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FAR EAST CAPITAL
The Mining Investment Experts

**Weekly Commentary**

29 April 2017 *On Friday's Close* Analyst : Warwick Grigor

# Graphene companies - comparing the two leaders

The mining market continues to wallow around without any enthusiasm while the world seems set on the path to another Cuban Missile Crisis, this time with the bad guy being North Korea. This will be a continuing theme for some time with there being no way to know which way it will pan out. Maybe China will do the right thing but what if Russia steps in and becomes friendly with North Korea, to fill any vacuum that China might create? That is when it gets really dangerous.

China currently buys about 1.5 Mt p.a. of coking coal from North Korea. Australian producers may benefit from any embargo of coking coal leaving North Korea. Keep an eye on this one and the implications for the spot coking coal price.

The most notable big performer in the market in recent days has been Iluka, rising from $7.26 to hit $9.00. The March quarterly report showed a 118% increase in revenue compared with the previous corresponding period, due to both improving commodity prices and expanded production. So, there are some bright spots.

While the markets are quiet we have chosen to revisit one of our favourite topics; graphene.

## *Traxys to market graphite and graphene for FGR*

FGR has ticked another box with the signing of a strategic marketing alliance with Traxys, a global specialist commodities marketing organisation with 300 staff in 20 offices around the world. Traxys will have a much wider and deeper reach into markets and customers than any single producer could achieve, so bringing this company on board makes great sense. This arrangement is actually better than an offtake agreement with specific buyers as it provides greater flexibility and opportunity to develop the market further. It frees up FGR staff to concentrate on the ramping up of mine production and the pursuit of technologies that employ graphene.

The strategic element of the deal comes from Traxys taking remuneration in shares and options rather than cash payments for the first two years. This preserves cash but it also aligns Traxys and shareholders. Both will benefit from a stronger share price.

## *Comparing Graphene Stocks - Talga and FGR*

I have had a number of clients comment to me about the very strong share price performance of Talga vis a vis First Graphite resulting in market capitalisations of $150m and $33m respectively. My off-the cuff reaction is to say "well, the spread is too great". Either Talga is to expensive or FGR is too cheap, or both. To help investors understand the differences I have gone though the presentation delivered by Talga at the Goldman-Sachs mid-cap conference this week.

Talga consistently promotes its Swedish graphite as the highest grade resource in the world, under JORC guidelines. Technically that is correct, but it is not the highest grade graphite. Sri Lankan graphite, which has been mined for > 100years, is 3-4 times higher grade. It is frequently produced at grades as high as 95%. The nature of the orebodies doesn't lend itself to JORC classification, being underground and narrow veined but just because they are statistical outliers it doesn't mean they don't exist.

Talga's statement that it has the potential to be the world's largest volume, best margin supplier of graphene is simply not accurate. Perhaps it should have thrown in the word "arguably", because that is as close as it can get to this status. There is a lot of arm waving but very little factual backup.

Both Talga and FGR are employing electrochemical exfoliation techniques to produce graphene. The biggest difference between the two is the yield to graphene, which is a direct function of the quality of the graphite raw material. Talga starts with ore grading 24-25%. It recovers 90% of the graphite and this reports as 90% micro-graphite and 10% graphene. So, for each tonne of plant feed, it produces only 20-30 kg of graphene.

FGR starts with ore that grades 95%. It gets greater than 80% conversion to graphene within 24 hours. That means for each tonne treated it produces 800 kg of graphene. That is dramatically better than what Talga can achieve. With such a high yield, the capex for any FGR plant is tiny and profit margins are enormous. In fact, rather than having to build a large treatment plant, FGR's process consists of highly efficient modular units that can be manufactured on demand. Also, FGR won't be producing the truckloads of micro-graphite that Talga will produce, for which it is yet to find a market.

Electrochemical exfoliation is not a patentable process, so disregard statements by any company that says otherwise. Yes, there may be some aspects to which you can attach proprietary rights, but the actual process is available to all and sundry. The magic in the graphene production using this process is the quality of the graphite you put into it. Nothing works as well as Sri Lankan vein graphite.

At the end of the day the best graphene company will be the one that has the best economics. That starts with the highest grade, which influences the capital cost and has implications for quality. Any advancements in applications of graphene, which will expand global demand, will benefit the entire graphene sector. It is great that Talga is working with industry to stimulate demand for graphene, but like any input into manufacturing, the cheapest source is the best source, at any given quality specification.

It is probably true that there isn't enough Sri Lankan graphite availability to meet the expected demand for graphene in future years, but what you can expect is that graphene sourced from Sri Lankan graphite will give producers the highest profit margins. That is what business is all about.

One final point on the Talga graphite is worth mentioning. The grade is in the order of 25%, whereas many flake graphite companies are quoting grades of 10-15%. Those flake graphite companies will build a plant and concentrate the graphite to 95-99% levels., and ship it to buyers. The waste material is left behind. Talga will not be concentrating the ore prior to shipping. Thus, it will have to transport a waste component of 75%, presumably from Sweden to Germany. When the ore is processed there will be large volumes of waste material in the that has to be disposed of.

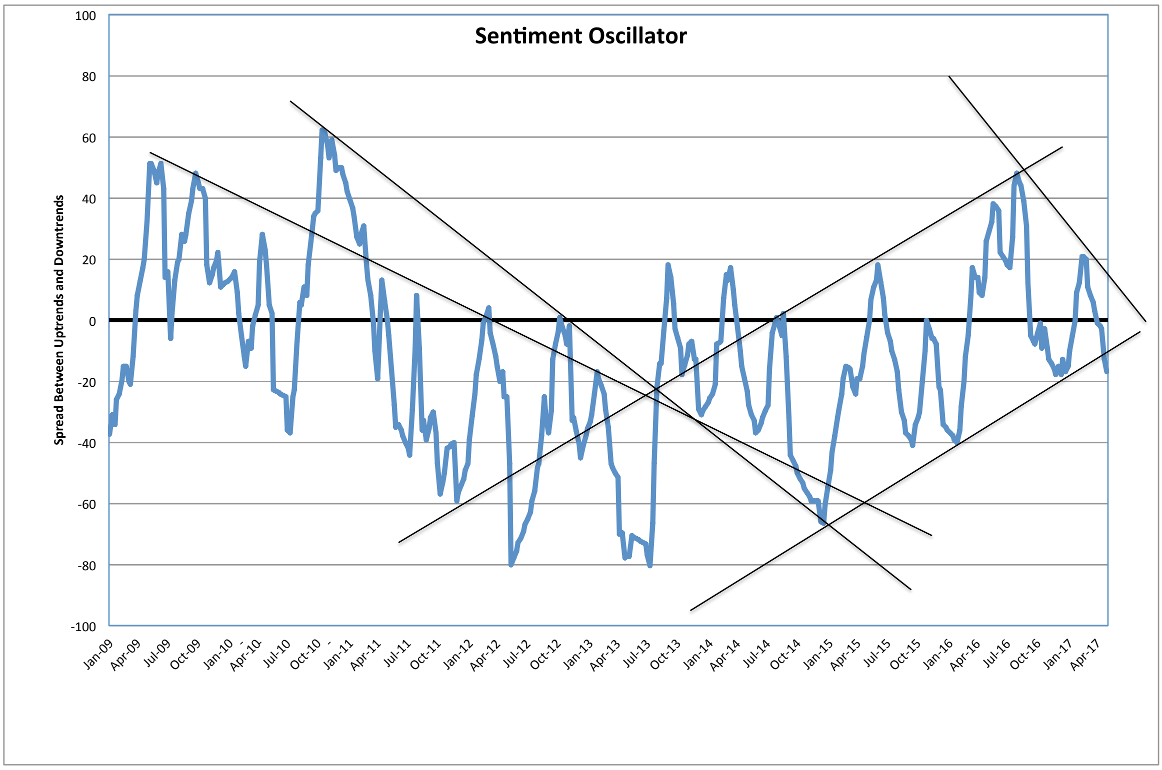
Talga's process requires a centralised treatment plant, from which it can transport its graphene to market around the world. The transportation costs will not be insignificant given the huge expansion factor of the material. Also, graphene has a limited shelf life before having to be re-processed to overcome re-agglomeration.

The extreme efficiency of FGR's Graphene Cell means that the production units can be located on the factory floor of its end users. It is much cheaper to transport the 95% grade ore to the location of the customer and turn it into graphene with just-in-time methodology. It is very elegant and efficient.

Realistically, both Talga and FGR have promising futures. The immediate issue is whether the relative market valuations of $150m and $35m respectively, are appropriate. I was once the second largest shareholder in Talga, but sold out in favour of what I saw as a better business proposition. As we stand today it would seem that I have left a lot on the table, but I'm focusing on the longer term picture. I still believe that anything that Talga can do, FGR can do better. Time will tell.

I first raised money for Talga three years ago, when its market capitalisation was $5m and it was about to go broke. At $150m market capitalisation I suppose you can say it is delivering on expectation, share price wise at least. During that time it has raised approximately $22m.

When I decided to switch to FGR, two years ago, its market capitalisation was also around $5m. Since then FEC has raised the company about $10m. With the market capitalisation of $35m, the share price has some catching up to do. Coincidently, that is the same level that Talga was capitalised at after it had been in the business for two years. It has now been into graphene for three years. It takes time for companies to get their messages out there and win investors over.




**Sentiment Indicator:** A few more stocks moved into downtrends during the week, taking the Oscillator below the support line. This could be an aberration, or it could mean that things are likely to get worse on the sentiment front. So, we wait. There were 22% (21%) of the charts in uptrend and 39% (34%) in downtrend.

## Detailed Chart Comments

*NB. Only the bold comments have been updated. Comments in grey type are from previous weeks and will be less relevant.*

| Indices | Code | | Trend Comment | |
|---|---|---|---|---|
| All Ordinaries | XAO | | back to highs | |
| Metals and Mining | XMM | | trying to hold trend line | |
| Energy | XEJ | | pullback from its highs | |
| **Stocks** | **Code** | | **Trend Comment (updated comments in bold)** | **Main Interest** |
| ABM Resources | ABU | | weaker | gold |
| Aeon Metals | AML | | sideways through uptrend | copper + cobalt |
| Alacer Gold | AQG | | breached uptrend | gold – production |
| Alkane Resources | ALK | | fallen to new low | gold, zirconia |
| Acacia Resources | AJC | | Sideways at the bottom | coal |
| Aguia Resources | AGR | | testing resistance line | phosphate |
| Alicanto Minerals | AQI | | sideways at lows | gold exploration |
| Alliance Resources | AGS | | sideways | gold exploration |
| Alltech Chemicals | ATC | | resting on long term supporting trendline | industrial minerals |
| Anova Metals | AWV | | testing downtrend | gold |
| Antipa Minerals | AZY | | sideways | gold |
| Apollo Consolidated | AOP | | sideways at lows | gold exploration |
| Archer Exploration | AXE | | continuing down | magnesite, graphite |
| Argent Minerals | ARD | | pullback | polymetallic |
| Aspire Mining | AKM | | continuing to fall | coal |
| Atrum Coal | ATU | | new low | coal |
| Aurelia Metals | AMI | | down | gold + base metals |
| Auroch Minerals | AOU | | breached uptrend | exploration |
| Aus Tin | ANW | | softer | tin, cobalt |
| Australian Bauxite | ABX | | coming out of downtrend | bauxite |
| Australian Potash | APC | | continuing higher | potash |
| Australian Mines | AUZ | | short term down | cobalt/nickel |
| Australian Vanadium | AVL | | rising gently | vanadium |
| Avanco Resources | AVB | | starting to test uptrend | copper |
| AWE | AWE | | down again | oil and gas |
| Azure Minerals | AZS | | crunch down on Kennecott withdrawal | silver |
| BHP | BHP | | back into short term downtrend | diversified |
| Base Resources | BSE | | breached steepest uptrend, LT uptrend now | mineral sands |
| Bathurst Resources | BRL | | continuing higher | coal |
| Battery Minerals | BAT | | down | graphite |
| Beach Energy | BPT | | on long term support | oil and gas |
| Beadell Resources | BDR | | breached ST uptrend | gold |
| Berkeley Resources | BKY | | heavy fall, now on long term support | uranium |
| Berkut Minerals | BMT | | down | cobalt |
| Blackham Resources | BLK | | down heavily on production downgrade | gold |
| Broken Hill Prospect. | BPL | | testing downtrend | minerals sands, cobalt |
| Buru Energy | BRU | | sideways at lows | oil |
| Canyon Resources | CAY | | new low | bauxite |
| Cardinal Resources | CDV | | breaching uptrend after placement | gold exploration |
| Carnegie Clean Energy | CCE | | testing uptrend | wave energy |
| Cassini Resources | CZI | | new high | nickel/Cu expl. |
| Chalice Gold | CHN | | holding uptrend | gold |
| Cobalt Blue | COB | | uptrend breached | cobalt |
| Consolidated Zinc | CZL | | downtrend | zinc |
| Corizon Mining | CZN | | new low | cobalt |

| | | | | |
|---|---|---|---|---|
| Crusader Resources | CAS | | sideways through downtrend | gold/iron ore |
| Dacian Gold | DCN | | secondary downtrend | gold exploration |
| Danakali | DNK | | strongly higher | potash |
| Doray Minerals | DRM | | continuing to fall | gold |
| Duketon Mining | DKM | | breached downtrend | nickel |
| Eden Innovations | EDE | | breached uptrend | carbon nanotubes in concrete |
| Energia Minerals | EMX | | heavy pullback | zinc |
| Equator Resources | EQU | | breached uptrend | cobalt/nickel |
| Evolution Mining | EVN | | surge through downtrend line | gold |
| Excelsior Gold | EXG | | surge higher | gold |
| Finders  Resources | FND | | breached downtrend | copper |
| First Australian | FAR | | new uptrend | oil/gas |
| First Graphite | FGR | | testing downtrend | graphite |
| Fortescue Metals | FMG | | new downtend | iron ore |
| Galaxy Resources | GXY | | breached support line | lithium |
| Galilee Energy | GLL | | testing uptrend | oil and gas, CBM |
| Gascoyne Resources | GCY | | correcting lower | gold |
| Geopacific Res. Resources | GPR | | testing downtrend | copper/gold exp. |
| Global Geoscience | GSC | | new high | lithium |
| Gold Road | GOR | | testing downtrend | gold exploration |
| Graphex Mining | GPX | | breached uptrend | graphite |
| Heron Resources | HRR | | drifting lower | zinc |
| Highfield Resources | HFR | | breached downtrend | potash |
| Highlands Pacific | HIG | | edging higher | copper, nickel |
| Hillgrove Resources | HGO | | rising again | copper |
| Hot Chilli | HCH | | testing downtrend | copper |
| Iluka Resources | ILU | | surged higher | mineral sands |
| Image Resources | IMA | | new high | mineral sands |
| Independence | IGO | | down | gold, nickel |
| Intrepid Mines | IAU | | sideways | copper |
| Karoon Gas | KAR | | breached support line | gas |
| Kibaran Resources | KNL | | breached support line | graphite |
| Kin Mining | KIN | | surge on gold discovery announcement | gold |
| Legend Mining | LEG | | strong surge, then a slump | exploration |
| Lithium Australia | LIT | | secondary downtrend | lithium |
| Lucapa Diamond | LOM | | down | diamonds |
| Macphersons Res. | MRP | | sideways through steep uptrend | silver |
| Medusa Mining | MML | | testing downtrend | gold |
| MetalsX | MLX | | breached uptrend | tin, nickel |
| Metro Mining | MMI | | testing uptrend | bauxite |
| Mincor Resources | MCR | | breached support line | nickel |
| Mineral Deposits | MDL | | continuing up | mineral sands |
| Mustang Resources | MUS | | correcting lower | diamonds, rubies |
| MZI Resources | MZI | | rallied to meet resistance line | mineral sands |
| Northern Minerals | NTU | | sideways | REE |
| Northern Star Res. | NST | | rising | gold |
| NTM Gold | NTM | | breached uptrend | gold |
| Oceana Gold | OGC | | holding LT uptrend | gold |
| Oklo Resources | OKU | | steeply higher | gold expl. |
| Orecorp | ORR | | on support line in a wedge | gold development |
| Orinoco Gold | OGX | | at lows | gold development |
| Orocobre | ORE | | rallying | lithium |
| Oz Minerals | OZL | | down | copper |
| Paladin Energy | PDN | | suspended | uranium |

| | | | | |
|---|---|---|---|---|
| Pacific American Coal | PAK | | breached support line | coal, graphene |
| Pantoro | PNR | | new high | gold |
| Panoramic Res | PAN | | breached uptrend | nickel |
| Paringa Resources | PNL | | resting on support line | coal |
| Peel Mining | PEX | | gentle uptrend | copper |
| Peninsula Energy | PEN | | down | uranium |
| Perseus Mining | PRU | | testing downtrend | gold |
| Pilbara Minerals | PLS | | heavy fall | lithium/tantalum |
| PNX Metals | PNX | | down | gold, silver, zinc |
| Potash West | PWN | | falling | potash |
| Red River Resources | RVR | | ST down | zinc |
| Regis Resources | RRL | | rallying | gold |
| Resolute Mining | RSG | | holding long term support | gold |
| Reward Minerals | RWD | | testing downtrend | potash |
| RIO | RIO | | down | diversified |
| RTG Mining | RTG | | down again | copper/gold |
| Rum Jungle | RUM | | sideways | quartz |
| Salt Lake Potash | SO4 | | breached uptrend | potash |
| Saracen Minerals | SAR | | still under downtrend | gold |
| St Barbara | SBM | | breached resistance line | gold |
| Sandfire Resources | SFR | | breached uptrend | copper |
| Santana Minerals | SMI | | back in downtrend | silver |
| Santos | STO | | under long term support line | oil/gas |
| Sheffield Resources | SFX | | still in downtrend | mineral sands |
| Silver Lake Resources | SLR | | heavy fall | gold |
| Silver Mines | SVL | | down again | silver |
| Sino Gas & Energy | SEH | | down | gas |
| Southern Gold | SAU | | down | gold |
| Stanmore Coal | SMR | | breaching long term support | coal |
| Sundance Energy | SEA | | down | oil/gas |
| Syrah Resources | SYR | | falling heavily | graphite |
| Talga Resources | TLG | | new high | graphene |
| Tanami Gold | TAM | | short term down | gold |
| Tempo Australia | TPP | | breached downtrend | mining services |
| Teranga Gold | TGZ | | secondary downtrend | gold |
| Tiger Realm | TIG | | down | coal |
| Tiger Resources | TGS | | suspended | copper |
| TNG Resources | TNG | | hugging support line | titanium, vanadium |
| Torian Resources | TNR | | downtrend | gold expl'n |
| Toro Energy | TOE | | down | uranium |
| Troy Resources | TRY | | breaching steep downtrend | gold |
| Tyranna Resources | TYX | | sideways | gold exploration |
| Vimy Resources | VMY | | sideways | uranium |
| West African Resources | WAF | | testing downtrend | gold |
| Westwits | WWI | | testing downtrend | gold exploration/development |
| Western Areas | WSA | | back to lows | nickel |
| White Rock | WRM | | hitting resistance | silver |
| Whitehaven Coal | WHC | | a spike and then a pullback | coal |
| WPG Resources | WPG | | still down | gold |
| Wolf Minerals | WLF | | sideways at the lows | tungsten |
| Totals | 22% | 33 | Uptrend | |
| | 39% | 57 | Downtrend | |
| | | 148 | Total | |

**Guides to Chart Interpretations**

- Charts usually go pass from one trend (up or down) into the other via a period of indecision and uncertainty during which the trend can either recover or change. This period is signified by the orange colour. The orange represent both the greatest risk and greatest reward possibilities.
- Once a chart is in confirmed up or downtrends it is not uncommon for 10-20% of that trend to have already transpired.
- There are trends within trends. The focus of this chart review is the immediate trend that affects the sentiment i.e. it can be a downtrend within a long-term uptrend.
- Not every chart warrants a new comment every week. The new comments are in bold type. Grey type comments may be dated.
- Individual charts provide a single view. It is valuable to look at charts of other companies in similar commodities, and the overall sentiment is also very valuable. Not many stocks can swim against the tide.
- We periodically add or delete charts, some times for obscure reasons. If a chart consistent gives poor signals or is very erratic, we may delete it. Sometimes we add a chart because we want to see what all the fuss is about. We do have a preference for charting stocks that we cover in our research as well.
- Errors and omissions may occur from time to time, especially in fast moving markets.

Amber Lights in Tables: Just a reminder if when the amber light is used in the table – it is when the charts are ambiguous or when there is a change of trend taking place. If a chart is breaching a downtrend it can either be a positive sign or a trap. Only once it has done more work can it be confirmed as a new uptrend. Maybe it is a new uptrend (or conversely a new downtrend); the risk takers can decide to jump on board early (or sell). They will maximise their profits (or minimise their losses if indeed it is the start of the new uptrend (downtrend). More risk-averse investors should wait a little longer, being prepared to give up some of the gains in return for greater certainty.

**Weightings of Sectors Represented in the Company Charts**

| Sector | No. of Companies | Weighting | |
|---|---|---|---|
| Gold | 32 | 21.6% | |
| Copper | 13 | 8.8% | |
| Gold Exploration | 14 | 9.5% | |
| Coal | 10 | 6.8% | |
| Oil/Gas | 9 | 6.1% | |
| Potash/Phosphate | 7 | 4.7% | |
| Mineral Sands | 7 | 4.7% | |
| Graphite | 6 | 4.1% | |
| Silver | 6 | 4.1% | |
| Zinc | 6 | 4.1% | |
| Lithium | 5 | 3.4% | |
| Nickel | 5 | 3.4% | |
| Uranium | 5 | 3.4% | |
| Cobalt | 4 | 2.7% | |
| Tin | 2 | 1.4% | |
| Bauxite | 3 | 2.0% | |
| Diamonds | 2 | 1.4% | |
| Iron Ore | 1 | 0.7% | |
| Other | 11 | | |
| Total | 148 | | |