

First Graphene adding hydrogen capability to its credentials

Traditionally at this time of the (new) year the bears go away to lick their wounds. Those who wanted to sell in the end of year clean have usually done so. The New Year frequently opens up on a positive note, at least for a week or two, and thin volumes make it easier for the bulls to push prices higher. Maybe it will be the same again this year, but the travel restrictions caused by the coronavirus will have an impact. More people will be watching the market than usual.

The lacklustre performance of the gold price, going back to August, has caused traders to pull money out of the gold sector and switch into a range of different commodities. The thinner volumes in many of the speciality sectors resulted in good share price rises even though the fundamental merits were often found to be wanting. With the gold price showing a healthy uptrend since the end of November, we may see money moving back into the gold sector as money rotates. However, keep in mind that the weakening US\$ (and stronger A\$), has been a motivator for gold price movements.

Hydrogen is an emerging part of the energy mix

Hydrogen has been mentioned on many occasions in recent decades as a potentially important source of energy for industry, and particularly as an alternative fuel source for automobiles. Going back to the 1980s, Ballard was spending billions of dollars to develop the first mass produced hydrogen powered car. However, commercial success was not even remotely achieved and hydrogen was relegated to the bench - at least as far as investors were concerned.

Yet, there is increasingly a view being held that hydrogen still has a future. The Bank of America recently forecast that the global hydrogen market will be worth \$2.5 trillion by 2050, requiring a \$11 trillion investment to achieve this level. Thus it is seen as an emerging power source that is being encouraged by government and regulatory policy as opposed to stand-alone economics at this point. As yet there have not been any deep pricing signals. Any move to adopt hydrogen more widely will require a large investment in storage and transport infrastructure.

While hydrogen is being promoted as a carbon free fuel that can be readily stored, it is not technically carbon free if you include the manufacturing process utilising hydrocarbon feedstock, which is how it is mostly made today.

They call this type of hydrogen "blue hydrogen", implying that it is almost green. An important feature is that the CO₂ released at the point of manufacture can be captured and managed, as opposed to being released at the point of use. So, that is useful.

Technically green hydrogen is generated by electrolysis of water using non-carbon reliant energy (solar or wind), but this amounts to less than 5% of global hydrogen production today.

Hazer is the most notable ASX hydrogen company listed on the ASX

We are keeping an eye on stocks that qualify for the hydrogen sector. The most widely promoted in recent years has been Hazer Group Ltd (HZR), which currently has a market capitalisation of \$96m, having been as high as \$124m recently. Approximately five years after completing an IPO, in November 2015, Hazer is working on the construction of a 100 tpa Commercial Demonstration Plant (CDP). As at the recent AGM, the design of this plant was 65% complete. Commissioning is scheduled for October 2021. The capex is estimated to be \$17.5m. Hazer plans to use the knowledge gained from the CDP to design a commercial scale plant of 1,000 to 5,000 capacity of hydrogen.

In the earlier days of its career, Hazer frequently promoted its process as a potential supplier of high quality graphite as a by-product, but that was when the ill-fated graphite stock market boom was underway. I suppose this is a demonstration of the useful carbon capture feature mentioned above, but any assessment of Hazer needs to be based on the economics of hydrogen, not graphite. The diminished interest in graphite was emphasised by the recent news that Minerals Resources was pulling out of its collaboration agreement with Hazer on the graphite, as it no longer views graphite as a strategic commodity.

Hydrogen and FGR's Kainos Technology

First Graphene has recently made announcements regarding its work with Kainos Innovation Ltd that involves the development of a new, innovative route to the manufacturing of a "green" hydrogen that also provides high quality, battery grade graphene products.

An exclusive, worldwide licence is held over the technology that enables precise control over size, shape and chemistry of the graphene products. For every tonne of petroleum feedstock used, 940 kg of graphene/graphitic carbon and 60 kg of green hydrogen gas is produced. There are no carbon dioxide products. Thus, it qualifies for the "green tag".

Work is starting in January 2021, focusing on production of proof of concept samples of the novel battery-grade materials which is fully funded by the UK Government. While it has to be acknowledged that this is an advanced research project at present, as opposed to commercial scale, it is nonetheless a very exciting development.

On a general note, any move towards hydrogen as a transportable energy source will require the development of rubber and composite materials with upgraded barrier performance in gaskets, seal and storage tanks. This need will play into graphene's strengths and potential to be a strong source of demand for PureGRAPH. Graphene scaffold catalysts could also feature in the water electrolysis process of making hydrogen.

Of more immediate commercial interest will be the ability of the Kainos process to deliver carbon coated electrode materials for sale into the existing lithium-ion battery market. This can be added to the list of markets that First Graphene's products could supply.

Disclosure: Interests associated with the author own shares in Lucapa Diamond Company had FEC has received capital raising fees.

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Lucapa strengthening its shareholder base

Lucapa announced that Safdico International Limited had become a 5.95% shareholder, following on from a placement that had received shareholder approval. Safdico is one of the world's leading diamond manufacturing and trading companies with a head office in Mauritius and other offices in Israel, Belgium and South Africa. Its expertise lies in large and rare gemstones. Previously, Lucapa had announced an agreement for Safdico to be a Preferred Buyer of up to 60% of Lulo's rough diamond production from Angola.

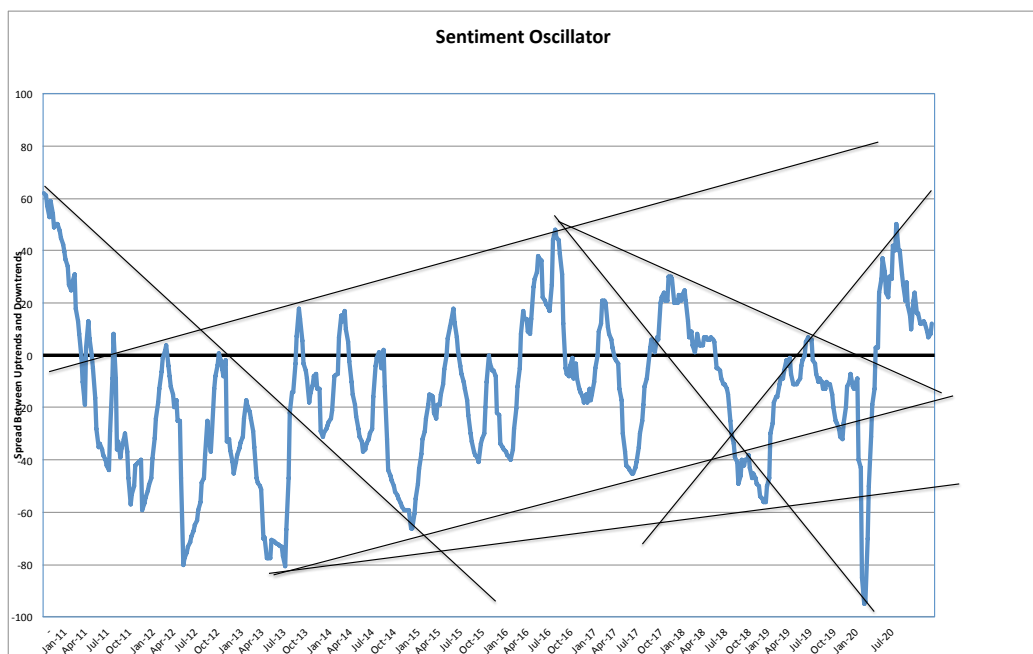
In a separate announcement Lucapa disclosed that it was participating in the sale process being undertaken by the liquidators of Merlin Diamonds Ltd., that may lead to it purchasing the Merlin kimberlite diamond mine. Apparently, Lucapa is of the opinion that it can extract good value out of the project that was previously poorly managed. Negotiations are continuing.

Predatory behaviour of the Chinese needs to be countered

Last week we mentioned that the Chinese manipulated the rare earths market to suit its own ends. That should be taken as read. If it has been doing it in one market, we should expect that it will try and do that with other markets. Is that what is happening now with the ban on coal from Australia? Is it seeking to white ant or even destroy our coal producers with the view to coming in and buying the assets cheap once the companies are on their knees, if it gets to that?

The first thing the Australian Government should do is ban Chinese parties from purchasing such assets in Australia. While it is not good to have a government interfere with market pricing of commodities or the companies that supply them, when it comes to war - a trade war - you have to fight fire with fire.

The weakness with our laissez-faire style of business, where governments keep their noses out of it, is that the operators are vulnerable to more powerful foreign government supported forces that try to manipulate normal market forces. Our government should not stand back and allow the predatory actions of the Chinese Communist Party to undermine our industry.




Sentiment Oscillator: Sentiment improved over the short week. There were 45% (42%) of the charts in uptrend and 33% (34%) in downtrend on Friday's close.

Detailed Chart Comments





NB. Only the bold comments have been updated. Comments in grey type are from previous weeks and will be less relevant. Please note that this list is a cross section of the market. It IS NOT a list of recommendations.

Indices	Code		Trend Comment	
All Ordinaries	XAO		consolidating near highs	
Metals and Mining	XMM		consolidating around recent highs	
Energy	XEJ		consolidating around recent highs	
Stocks	Code		Trend Comment (updated comments in bold)	Main Interest
Alpha HPA	A4N		testing uptrend	HPA
Adriatic Resources	ADT		testing downtrend	zinc, polymetallic
Aeon Metals	AML		down	copper + cobalt
Alkane Resources	ALK		breached uptrend, heading down	gold, zirconia
Alicanto Minerals	AQI		down	base metals, silver, gold
Allegiance Coal	AHQ		surge through downtrend	coking coal
Alliance Resources	AGS		down	gold predevelopment
Alto Metals	AME		down	gold exploration
American Rare Earths (was BPL)	ARR		short term down	rare earths
Apollo Consolidated	AOP		down	gold exploration
Arafura Resources	ARU		rising again	rare earths
Aurelia Metals	AMI		down	gold + base metals
Australian Potash	APC		breached downtrend	potash
Auteco Minerals	AUT		down	gold exploration
BHP	BHP		new high	diversified, iron ore
Base Resources	BSE		new high	mineral sands
BBX Minerals	BBX		breaching downtrend	gold exploration
Beach Energy	BPT		surged higher	oil and gas
Beacon Mining	BCN		sideways	gold production
Bellevue Gold	BGL		off its highs	gold exploration
Blackstone Minerals	BSX		breached downtrend	nickel
Blue Star Helium	BNL		spike through downtrend	gas, helium
Boab Metals			named change from Pacifico Minerals	silver/lead
Breaker Resources	BRB		still in LT downtrend	gold exploration
Buru Energy	BRU		surge higher	oil
Calidus Resources	CAI		down	gold
Capricorn Metals	CMM		testing downtrend	gold
Caravel Minerals	CVV		steeply higher	copper
Celsius Resources	CLA		rising	uptrend
Central Petroleum	CTP		sideways	oil/gas
Chalice Gold	CHN		new high	nickel, copper, PGMs, gold exploration
Chase Mining	CML		sideways at lows	nickel/copper/PGE
Chesser Resources	CHZ		rallying	gold exploration
Cobalt Blue	COB		strongly higher	cobalt
Cyprium Metals	CYM		fallen back to support line	copper

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Dacian Gold	DCN		gentle uptrend	gold
Danakali	DNK		down	potash
Davenport Resources	DAV		rising	potash
De Grey	DEG		shallower downtrend	gold
E2 Metals	E2M		correcting lower, ST downtrend	gold exploration
Ecograf (was Kibaran)	EGR		pullback	graphite
Element 25	E25		new high	manganese
Emerald Resources	EMR		rising	gold
Euro Manganese	EMN		on apex of a wedge	manganese
Evolution Mining	EVN		down	gold
Firefinch	FFX		testing downtrend	gold
First Graphene	FGR		consolidating at highs	graphene
Fortescue Metals	FMG		rising again	iron ore
Galaxy Resources	GXY		rising strongly	lithium
Galena Mining	G1A		rising	lead
Galilee Energy	GLL		down	oil and gas, CBM
Genesis Minerals	GMD		down	gold
Gold Road	GOR		breaching downtrend	gold
Highfield Resources	HFR		rising	potash
Hillgrove Resources	HGO		breached support line	copper
Iluka Resources	ILU		strong rise	mineral sands
Image Resources	IMA		falling back to support line	mineral sands
Independence Group	IGO		surge through resistance line	gold
ioneer (was Global Geoscience)	INR		steeply higher	lithium
Ionic Rare Earths (Oro Verde)	IXR		gentle uptrend	rare earths
Jervois Mining	JVR		rising again	nickel/cobalt
Jindalee Resources	JRL		on support line	lithium
Kin Mining	KIN		testing uptrend	gold
Kingston Resources	KSN		rising gently	gold
Kingwest Resources	KWR		back to support line	gold
Legend Mining	LEG		down	nickel exploration
Lepidico	LPD		sideways	lithium
Lindian Resources	LIN		strong rally	bauxite
Lithium Australia	LIT		rising	lithium
Los Cerros	LCL		rally through downtrend line	gold exploration
Lotus Resources	LOT		firmer	uranium
Lucapa Diamond	LOM		testing resistance	diamonds
Lynas Corp.	LYC		new high	rare earths
Mako Gold	MKG		down again	gold exploration
Manhattan Corp	MHC		down	gold exploration
Marmota	MEU		drifting lower	gold exploration
Marvel Gold (was Graphex)	MVL		down	gold exploration
MetalTech	MTC		testing downtrend	gold
Meteoric Resources	MEI		rising	gold exploration

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MetalsX	MLX		strongly higher	tin, nickel
Metro Mining	MMI		at lows	bauxite
Mincor Resources	MCR		rising	gold/nickel
Musgrave Minerals	MGV		down	gold exploration
Myanmar Minerals	MYL		breaching downtrend	lead, zinc, silver
Nelson Resources	NES		new high	gold exploration
Neometals	NMT		rising	lithium
Northern Minerals	NTU		back to support line	REE
Northern Star Res.	NST		testing downtrend	gold
NTM Gold	NTM		takeover bid	gold exploration
Oceana Gold	OGC		surge through downtrend	gold
Oklo Resources	OKU		down	gold expl.
Orecorp	ORR		rising again	gold development
Orocobre	ORE		rising	lithium
Oz Minerals	OZL		at recent highs	copper
Pacific American Holdings	PAK		down	coal
Pantoro	PNR		sideways through downtrend	gold
Panoramic Res	PAN		sideways	nickel
Peak Resources	PEK		correcting	rare earths
Peel Mining	PEX		testing downtrend	copper
Peninsula Energy	PEN		surge out of downtrend	uranium
Poseidon Nickel	POS		breached uptrend	nickel
Pensana Metals	PM8		new high	rare earths
Perseus Mining	PRU		testing downtrend	gold
Pilbara Minerals	PLS		at highs	lithium
Polarex	PXX		down	polymetallic exploration
Queensland Pacific Metals	QPM		breaching correcting downtrend	nickel/cobalt/HPA
Ramelius Resources	RMS		down again	gold production
Red5	RED		sideways through downtrend	gold
Red River Resources	RVR		new high	zinc
Regis Resources	RRL		down	gold
Regergen	RLT		back to support line	gas, helium
Resolution Minerals	RML		down	gold exploration
Resolute Mining	RSG		testing downtrend	gold
RIO	RIO		new high	diversified, iron ore
Rumble Resources	RTR		secondary downtrend	gold exploration
Salt Lake Potash	SO4		down again	potash
Saracen Minerals	SAR		down	gold
St Barbara	SBM		secondary downtrend	gold
Sandfire Resources	SFR		breached downtrend	copper
Santos	STO		pullback from high	oil/gas
Saturn Metals	STN		secondary downtrend	gold exploration
Sheffield Resources	SFX		rising	mineral sands
Sky Metals	SKY		back in downtrend	gold exploration

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St George Mining	SGQ		down	nickel
Silex Systems	SLX		steeply higher	uranium enrichment technology
Silver Mines	SVL		on support line	silver
Sipa Resources	SRI		down	general exploration - Ni,Cu, Co, Au
Stanmore Coal	SMR		breached steepest downtrend	coal
Strandline Resources	STA		still in downtrend	mineral sands
Sunstone Metals	STM		down	
Talga Resources	TLG		fallen back to support line	graphite
Technology Metals	TMT		down	vanadium
Tesoro Resources	TSO		down	gold exploration
Theta Gold Mines	TGM		uptrend	gold
Thor Mining	THR		down	gold exploration
Tietto Minerals	TIE		down	gold
Titan Minerals	TTM		sideways	gold
Vango Mining	VAN		down	gold
Venturex	VXR		testing uptrend	zinc
Vimy Resources	VMY		steeply higher	uranium
West African Resources	WAF		testing downtrend	gold
Westgold Resources	WGX		strong rally	gold
West Wits Mining	WWI		off its highs	gold
Western Areas	WSA		rising	nickel
Whitehaven Coal	WHC		rising	coal
Wiluna Mining	WMX		down	gold
Yandal Resources	YRL		down	gold exploration
Zinc Mines of Ireland	ZMI		secondary downtrend	zinc
Totals	45%	66	Uptrend	
	33%	49	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	37	25.0%	
Gold Exploration	26	17.6%	
Nickel	12	8.1%	
Oil/Gas	7	4.7%	
Lithium	8	5.4%	
Zinc/Lead	7	4.7%	
Rare Earths	7	4.7%	
Copper	9	6.1%	
Mineral Sands	5	3.4%	
Iron Ore/Manganese	5	3.4%	
Potash/Phosphate	5	3.4%	
Coal	4	2.7%	
Uranium	4	2.7%	
Graphite	2	1.4%	
Bauxite	2	1.4%	
Silver	2	1.4%	
Cobalt	1	0.7%	
Tin	1	0.7%	
Diamonds	1	0.7%	
Other	3		
Total	148		

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