

Graphene - great progress on two fronts

1. Low cost, high quality production (First Graphite)
2. Commercialisation into industry (Imagine IM, Pacific American)

Markets encouraged as China re-inflates

It is worthwhile reading through the various economic commentaries in the newspapers, not because they offer sage opinions, but because you need to be aware of what is influencing other investors. Very few investors are brave enough to be countercyclical and stand in the way of popular opinion so they can easily be influenced by the press.

This week started off with the front page of the AFR saying that credit creation in China was growing at 21% p.a., and without this high level of monetary expansion the growth rate would only be 3%. This is clearly inflationary but popular opinion says that inflation is good. There are many countries trying to inflate their flaccid economies to cause a reckoning, but the same article said this is unlikely to be an issue for another five years.

The credit expansion is delivering the desired result as China has reported that exports rose to an annualised growth rate of 18.7% in March, compared to a decline of 20.6% in February. Imports grew at a rate of 1.7%, compared to the 8% decline in February (*how much of this can be attributed to Chinese New Year events?*).

This news bolstered the market mid week, tilting the odds in favour of further rises. Iron ore stocks received a fillip. BHP breached its downtrend. RIO has run from \$42 to better than \$48 in a straight move over a six day period. Looking at our share price charts, a number of them that had breached short-term uptrends and were contemplating moves lower have actually rallied to, or above previous highs. This suggests that less steep secondary uptrends are forming. These would be less aggressive but be longer lasting - more sustainable. It all looks positive.

First Graphite delivering quality graphene

In its latest update on the graphene program FGR has delivered some very impressive results, producing large graphene platelets averaging 30-40 microns in size, in the range of 3-10 atoms thick (and the ability to go down to one atom with sonication). The large platelet size is significant because it has positive implications for quality and suitability for applications, particularly in batteries.

While the size is a big plus, the really stunning result from the latest tests is the yield, at better than 80% conversion of graphite to graphene in less than 24 hours (with better than 50% being achieved in the first four hours). For every tonne of graphite processed FGR can recover 800 kg of graphene. This is dramatically better than what Talga can achieve. For every tonne of graphite ore processed by Talga, it can recover in the order of 25 kg of graphene. FGR's recovery is 30x more efficient.

This efficiency will come to light on a number of fronts. It will be able to manufacture and install graphene recovery units at nominal capital cost. It won't need a large treatment plant. Rather, it will be able to install small modular units in the factories of the end customers. There will be very little cost in transporting the 93% pure graphite to location and there will be very little waste product to dispose of later. Add a functionalising module to the equation and you will have a very efficient customer oriented production and delivery system; just-in-time graphite, on demand.

The biggest obstacles to commercialisation of graphene to date has been the availability of large quantities at reasonable cost. FGR is the answer to both of these issues as it should be able to produce graphene at a fraction of the costs of any other method. Talga was the first company to tout this capability, but FGR will be able to do significantly better because of its superior grades and yield.

In recent years the high-grade Sri Lankan graphite has been selling in the range of US\$1,700-\$2,000 per tonne, and FGR expects this will be the base price range for unprocessed vein graphite. In contrast graphene has been selling at prices of up to US\$300 per gram, but not in bulk. As more graphene makes it to the market we are likely to see the price of graphene settle at much lower prices. Some operators are suggesting a realistic price would be US \$55,000 per tonne once it is commoditised. Accepting this proposition, the logic driving FGR in pursuing the graphene strategy in parallel with graphite production is clearly that conversion to graphene could result in a 25 times uplift in value when compared to sales of run-of-mine product. FGR will be well positioned to deliver graphene into the market as and when the market requires supplies.

Graphene commercialisation breakthrough

As we have said, the ability to produce graphene is only half the battle. You have to be able to sell it. The graphene produced by CVD methods has been an inhibitor to commercialisation due to the scale of production and the high cost, but the emergence of electrochemical exfoliation methodology promises to change that and make graphene affordable in volume; but you have to have the right ore type. First Graphite and Talga Resources are leading the field in this aspect, with First Graphite finding that the vein graphite (93% TCG) gives significant operating and cost advantages over the lower grade Talga ore (24% TCG).

In a significant breakthrough, the private Australian company, Imagine Intelligent Materials Pty Ltd (Imagine IM), announced this week that Australia will be the first country in the world to use graphene in the large scale manufacturing of an industrial product. Imagine IM has entered into an exclusive licensing agreement with Australia's largest geotextiles manufacturer, Geofabrics Australasia Pty Limited.

Geofabrics will use the technology to offer its customers an improved ability to locate and remedy leaks with applications in landfill and mining tailings dam construction, areas of increasingly environmental scrutiny given the BHP tailings disaster in Brazil. The technology to introduce graphene and make the geotextiles conductive gives the ability to detect pin hole size leaks, thereby preventing seepage of toxins into groundwater.

Imagine IM estimates that its technology will save customers around 20 to 40% on their current costs. According to the General Manager of Geofabrics, this is a "game changer" for the geotextile industry. "It is a high tech solution at an extremely competitive price."

You may recall that Imagine IM and Pacific American Coal (PAK) are currently seeking shareholder approval for a transaction that will initially see PAK owning 20-40% of Imagine, and it is about to conduct a placement. PAK will continue to fund Imagine IM and will likely own more than 50% of the company before the end of 2016. Thus PAK should be seen in the market as a graphene commercialisation company and an IP developer upon the completion of the transactions.

This development is positive for First Graphite as that company has a HoA with Imagine IM, whereby it proposes to supply graphene for commercial purposes.

Eden Energy market capitalisation now > \$250m

When we first noticed that EDE was kicking goals with carbon nanotubes in concrete the share price was 1-2¢ and it was being funded by loans from directors. That was a year ago. This week the share price hit 24¢, taking the market capitalisation above \$250m.

The spur for this week's rise, from 13.5¢ to 24¢, was the announcement that it had received a US\$24.7m financial assistance package to establish an EdenCrete plant in Georgia, USA. This comprises a grant of 45 ha of industrial land (\$2.8m), savings in property taxes (\$5.8m), road and rail access (\$3.5m), water facilities (\$1.5m) and various tax credits. This all helps the plan to build a US \$67m production facility, in four stages, over the next seven years.

Eden's performance is an example of what can happen to the share price of a company specialising in the new carbon based technology when it becomes apparent that the technology is being commercialised. In this case it is carbon nanotubes (CNTs) that are bringing approximately 50% improvements to concrete across a range of parameters. As the next generation material after CNTs,

and more simple to manufacture, graphene will offer similar commercial opportunities. Advanced carbon materials offer a future for industry not dissimilar to that offered by the introduction of plastics 60 years ago. Graphene will make plastics stronger than steel as well as making products conductive and flexible.

More thoughts on cobalt

See the chart on the cobalt price below. It has been very stable in recent years as increased supply from the DRC has prevented runaway price movements. In 2015, the global cobalt supply was 92,900 tonnes. However, recent and impending closures of nickel and copper mines could result in more than 10% fall in supply of cobalt at just the time that battery demand is accelerating. This is the perfect mark in which speculators like to come out and play. The risk is on the upside and if historical markets are anything to go by, a 3-5x spike in the cobalt price is not out of the question. As one pundit has written, "cobalt is an immense supply chain risk".



A new, independent publication worth considering

Jenny Prabhu and Gerald Stanley, publishers of OzEquities for 20 years, now have a weekly online magazine entitled, "The Passionate Investor" subtitled "Seeking Profitable Investments in inventions for a better world".

Inaugural readers (joining before the next edition due out April 22) are entitled to a discounted rate. Check it out on line or email jenny.d.prabhu@gmail.com.

























































Sentiment Indicator: There was a useful step up in positive sentiment over the week There were 40% (36%) of the stocks in uptrend and 26% (28%) 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	strong break out of downtrend	
Metals and Mining	XMM	strong break through downtrend	
Energy	XEJ	at resistance line trend line	
Stocks	Code	Trend Comment (updated comments in bold)	Main Interest
ABM Resources	ABU	stopped by resistance	gold
Aeon Metals	AML	hitting resistance line again	copper + cobalt
Alacer Gold	AQG	surge through downtrend	gold – production
Alkane Resources	ALK	continuing down	gold, zirconia
Acacia Resources	AJC	Sideways at the bottom	coal
African Energy	AFR	still in downtrend	coal
Agua Resources	AGR	downtrend	phosphate
Alicanto Minerals	AQI	correcting lower	gold exploration
Atleach Chemicals	ATC	breached uptrend with a placement	industrial minerals
Anova Metals	AWV	uptrend, consolidating	gold
Antipa Minerals	AZY	rising	gold
Archer Exploration	AXE	punched through downtrend, then pullback	graphite
Argent Minerals	ARD	strong rise, then pullback	polymetallic
Atlas Iron	AGO	resting on support line	iron ore
Atrum Coal	ATU	breached ST uptrend	coal
Australian Bauxite	ABX	breached downtrend	bauxite
Avanco Resources	AVB	testing ST uptrend	copper
AWE	AWE	breached ST uptrend	oil and gas
BHP	BHP	breached downtrend	diversified
Base Resources	BSE	steep rise from lows	mineral sands
Beach Energy	BPT	breached ST uptrend	oil and gas
Beadell Resources	BDR	new high	gold
Berkeley Resources	BKY	rising again	uranium
Blackham Resources	BLK	steeply higher	gold
Broken Hill Prospect.	BPL	new high	minerals sands, cobalt
Buru Energy	BRU	new low	oil
Canyon Resources	CAY	rising	bauxite
Cardinal Resources	CDV	sideways	gold exploration
Carnegie Wave	CWE	breached downtrend	wave energy
Cassini Resources	CZI	new uptrend	nickel/Cu expl.
Chalice Gold	CHN	moved to new high	gold
Consolidated Tin	CSD	heavy slump	tin
Consolidated Zinc	CZL	secondary downtrend	zinc
Coventary Resources	CYY	breached downtrend	copper
Dacian Gold	DCN	uptrend , at high	gold exploration
Danakiali	DNK	down	potash
Doray Minerals	DRM	new high	gold
Duketon Mining	DKM	rallying in a secondary uptrend	nickel
Eden Energy	EDE	new high	carbon nanotubes in concrete
Energia Minerals	EMX	uptrend in place	zinc
Energy Resources	ERA	breached downtrend	uranium
Evolution Mining	EVN	back to support line	gold
Excelsior Gold	EXG	rolling over, short term down	gold
First Australian	FAR	breached downtrend	oil/gas
First Graphite	FGR	new high	graphite
Fortescue Metals	FMG	new high	iron ore
Galaxy Resources	GXY	new high	lithium
Galilee Energy	GXY	surged higher, then pullback	oil and gas, CBM
Gascoyne Resources	GCY	rising again	gold

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General Mining	GMM		new high	lithium
Geopacific Res. Resources	GPR		new uptrend	copper/gold exp.
Gold Road	GOR		uptrend	gold exploration
Goldphyre	GPH		higher	potash,gold
Gryphon Minerals	GRY		new high, secondary uptrend	gold
Herron Resources	HRR		sideways	zinc
Highfield Resources	HFR		heavy fall	potash
Highlands Pacific	HIG		testing downtrend	copper, nickel
Hillgrove Resources	HGO		rallying off its low	copper
Hot Chili	HCH		off its lows	copper
Iluka Resources	ILU		down heavily	mineral sands
Independence	IGO		strong rally	gold, nickel
Intrepid Mines	IAU		sideways	copper
IMX Resources	IXR		testing downtrend	graphite
Karoo Gas	KAR		new low	gas
Kasbah Resources	KAS		breached uptrend	tin
KBL Mining	KBL		collapse back to lows	copper/gold/zinc
Kibaran Resources	KNL		breaching support	graphite
Kin Mining	KIN		at lows	gold
King Island Scheel.	KIS		New low	tungsten
Kingsgate Consol.	KCN		secondary downtrend	gold
Kingsrose Mining	KRM		at resistance	gold
Legend Mining	LEG		testing uptrend	exploration
Lithium Australia	LIT		new high	lithium
Lucapa Diamond	LOM		breached uptrend (April option expiry influence)	diamonds
Macphersons Res.	MRP		testing uptrend	silver
Medusa Mining	MML		testing uptrend	gold
Metals of Africa	MTA		surged higher, but at resistance line	zinc expl/graph.
MetalsX	MLX		breached downtrend	tin, gold
Mincor Resources	MCR		testing resistance line	nickel
MMJ PhytoTech	MMJ		uptrend breached	medical cannabis
Mount Gibson	MGX		sideways	iron ore
Mustang Resources	MUS		new low	diamonds, rubies
MZI Resources	MZI		new low	mineral sands
Newfield Resources	NWF		collapse on tiny volume	diamonds
Northern Minerals	NTU		new low	REE
Northern Star Res.	NST		rallying	gold
Oceana Gold	OGC		back to high	gold
Oklo Resources	OKU		rising	gold expl.
OM Holdings	OMH		New low	manganese
OreCorp	ORR		vertical rise	gold development
Orinoco Gold	OGX		short term down	gold development
Orocobre	ORE		through resistance and higher	lithium
Oz Minerals	OZL		testing uptrend	copper
Paladin Energy	PDN		breaching downtrend	uranium
Pacific American Coal	PAK		strong rise	coal
Pantorro	PNR		rising	gold
Panoramic Res	PAN		breached uptrend	nickel
Panterra Gold	PGI		new uptrend	gold production
Paringa Resources	PNL		secondary downtrend	coal
Peel Mining	PEX		down	copper
Peninsula Energy	PEN		testing downtrend	uranium
Perseus Mining	PRU		rising again	gold
Pilbara Minerals	PLS		sideways	lithium/tantalum
Platina Resources	PGM		back to downtrend	PGMs, gold
Potash West	PWN		secondary downtrend	potash
Red River Resources	RVR		rising again	zinc
Regal Resources	RER		strong rise	copper
Regis Resources	RRL		looks like a short term top	gold

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Renaissance Min.	RNS		short term higher, with pullback	gold
Resolute Mining	RSG		new high	gold
Reward Minerals	RWD		down	potash
Rex Minerals	RXM		surge through downtrend	copper
RIO	RIO		steep ST uptrend	diversified
RTG Mining	RTG		strongly higher	copper/gold
Rum Jungle	RUM		turned down at resistance line	quartz
Salt Lake Potash	SO4		uptrend	potash
Saracen Minerals	SAR		new high	gold
St Barbara	SBM		new high	gold
Sandfire Resources	SFR		ST downtrend	copper
Santana Minerals	SMI		vertical rise then pullback	silver
Santos	STO		rallying	oil/gas
Sheffield Resources	SFX		uptrend in play	mineral sands
Silver City Minerals	SCI		good bounce	base metals
Silver Lake Resources	SLR		breached new uptrend	gold
Sino Gas & Energy	SEH		new uptrend	gas
Southern Gold	SAU		testing uptrend	gold
Sthn Hemisphere	SUH		down	copper
Stavely Minerals	SVY		fallen again	copper exploration
Sunbird Energy	SNY		New low	gas/CBM
Sundance Energy	SEA		surge higher	oil/gas
Syrah Resources	SYR		rallied back to trendline	graphite
Talga Resources	TLG		sideways through downtrend	graphene
Tanami Gold	TAM		down	gold
Tiger Resources	TGS		back into downtrend	copper
TNG Resources	TGS		secondary uptrend	titanium, vanadium
Torian Resources	TNR		downtrend	gold expl'n
Toro Energy	TOE		downtrend	uranium
Troy Resources	TRY		uptrend	gold
UraniumSA	USA		Secondary downtrend	uranium
URI	URI		downtrend	uranium
Vimy Resources	VMY		breached downtrend	uranium
West African Resources	WAF		strong rise	gold
Westwits	WWI		breached downtrend	gold exploration/development
Western Areas	WSA		breached uptrend	nickel
Wolf Minerals	WLF		down	tungsten
Totals	40%	57	Uptrend	
	26%	37	Downtrend	
		144	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

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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	33	22.9%
Copper	18	12.5%
Oil/Gas	10	6.9%
Gold Exploration	10	6.9%
Uranium	8	5.6%
Graphite	6	4.2%
Potash/Phosphate	7	4.9%
Zinc	6	4.2%
Nickel	5	3.5%
Coal	5	3.5%
Mineral Sands	5	3.5%
Iron Ore	3	2.1%
Tin	3	2.1%
Lithium	4	2.8%
Silver	3	2.1%
Diamonds	3	2.1%
Bauxite	2	1.4%
Other	13	
Total	144	

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