

Alkane's disruptive technology to reduce metallization costs by +50%

[Note from the Publisher: This InvestorIntel interview is about the Alkane Resources Limited: Investment in Clean Metal Processing Technology news release put out on June 6, 2019 that starts: "Alkane Resources Ltd (ASX: ALK) (Alkane) through its wholly owned subsidiary Australian Strategic Materials Limited (ASM) has executed a binding agreement with Zirconium Technology Corporation (a South Korean company) (Ziron Tech) to fund the final stage research and feasibility in relation to a clean metal process to convert metal oxide – including key Dubbo Project metals – to metals of high marketable purity (Technology)."

InvestorIntel did a follow-up column titled Alkane deal with Ziron Tech to reduce metallization costs in excess of 50% for zirconium, hafnium, and titanium metals on July 15, 2019 as we deem this news to be disruptive for the overall critical materials sector.]

"It is an electrolysis process. So it uses standard electrolysis but through a solid oxide membrane rather than a carbon electrode. That is a big step because it takes carbon out of the equation. The really exciting thing for us was, the solid oxide membrane that they use is a yttria stabilized zirconia. Here are two products that we will produce from Dubbo, we can actually produce yttria stabilized zirconia used in the process, so there was an added bonus for us. The beautiful thing about the process is that it generates only oxygen as waste material and produces high purity metals" States Ian Chalmers, Technical Director of Alkane Resources Ltd. (ASX: ALK | OTCQX: ANLKY), in an interview with InvestorIntel's Tracy Weslosky.

Ian went on to say that the Ziron Tech Electrolysis Process is estimated to reduce metallisation costs by in excess of 50% and is applicable to the majority of Dubbo Project products, including zirconium, hafnium, titanium, neodymium and praseodymium. Ian also said that the process doesn't add much to the capital and operating cost of the Dubbo Project and expects that by the end of 2020 this technology will be available to the global critical material market.

To access the complete interview, [click here](#)

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Alkane's Chalmers on the supply shortage of rare earths

"Surprisingly the rare earth market still has not shown the jumps that we believe it would have by now. The equity market is still very skeptical of us. I think that is a combination of things. Eventually the customers, the equity market are going to lock on or understand that if we are going down this path, which we all believe we are going, then the demand for rare earth magnets is just going to have to increase dramatically and there is not the supply around at this point in time." States Ian Chalmers, Technical Director of Alkane Resources Ltd. (ASX: ALK | OTCQX: ANLKY), in an interview with InvestorIntel Corp. CEO Tracy Weslosky.

Tracy Weslosky: Ian, the headlines everywhere, we have got U.S.-China trade negotiations happening. We have China and

Canada at each other. What is happening with the rare earth market?

Ian Chalmers: That is a good question actually. It is pretty hard to summarize in a short space of time. Surprisingly the rare earth market still has not shown the jumps that we believe it would have by now. The equity market is still very skeptical of us. I think that is a combination of things. Eventually the customers, the equity market are going to lock on or understand that if we are going down this path, which we all believe we are going, then the demand for rare earth magnets is just going to have to increase dramatically and there is not the supply around at this point in time. At some point in the not too distant future the market is going to crack and we are going to see some really, really strong interest.

Tracy Weslosky: Ian I think we are both getting our updates on what is happening with Lynas for instance from just the general news media. What is your understanding of what is happening right now?

Ian Chalmers: My understanding, and again like you I am just getting it from the public domain, is that Lynas had been instructed that they have to come up with a solution to the radioactive waste. Now in the meantime they have stopped production. I understand it was only initially for a month while this review was completed, but they have to come up with an issue to deal with the radioactive waste that is already on site. It is a serious problem, but it is a problem I do not believe the Malaysian government cannot resolve because there is too much outside influence on the Malaysian government. There is a strong relationship between Japan and Malaysia and really a lot of Lynas' product goes to Japan. I think I would be very surprised if the Malaysian government shut down the operation.

Tracy Weslosky: I really appreciate the update with that.

Speaking of updates, considering the size and the magnitude of your critical material resource, can you give us an update on what is happening with the Dubbo Project?

Ian Chalmers: Basically the Dubbo Project is ready to go. We are continuing to work on offtake agreements. We are continuing to work on the finance. One of our major issues is our customers, particularly in the rare earth space keep wanting to see discounts. They want to see discounts to Chinese domestic price. In other words they are saying to us, yeah we will sign an off take contract, but you accept the 7%-8% vet as a discount and you put another small discount on top of that as the Chairman stated at the lead in to our annual general meeting back earlier in November...to access the complete interview, [click here](#)

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Alkane Resources tells the hafnium tale

Ian Chalmers, Managing Director of Alkane Resources Ltd. (ASX: ALK | OTCQX: ANLKY) in an interview with InvestorIntel Editor Peter Clausi discuss the Dubbo Project and hafnium. The Dubbo project, northwest of Sydney, Australia, is abundant in rare earth elements – all of which are of interest to Alkane and their investors. However, Alkane's trump card is hafnium. While discussing the relationship between hafnium and Alkane, Ian highlights the major drivers for hafnium demand, as well as new applications.

Peter Clausi: I would imagine the past year has been an

interesting one for you.

Ian Chalmers: That's one way to describe it, yes.

Peter Clausi: Tell us a little about that.

Ian Chalmers: Trying to advance the Dubbo Project through financing, we've really done everything we can do in terms process development, market development. We're effectively construction ready, just trying to put the financing in place. Started off with a billion dollar project and now working on cutting that into two slices. That's a good step forward.

Peter Clausi: Where is the Dubbo Project?

Ian Chalmers: It's about 400 kilometers northwest of Sydney in a region they call the Central West, which is a strange name for something that's near the east coast, but that's what they call it. It's a very civilized part of the world to operate in. Lovely countryside, farming countryside, all over infrastructure, everything you need and a good place to live.

Peter Clausi: Now at PDAC in Toronto this year was the first time that I heard about hafnium.

Ian Chalmers: Right.

Peter Clausi: Good old element 72 on the periodic table. Tell us about what you're doing with hafnium.

Ian Chalmers: Well, it's a long story. I'll give you the shortened version. We were approached 4 years ago by a large aerospace group to say, "what are we doing with the hafnium in our deposit?" We said, well, the hafnium reports with the zirconium. Most zirconium products have hafnium. That's the way it lives. They said, "well if you can separate it and get it out we'd be very interested." We embarked on a process to look at hafnium and really then looked at, first of all, the technology of getting it out. It's very complex, but we've got a process. Secondly, I suppose getting into the hafnium space

we suddenly realized that here was a metal that had this enormous potential with an enormous amounts of R&D taking place that showed lots and lots of opportunities so very interesting product...to access the full interview, [click here](#)

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Have you heard the Hafnium buzz?

Ian Chalmers, Managing Director of Alkane Resources Ltd. (ASX: ALK | OTCQX: ANLKY), in an interview with InvestorIntel's CEO, Tracy Weslosky discuss the new super metal hafnium. Hafnium, which is building on its nuclear energy application to absorb heat – is now expanding into the tech and automotive sectors. Ian comments, “[there’s] a lot of potential interest [in hafnium] converting the heat of the automobile back into electricity.” Ian points to a shortage as demand increases. As a multi-commodity company, Ian goes on to discuss Alkane's rare earths and comments on 2017 market prices. Ian will be presenting at InvestorIntel's 6th Annual Cleantech and Technology Metals Summit on Monday and Tuesday, May 15th and 16th in Toronto, Canada at the Omni King Edward Hotel.

Tracy Weslosky: Ian, we were delighted to see you're one of the top 50 performing OTC stocks last year. Is that correct?

Ian Chalmers: It was great. I must admit I was quite surprised, but it was great to see. It was great that we get some recognition for everything that's going on in the company.

Tracy Weslosky: Speaking of recognition, you're coming to North America, May 15th and 16th to speak at the Cleantech & Technology Metals Summit, yes?

Ian Chalmers: Yes I am. I'm looking forward to it.

Tracy Weslosky: As one of the featured speakers, can you share with us what you plan on discussing, as Alkane Resources is a multi-commodity play?

Ian Chalmers: We thought this time we'd do something slightly different. We've always talked about the project or financing the project and those sort of things. We would like this year to talk about hafnium. We think it's appropriate that we bring up hafnium to the broader audience because hafnium is a fascinating metal. Certainly all the work that we've done on the last 2-3 years on hafnium indicates it's one of these metals that is really going to have a big impact on our future. I'd like us to expose the world to some of our fascinating developments.

Tracy Weslosky: Many of the members of our audience don't know about hafnium. Ian, I am a believer in hafnium and the technology that hafnium can be used for is quite sizzling. Could you give the InvestorIntel audience a bit of an overview...to access the complete interview, [click here](#)

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InvestorIntel to host the 6th

Annual Cleantech & Technology Metals Summit in Toronto on May 15-16th, 2017

December 13, 2016 – On behalf of the team of InvestorIntel, a leading online source of independent investor information, we are pleased to announce the **6th Annual Cleantech & Technology Metals Summit** (@CTMS2017) scheduled for Monday, May 15th and Tuesday, May 16th at the Omni King Edward Hotel in Toronto, Canada.

InvestorIntel Corp. CEO Tracy Weslosky commented: “It is with great pleasure that we announce our 2-day annual investor event on Monday, May 15th and Tuesday, May 16th – the **6th Annual Cleantech & Technology Metals Market Summit** with this year’s theme – ***Invest in Sustainability***. Traditionally we attract global leaders in the technology metals sector, but this last year we had wider representation from the cleantech sector with battery storage, water desalination and even graphene technology companies presenting. Additionally, I would like to welcome Neil Lock to the InvestorIntel team as he takes on the leadership role as the Summit Director for this year’s event. With expert panellists that examine various ground breaking cleantech technologies, the impact of geopolitical and financial issues on sustainability, and the ongoing race for critical materials in the global technology market: we believe CTMS2017 will be our most **remarkable** year to date!”

“Metals, alloys, and advanced materials play a vital role in reducing life-cycle environmental impacts and enhancing the sustainability of many products, particularly when they are used to lightweight transportation and other systems,” said Mark A. Smith, CEO and Executive Chairman of NioCorp Developments Ltd. “Pick your molecule of concern – carbon

dioxide, methane, nitrogen oxides, volatile organic compounds – reducing mass in transportation and infrastructure systems via lightweighting can deliver large emissions reductions, and relatively quickly. I see the current lightweighting revolution accelerating on a global scale, helping to drive demand for many metals and high-performance alloys that reduce mass, increase fuel efficiency, and reduce a broad range of manmade emissions into the atmosphere.”

Managing Director of Alkane Resources Ltd. Ian Chalmers adds: “Rare earths and rare metals are used to tailor the properties of advanced materials and reduce their size or weight, for use in clean and sustainable technologies. Certain rare earths are in particularly high demand for use in lightweight high-strength magnets for high-efficiency electric motors, while others are key components of photovoltaics, electronics and speciality alloys. This makes them vital components of many technologies we take for granted – including smart devices, auto fuel systems, wind turbines and industrial gas turbines.”

Cleantech & Technology Metals Summit 2017: The **Cleantech & Technology Metals Summit** is intended to provide a strong venue for dialogue and debate from industry leaders and the investment community alike and is being held on Monday, May 15th and Tuesday, May 16th from 8AM – 6PM. Located at the Omni King Edward Hotel on 37 King St. East in Toronto, Ontario – Canada, to register as a delegate, go to <http://bit.ly/2h4EE54>. Cost is CAD\$1000 per delegate for the 2-day event and includes breakfast and lunch. There is an early bird registration discount of 25% through January 30, 2017.

Presentations: C-level presentations confirmed include: Alkane Resources Ltd., H2O Innovation Inc., HPQ Silicon Resources Inc., Nemaska Lithium Inc. and NioCorp Developments Ltd.

Accommodations: To make reservations at the Omni King Edward

Hotel for dates between May 14-17th and to access the **Cleantech & Technology Metals Summit 2017** CAD\$TBD special rate per night, [click here](#) or go to the following link: <https://www.omnihotels.com/hotels/toronto-king-edward/meetings/cleantech-technology-metals-summit-2017>

Contact Information: For more information, contact the 6th **Annual Cleantech & Technology Metals Summit Director** Neil Lock at +1 647 345 5486 or Neil@InvestorIntel.com. For regular updates on the **Cleantech & Technology Metals Summit** agenda, please follow us on twitter @CTMS2017.

Ian Chalmers on the Minchem zirconium deal and Alkane's full spectrum of rare earths

September 12, 2016 – Ian Chalmers, Managing Director of Alkane Resources Limited (ASX: ALK | OTCQX: ANLKY), in an interview with InvestorIntel Sr. Editor Fred Cowans discuss Alkane's marketing deal with Minchem for all zirconium materials produced by the Dubbo Zirconia Project, to which the market responded very enthusiastically. In this interview Ian explains how they have derisked the flowsheet to such an extent that it will work in a full-scale commercial plant. They also discuss Alkane's JV with Vietnam Rare Earths in Vietnam to produce the full spectrum of rare earths to high specification.

Fred Cowans: You just recently put out some news of a deal on zirconium marketing with Minchem in the U.K. The market responded very enthusiastically. Let's talk about the DZP

project, the Dubbo Zirconia Project and how much zirconia you intend to produce there.

Ian Chalmers: Sure Fred. Yeah, you're right. It was a pleasing response because we actually put out a couple of quite decent announcements in the previous six months and got no market response so for zirconia it was great. We produce about 16,000 tons a year of zirconia, which really means zirconia oxide and zirconia chemicals. It's the bulk of the volume of the project that we will produce. In terms of revenue though, it's about 30% so important, but not the dominant output.

Fred Cowans: The market gets excited about rare earth elements outside of China. You've got in this project both heavy rare earth elements and light rare earth elements. What will you be producing?

Ian Chalmers: We can produce all the rare earths so run the full spectrum through lanthanum through lutetium and yttrium. It's important, but in terms of revenue, again, the key ones are the magnet materials, like neodymium, praseodymium, dysprosium and terbium. They really do dominate the rare earth revenue part of the project. Other ones, lanthanum, cerium – but right now the price is so low that it's almost not worth producing those. We'll focus on the key revenue generators.

Fred Cowans: I understand the current quarter Ian that you're going to be operating a pilot plant there. Is that to show your flowchart actually do work or is it also to demonstrate to your potential buyers what your products will be?

Ian Chalmers: Fred, the pilot plant's really been operating now coming up to 9 years. Really the length of that time has been to optimize, to derisk it and this current run is as combination of all of that work over many, many years. We think we've now derisked the flowsheet to such an extent that it will work in a full-scale commercial plant. We made some modifications and adjustments to the pilot plant for this run,

but the other really big driver is to produce products. We've got a number of products. We will produce all products this time around, get them out to the customers, get the customers to look at them, decide whether this is what they will buy or if there are any issues we need to get back and relook at what we need to do to produce that material that our customer wants to buy. As you're probably aware when you're dealing in these, sort of, exotic metals sweets, the customer drives the demand. The customer decides the purity, the particle morphology, all of these things, which are very important when you start generating science.

Fred Cowans: When you actually get into commercial production you're not going to be doing the production. I think you've got the beginnings of an LOI in place with a Vietnamese company. How important is that?

Ian Chalmers: It's very important Fred. Basically we decided many years ago that we would only produce a rare earth concentrate on site. The reason for that is we were trying out to minimize the risk of going into a commercial technically complex rare earth separation plant knowing full well that we could produce the whole spectrum of rare earths. We looked around for different opportunities and finally settled on Vietnam Rare Earths in Vietnam, an interesting company run by a very entrepreneurial gentlemen. Basically that plant's been operating since 2012. It can produce all the rare earths. It can produce them to high specification and it's already selling product into Japan... to access the complete interview, [click here](#)

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Ian Chalmers on the Alkane gold revenue and global rare earth advantage

December 8, 2015 – Tracy Weslosky, Publisher of InvestorIntel interviews Ian Chalmers, Managing Director of **Alkane Resources Ltd.** (ASX: ALK | OTCQX: ANLKY) on the numerous milestones announced at Alkane's recent AGM. With \$102.5 million in total income and nearly \$ 20 million in cash and bullion, Ian discusses the impact of illegal rare earth production in China, and what shareholders should anticipate from the Dubbo Zirconia Project (DZP) in the New Year. Anticipating their Environmental Protection License and Mining Lease approval shortly, Ian touches on DZP's zirconium, niobium, yttrium, hafnium and rare earths and the global competitive advantages innate in these resources.

Tracy Weslosky: Ian, I hope you don't mind, but I know you've been traveling a lot and I'd love to get your feedback on the Singapore conference and in particular Dudley's presentation. I read his title was, "The Global Rare Earths Industry Today Plagued by Illegal Production in China". Can you comment on this?

✘ **Ian Chalmers:** Yes. It was a theme that Dudley's been, sort of, promoting now for probably 2 years, that the Chinese aren't really in control of their rare earth industry. That's simply what it is at present because the illegal rare earths are really probably 30% or 40% of production. Until they either eradicate that or control or do whatever they have to do to it we're never going to be sure and it's putting a lid

on rare earth demand or rare earth prices. What's even more disturbing, and this is Dudley's view obviously, is that it would appear that a number of major consumers are accessing those illegal rare earths. That's disappointing that we do have a number of western companies actually accessing those rare earths.

Tracy Weslosky: This is your 29th anniversary at Alkane, so what I'd really love is your opinion: are the illegal exports plaguing the industry?

Ian Chalmers: Oh absolutely. I have no doubt in my mind at all that's what's going on. It's just they're effectively undercutting the demand or oversupplying the demand and keeping prices low. There's no doubt its happening. It's very disappointing for an industry that's got guys going through a very tough time.

Tracy Weslosky: You just had your AGM and this was a jam-packed PowerPoint presentation. Every page was full of highlights. Let me start with something I found interesting. I didn't realize that you had a total income of \$102.5 million last year and that you have nearly \$20 million in cash and bullion presently. Is that correct?

Ian Chalmers: Yes, that's correct. Yes. The nice thing about all of that is that we made about \$28 million free cash flow out of that operation or out of the gold operation. We are in a very sound financial position going forward.

Tracy Weslosky: Well, everybody talks to me about finding companies with revenue. Okay, investors we have a company here with revenue. You only have a \$90 million dollar market cap. What should we expect in this upcoming year for revenue for the gold project?

Ian Chalmers: Yeah. Look, look, revenue and cash return should be about the same. Even though the gold price has weakened a

bit in the last month or so we should come out round about the same, probably \$100 million-plus revenue, \$20-\$25 million cash flow out of the business...to access the complete interview, [click here](#)

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