

Bringing to market unique gold nanorod technology with its own proprietary nontoxic surfactant, Sona Nanotech is positioned to make an impact in the growing lateral flow diagnostics sector as well as in cell imaging, life sciences, drug delivery and photothermal therapy



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CEOCFO: Mr. Rowles, what is the focus at Sona Nanotech today?

Mr. Rowles: Our focus is around exploiting Sona Nanotech's core nanotechnology, to use across multiple different markets, everything from diagnostics, cell imaging, life sciences market, drug delivery, photothermal therapy (PTT). With regards to our actual core focus over the next couple of years, it certainly would be in the diagnostics space, and that has taken the form of utilizing lateral flow assay tests, which most people are familiar with in the form of the Home Pregnancy test. Over the last few years the market has significantly changed because the patents around that platform have expired and that has allowed the whole market to expand significantly, allowing new companies to enter into that market. [In 2017 lateral flow market was estimated to be around \\$6 billion and it is expected to grow and rise to about \\$9.7 billion by 2026.](#)

CEOCFO: You have 14 years' experience in nanotechnology and lateral flow diagnostics. What is your day-to-day role at Sona Nanotech? How long have you been with the company and how has your role evolved over time?

Mr. Rowles: As you mentioned I have 14 years of experience and it is coming up to 16 years now in the diagnostic space. Started in 2003 with a previous company and I joined Sona Nanotech in October 2017. They brought me in as the CEO, because they wanted someone who knew and understood the technology, but also understood the market, especially the diagnostics space. I have been in the role now for about 18 months. We are a growing business with 5 fulltime staff in operations and commercial roles and we also use a network of consultants that across North America and the UK for PR, finance, business development and technical assistance.

As we are listed on the Canadian Securities Exchange, one of my primary day-to-day objectives as CEO is towards shareholder value and ensuring that the share price is maintained and continues to grow. We were listed on the stock exchange in Oct 2018 so for about six months now and we have had steady growth. We started at \$0.25 and there has been a bit of fluctuation there, but we are currently trading at just over \$0.30. There are two other key areas that I work on. One of them is the business development side as I have a lot of contacts within the industry and we have been able to utilize those and create some great partnerships for the business over the last twelve months. The team and I are continually building business development activities and new collaborations. I also help the existing business development team to fully understand some of those relationships and where we want to position ourselves, both from a marketing and conference perspective.

Another aspect of my day-to-day activities is obviously on an operational basis, because I have a scientific background in biomedical science and toxicology, as well as a business background with an MBA. Therefore, I am able to work across both the commercial and operational sides. We have started to grow the operational team and brought in some new scientists that can operate in the diagnostics space, and took the existing operational team that were predominantly PhD academic, post-doc people and really started to integrate them and get them used to the idea of working in a quality management system within the diagnostic space. It is a very different mindset going from an academic lab, to an industrial lab and are committed to making sure we have those things in place. We took a big journey last year when we moved from Sona's original home of St. FX University (St. Francis Xavier University) in Nova Scotia and transferred the whole lab and team down to our new lab in Dartmouth in Nova Scotia. We have been overseeing the reinstallation and qualification of that lab as well. As a CEO I am pretty hands-on; everything operational, commercial, as well as corporate.

"Our technology is very important for the whole diagnostics and human healthcare market. We feel that we can make a difference for peoples' lives."- Darren Rowles

CEOCFO: Are you involved with product development?

Mr. Rowles: Absolutely. We have our ongoing production side, but also our product development team, and we have a pipeline of new products coming through. Part of my job from a commercial point of view is about understanding the market, understanding what we need to do next. That would involve being aware of new trends that are happening in the market and making sure that we are setup to be able to exploit them.

CEOCFO: Would you tell us about your gold nanorod products and why they are unique?

Mr. Rowles: The major difference between our gold nanorod technology and anybody else's that is in the market goes back to the basis of what a gold nanorod is. When you fabricate a gold nanorod, you have to use surfactant chemistry to do that. The surfactant used is a key ingredient to allow you to make the nanorods and to my knowledge, everybody else in the marketplace that produces gold nanorods, uses a surfactant called CTAB (cetyltrimethylammonium bromide). However, that surfactant is toxic to biological material. Therefore, in the diagnostic space, if you are integrating nanorod technology with that surfactant, and putting it in touch with antibodies or antigens, which you want to detect in biological cells or samples like blood and saliva, that can start to hinder the performance of those biologicals.

The difference with our technology is that we use a surfactant that we created ourselves, in-house from our knowledge. This means that we do

not use CTAB at all. We use our own proprietary surfactant that we have made that is nontoxic and so they do not actually damage or hinder that performance in the biological workplace. That is the major difference between our nanorod technology and any other nanorod technology out there and is currently patent pending internationally.

CEOCFO: *What is the history of gold nanorods? How long have they been around and what was used before them to make diagnostics possible?*

Mr. Rowles: Nanorod technology has been around between ten and fifteen years. When I started in the business in early 2000, the initial research around it was starting to be done. Then I believe the initial patent around the CTAB manufacturing method, which everybody tends to use, was generated around the mid-2000s by Dr. Catherine J. Murphy, who now operates out of Illinois University in Chicago. Catherine actually sits on our scientific advisory board today. When Sona presented the technology to her at a conference a few years ago, she was amazed by it and really saw the potential as a technology and as a basis, so she joined our scientific advisory board. She has been able to commercialize her patent and allow access to various companies around the world to exploit it. That was the start of nanorod technology, and since then, in reality nobody has really done anything with that platform, other than utilize that manufacturing method.

Lateral flow test technology has been around for 30 plus years but we are the only nanotechnology company that is offering nanorod technology for use in lateral flow diagnostics. Nobody else is doing that, and that is why we are unique in the market. In a standard pregnancy test you tend to have latex particles which are dyed blue - everybody knows the Clear Blue brand - or you can get other colored dyes for latex, or you would use gold spherical nanoparticles. This has been the traditional nanotechnology used in lateral flow tests. They are typically 40 nm (nanometers) in size and red in color. People are still utilizing these types of particles and they will continue to utilize them as they will the latex, but change is coming.

Over the last couple of years there have been other labels that have come into play. Nitrocellulose beads were introduced a couple of years back, magnetic nanoparticles have been used and new particles for fluorescent particle technology such as quantum dots and up converting fluorophores are all available but not really taken-off due to expense and probably due to the difficulty of being able to use the particles and integrate them into existing tests as well as new tests. It is not so simple. People can also be wary of new technologies. That is where you see the advantage of our gold nanorods and their properties, they tick all of the boxes, so people are interested in it, but it is also familiar because it is gold based so everybody knows how to handle, utilize and understand how the gold works within the lateral flow tests. It also takes on the properties of having various different colors because of the nature of the rods and the size of those rods. It mimics one of the core properties of a latex particle. It has taken all the good points of all of the existing technology, put it all into one and still is applicable and easily integrated into existing tests in the market.

CEOCFO: *Does it make a difference in accuracy?*

Mr. Rowles: It is not necessarily a case of accuracy; it is more a case of improving the test performance. Performance could be a number of different things. Most people look for a performance enhancement in

terms of sensitivity, such as can it detect at a lower limit of detection so it detects smaller levels of analytes in a sample. That is what most people are looking for. What we see in our in-house model systems is we do see that improvement in performance. As a result, it has some of our existing partners very excited, because even a small improvement in performance gives them a competitive edge in the existing market.

CEOCFO: *Sona Nanotech recently signed an agreement to develop new point of care tests for infectious diseases. Why is that significant and do you still have a heavy R&D spend? Are you constantly innovating and looking for new applications?*

Mr. Rowles: The collaboration that we signed with OLM Diagnostics to develop a new infectious disease assay, is going to be very significant. It is a brand-new style of assay and it is going to be brought to the market. Nothing like that exists in the market at the moment in terms of the types of analytes it is going to be able to detect. There is a level of secrecy around it, and we cannot go into what it is exactly yet, but it will be a new test for them. It is a new test for the market as well, which we can prove our technology in. It is going to be quite significant and we know there is already existing demand within the marketplace for that type of test.

From an R&D perspective, we do still invest in R&D. The collaborations that we are creating with companies in this space is a shared risk model where we take some of the risks and use the R&D spend around developing some of the technology. They share that risk with us rather than us just being simply a contract research organization. We are continually wanting to innovate. We have a pipeline of product that we want to bring to the marketplace on the back of our core nanorod technology.

We signed a collaboration back in January with a company called Anteo Diagnostics, based in Australia. They have some proprietary coating technology to put on the surface of nanoparticles to help in the processes within development of lateral flow tests. We signed an agreement with them to develop a new suite of product lines that both they and us can take to market if we choose to do so, and integrate into existing and new tests. I believe we cannot sit on our laurels and say we have new technology that is taking the market by storm. We have to continue to innovate and integrate because the market will command further development. Everybody wants better performance, cheaper products, exciting products, different verticals, across product offerings. We will continue to invest in R&D so we can build a scalable and exciting business.

CEOCFO: *You have announced a collaboration with Romer Labs. Would you tell us about?*

Mr. Rowles: Romer Labs is one of the leading food-borne pathogen testing companies in the world. They have a suite of lateral flow tests for food-borne pathogens. The collaboration with them is slightly different from the OLM Diagnostics collaboration. With OLM it is in the development of a brand-new test, but with Romer we are collaborating with them to see if we can improve the performance of some of their food-borne pathogen assays, because it is a very competitive market that they operate in. They looked at our technology and they felt it could potentially give them a boost in performance. This is on the spectrum of using existing technology in the existing market and helping them deliver their next generation of product. We are glad to be working with their team.

CEOFO: *Where are your products manufactured?*

Mr. Rowles: We just moved to a brand-new facility here in Dartmouth, Nova Scotia, and all our nanorod manufacturing happens in that lab and it will continue to happen in that lab. We have patents pending on the fabrication of the nanorod technology itself that is still going through the process as we speak for international coverage. Therefore, we have to be quite cautious and tight around where we put manufacturing capabilities; the knowledge and manufacturing capabilities sits within our people as well.

CEOFO: *What is your global reach?*

Mr. Rowles: In terms of our collaborations, we have companies in the UK and Spain, and we are in discussions with many other companies in EU countries including Germany, Austria and Switzerland. We collaborate with Anteo in Australia and the US site of Romer Labs, with discussions ongoing with many more US based companies. About 90% of our work is export out of our Canadian base. We are talking to a group of Canadian companies that we are looking to work with as well. We have manufacturing and development here in Canada. We also work with a group of consultants based in the UK that consult on development programs, cover our PR needs and build our pipeline from a business development perspective. Therefore, we are a global business. One of the major things that made us a global business is we signed a distribution agreement with a UK-based company called Expedeon to sell and distribute our nanorods in different market segments, and they have over a hundred distributors in their global distribution network that we can now tap into. We really have reach into all of the countries that we want to go into.

CEOFO: *Are you attending industry conferences?*

Mr. Rowles: Oh absolutely! It is one of our core things really, in terms of this market and this business. Business is very much done around relationships and you need to build a huge amount of trust with companies, which I have been able to do over the last fifteen years. Sona were the new kids on the block, and everybody did not know us but now we have started to build that trust. We attended a bunch of conferences last year. Within our industry there are probably two major industrial conferences. One is in the US. It happens towards the end of July and it moves around the US. It is called the AACC (American Association of Clinical Chemistry). It is a huge industrial conference that we go to where thousands of people attend. We plan on going to that again this year in Anaheim, California. The other industry conference that we will go to and have attended in the past, is Medica in Dusseldorf, Germany. That is every year in November in Germany. Medica is a huge medical diagnostic conference with thousands of people which could service the European, UK and some Asian markets, as well as American. Then there are the market-specific conferences which we attend and have sponsored in the past, and we will continue to do that. They are specifically around the lateral flow courses, so there is one in Europe usually in the spring, which is an introductory seminar lecture series over a period of a couple of days and is just called the Lateral Flow Course. It is typically run by core industry suppliers. There is a similar one, run in the fall usually in the US on the West coast, again run by industry suppliers. That is more of a specific lecture series around some of the more advanced technologies and new innovations within the marketplace. I am going to the one in May of this year in Amsterdam, where I will be giving a keynote speech around nanoparticle

technologies. I hope to get invited to do a similar thing in San Diego in October as well. That is where we tend to meet a lot of existing and new customers.

CEOCFO: *Do you have the funds to continue to grow your business? Are you reaching out to investors and doing road shows?*

Mr. Rowles: We are listed on the Canadian Securities Exchange, we got listed in October of last year and as a result we did a private placement raise of \$2 million. Prior to that listing, we merged with an existing company on the TSXV. The company was called Stockport Exploration. As a result of that, we inherited a bunch of assets that we are looking to exploit and convert into cash for the business. We have cash in the bank as well, which we can deploy and utilize in a much more return on investment basis. In addition, back in April of last year we were provided with a half-a-million dollar re-payable loan from the Atlantic Canadian Opportunities Agency (ACOA), to help us commercialize our plans, go to conferences and set up our new lab. As a result, we are in a very good cash position as a business.

We are starting to generate small levels of revenue. We expect significant revenues to start entering the business by the end of 2020 or early 2021, with the idea of us becoming a self-sustaining business. As we continue to expand and grow, the management team here and board of Sona have ambitious plans and so never say never to the idea of raising further money. We have a very strong relationship with a group in Halifax and Nova Scotia called Numus Financial, they were one of the seeding founders of Sona Nanotech back in in 2014 and have continued to support the business over the last four years. They were instrumental in the merger with Stockport, the consequent listing and the \$2 million private placement. We have a very good relationship with them and they have a great many links to private investors, as well as the small cap markets and institutional investors. Therefore, if we did need to go back out to the market to raise any funds, then we have a great network to be able to do that. I am not currently undertaking any of that activity at this stage, but we plan to do a huge amount of investor relations work this year as we continue to obviously want to grow the share price for the business.

CEOCFO: *In closing, why is Sona Nanotech an important company?*

Mr. Rowles: It is important because we are bringing the next generation of technologies to a market that really is crying out for those and needs them, to allow people to take their products to the next level. That is only one application that Sona's gold nanorods can be used for, and there are a lot of other applications that Sona is exploring around drug delivery systems and photothermal therapy for cancer treatment and cell imaging, which is a longer-term business plan, five or ten-years out. Initially we need to be a focused self-sustaining organization over the next three to five years before we really get into those. Our technology is very important for the whole diagnostics and human healthcare market. We feel that we can make a difference for peoples' lives.