer it. We are doing some of that too.

CEO CFO: *Are you seeking investment or funding of any kind?*

Mr. Draa: We are pretty well funded today to execute on the phase one business I talked about, which is making materials and selling that to research labs. We have executed on that and we think we can get to profitability on the current course. When it comes time to go phase two, which is rolling out products for large market use cases, at that time

will be going out for an A Round to execute on that. I would say that would be sometime in the next twelve months to eighteen months.

CEOCFO: *What surprised you throughout the process of creating the company, the products and concept?*

Mr. Draa: Just eight weeks ago we rolled out our first released product, which is the raw material graphene for research and design purposes. When we went to introduce that to the market, we ran into some very unique use cases. We expected interest from university labs, we expected interest from large commercial labs and we have that. What we did not expect and what was a great surprise were the numbers of incredibly smart people at small labs all over the country trying to make their idea out of graphene. The sheer numbers are staggering and the combined force of all of this is incredible. Mostly we saw this in the US, but of course this is everywhere to different scales. So many smart people making things out of graphene that you would never have thought of. For example, there was a fellow who we sold some material to who was designing a powerless switch. That is, a switch that requires no power. How does can a switch work without any power? His switch is powered by the effort that one uses to push the button on the switch. Just that amount of energy powers the switch. Now, using a material like graphene, take that use case and follow it further. Imagine someone sitting at a keyboard and typing, and just the power they are applying onto the keyboard is what is powering the computer. That is pretty amazing stuff. Again, that is just one example. We are seeing all kinds of these use cases. To go back to answering the question of what surprised me, it is the incredible ingenuity that comes out of American enterprise. I am sure this phenomenon is worldwide to some degree but what we are seeing out of just US customer inquiries is mind blowing.

CEOCFO: *Why pay attention to Grolltex today, both from a product and potential investment point of view?*

Mr. Draa: I think anyone who spends five minutes researching graphene on the internet will come away with the idea that this is really going to be something special. There are over 25,000 patents worldwide in the field of graphene. This is not just a passing interest by a few technologists; this is a movement. I think that Grolltex has a significant piece in helping further this movement and introducing the material to wide acceptance. Why pay attention to us for investment? Well, we are a small company right now and our valuation reflects this. But I think from an investment perspective we have a lot to offer in a very high growth area. We have some key foundational patents in this area and we know the market as well as anyone.

The logo for Grolltex features the word "GROLLTEX" in a bold, sans-serif font. The letter "O" is a bright orange hexagon, while the other letters are in a dark grey color.