

Strategic Metals & Rare Earths Letter

INTERNATIONAL

the independent information and advisory publication on investing in Strategic Metals & Rare Earths

Overviews as at November 30, 2018



Heavy Rare Earths Oxides (HREO)		Light Rare Earth Oxides (LREO)		Critical Metals and Special Minerals	
europium (Eu)	erbium (Er)	lanthanum (La)	yttrium (Y)	lithium (Li)	
gadolinium (Gd)	thulium (Tm)	cerium (Ce)	scandium (Sc)	cobalt (Co)	
terbium (Tb)	ytterbium (Yb)	praseodymium (Pr)	niobium (Nb)	graphite (C)	
dysprosium (Dy)	lutetium (Lu)	neodymium (Nd)	tantalum (Ta)	tungsten (W)	
holmium (Ho)		promethium (Pm)	beryllium (Be)	titanium (Ti)	
		samarium (Sm)	gallium (Ga)	zirconium (Zr)	
			indium (In)	hafnium (Hf)	
			germanium (Ge)	antimony (Sb)	

Marino G. Pieterse, publisher and editor

Overview of listed REE focused companies (by market capitalization)

November 30, 2018		Trading symbol		Share price		Change in %	12 months prices		Total shares issued million	Market cap. million	
		Nov. 30 2018	Year-end 2017	H	L		local	US\$			
US:											
Rare Element Resources	OTC US	REEMF	0.10	0.23	-57	0.26	0.07	79.6	8.0	8.0	
Texas Mineral Resources	OTC US	TMRC	0.25	0.21	19	0.35	0.10	44.9	11.2	11.2	
			C\$	C\$		C\$	C\$		C\$		
Ucore Rare Metals	TSX.V	UCU	0.12	0.24	-50	0.26	0.12	277.0	33.2	25.0	
Canada:											
			C\$	C\$		C\$	C\$		C\$		
Commerce Resources	TSX.V	CCE	0.06	0.08	-20	0.09	0.06	310.5	18.6	14.0	
Appia Energy	CNSX	API	0.20	0.17	18	0.32	0.11	58.4	11.7	8.8	
Canada Rare Earth	1) TSX.V	LL	0.05	0.05	0	0.10	0.03	172.9	7.8	5.8	
Eagle Plains Resources	TSX.V	EPL	0.09	0.25	-66	0.29	0.08	90.2	7.7	5.8	
Search Minerals	TSX.V	SMY	0.04	0.05	-22	0.09	0.03	179.6	6.3	4.7	
Medaillon Resources	TSX.V	MDL	0.11	0.15	-28	0.18	0.08	31.2	3.3	2.5	
Int. Montoro Resources	3) TSX.V	IMT	0.05	0.06	-17	0.08	0.04	27.8	1.4	1.0	
Canadian Energy Materials	2) TSX.V	CHEM	0.15	0.28	-45	0.39	0.11	9.2	1.4	1.0	
Australia:											
			A\$	A\$		A\$	A\$		A\$		
Lynas	ASX	LYC	2.10	2.18	-4	2.96	1.54	665.7	1,398.0	1020.5	
Hastings Technology Metals	ASX	HAS	0.17	0.36	-53	0.38	0.16	778.1	132.3	96.6	
Alkane Resources	4) ASX	ALK	0.21	0.33	-36	0.38	0.18	506.1	106.3	77.6	
Northern Minerals	ASX	NTU	0.07	0.08	-13	0.12	0.06	1,190.0	83.3	60.8	
Arafura Resources	ASX	ARU	0.06	0.10	-40	0.14	0.06	629.6	37.8	27.6	
Western Europe:											
Greenland:											
			A\$	A\$		A\$	A\$		A\$		
Greenland Minerals	5) ASX	GGG	0.08	0.10	-20	0.10	0.07	1,130.0	90.4	66.0	
Sweden:											
			C\$	C\$		C\$	C\$		C\$		
Leading Edge Materials	TSX.V	LEM	0.23	0.91	-75	1.00	0.23	95.5	22.0	16.5	

1) vertically integrated REE business

2) name change from Canadian International Minerals, effective April 12, 2018

3) also uranium assets

4) also gold producer

5) world's largest undeveloped multi-element REE-uranium-zinc occurrence

November 30, 2018		Trading symbol		Share price		Change in %	12 months prices		Total shares issued million	Market cap. million	
		Nov. 30 2018	Year-end 2017	H	L		local	US\$			
Central Asia:											
Kyrgyzstan:											
Stans Energy		TSX.V	HRE	C\$ 0.03	C\$ 0.04	-29	C\$ 0.05	C\$ 0.02	181.4	C\$ 4.5	3.4
Africa:											
Namibia:											
Namibia Critical Metals	6)	TSX.V	NMI	C\$ 0.210	C\$ 0.04	425	C\$ 0.46	C\$ 0.07	180.3	C\$ 37.9	28.4
Tanzania:											
Peak Resources		ASX	PEK	A\$ 0.03	A\$ 0.05	-40	A\$ 0.06	A\$ 0.03	799.3	A\$ 24.0	17.5
Montero Mining and Exploration	7)	TSX.V	MON	C\$ 0.09	C\$ 0.28	-68	C\$ 0.44	C\$ 0.09	21.9	C\$ 2.0	1.5
Burundi:											
Rainbow Rare Earths		AIM	RBW	GBP 4.50	GBP 14.75	-69	GBP 24.35	GBP 4.49	187.9	£ 8.5	10.8
Kenya:											
Pacific Wildcat Resources	8)	TSX.V	PAW.H	C\$ 0.01	C\$ 0.02	-33	C\$ 0.02	C\$ 0.01	295.1	C\$ 3.0	2.2
Malawi:											
Mkango Resources		TSX.V	MKA	C\$ 0.16	C\$ 0.11	41	C\$ 0.24	C\$ 0.10	111.1	C\$ 17.2	12.9
Globe Metals and Mining	9)	ASX	GBE	A\$ 0.02	A\$ 0.02	0	A\$ 0.02	A\$ 0.01	465.9	A\$ 9.3	6.8
6) name change from Namibia Rare Earths as at May 30, 2018; diversified strategic portfolio of critical metals, including cobalt, lithium, graphite, tantalum, niobium, vanadium and gold											
7) also phosphate assets South Africa											
8) also tantalum mine in Mozambique and gold-silver project in Nevada											
9) also graphite project											

Overview of listed LITHIUM focused companies (by market capitalization)

November 30, 2018	Trading symbol		Share price		Change in %	12 months prices		Total shares issued million	Market cap. million		
			Nov. 30 2018	Year-end 2017		H	L		local	US\$	
			US\$	US\$		US\$	US\$		US\$	US\$	
Albemarle Corp.	1)	NYSE	ALB	96.32	127.89	-25	138.67	86.75	106.2	10,229.2	10,229.2
FMC		NYSE	FMC	82.74	94.66	-13	98.70	72.73	134.7	11,145.1	11,145.1
SQM		NYSE	SQM	44.00	59.37	-26	63.75	39.54	120.4	5,297.6	5,297.6
Tianqi Lithium	2)	HKSE	002466	31.78	53.21	-40	65.55	26.75	1.140	3,622.9	463.7
ERAMET		Paris	ERA:FP	71.25	99.03	-28	167.20	65.20	26.6	1,895.3	2,141.6
Pilbara Minerals		ASX	PLS	0.84	1.11	-24	1.25	0.68	1,740.0	1,461.6	1,067.0
Orocobre		ASX	ORE	4.32	6.97	-38	7.44	3.16	261.4	1,129.2	824.4
Galaxy Resources		ASX	GXY	2.70	3.83	-30	4.54	2.07	407.5	1,100.3	803.2
Kidman Resources		ASX	KDR	1.34	1.88	-29	2.48	0.82	399.6	535.5	390.9
Altura Mining		ASX	AJM	0.20	0.40	-50	0.51	0.18	1,820.0	364.0	265.7
IoNeer	3)	ASX	INR	0.23	0.35	-34	0.53	0.20	1,470.0	338.1	246.8
Tawana Resources		ASX	TAW	0.30	0.46	-35	0.58	0.22	578.1	173.4	126.6
Argosy Minerals		ASX	AGY	0.17	0.26	-35	0.48	0.16	923.5	157.0	114.6
AVZ Minerals		ASX	AVZ	0.08	0.23	-65	0.37	0.06	1,890.0	151.2	110.4
Neometals		ASX	NMT	0.23	0.44	-48	0.46	0.21	544.0	125.1	91.3
Piedmont Lithium		ASX	PLL	0.13	0.20	-35	0.23	0.12	559.2	72.7	53.1
Lithium Power International		ASX	LPI	0.27	0.57	-53	0.64	0.24	262.5	70.9	51.7
European Lithium		ASX	EUR	0.12	0.24	-50	0.33	0.08	547.9	65.7	48.0
Lithium Australia		ASX	LIT	0.10	0.20	-50	0.22	0.09	463.9	46.4	33.9
Core Lithium		ASX	CXO	0.06	0.08	-25	0.10	0.04	633.9	38.0	27.8
Sayona Mining		ASX	SYA	0.02	0.07	-71	0.12	0.02	1,720.0	34.4	25.1
Liontown Resources		ASX	LTR	0.03	0.04	-25	0.06	0.02	1,130.0	33.9	24.7
Force Commodities		ASX	4CE	0.02	0.08	-75	0.17	0.02	423.9	8.5	6.2
PepinNini Lithium		ASX	PNN	0.01	0.08	-88	0.09	0.01	686.7	6.9	5.0
Prospect Resources		ASX	PSC	0.03	0.05	-40	0.08	0.02	2,050	0.1	0.0
Nemaska Lithium	4)	TSX	NMX	0.80	2.35	-66	2.44	0.60	846.6	677.3	508.6
Lithium Americas		TSX	LAC	5.05	11.18	-55	13.47	4.00	88.6	447.4	336.0
Critical Elements		TSX.V	CRE	0.94	1.70	-45	1.86	0.65	158.6	149.1	112.0
Millennial Lithium		TSX	ML	1.51	3.66	-59	4.80	1.38	82.6	124.7	93.7
Neo Lithium		TSX	NLC	0.86	2.30	-63	2.75	0.83	117.5	101.1	75.9
Advantage Lithium		TSX.V	AAL	0.59	1.20	-51	1.39	0.56	157.8	93.1	69.9
Standard Lithium		TSX.V	SLL	1.20	2.14	-44	2.61	0.80	74.6	89.5	67.2
LSC Lithium		TSX.V	LSC	0.49	1.64	-70	1.65	0.29	162.2	79.5	59.7
Wealth Minerals		TSX.V	WML	0.54	1.76	-69	2.00	0.40	120.7	65.2	48.9
Frontier Lithium		TSX.V	FL	0.32	0.65	-51	0.85	0.30	148.4	47.5	35.7
American Lithium	5)	TSX.V	LI	0.55	0.46	20	0.74	0.21	61.0	33.6	25.2
Power Metals		TSX.V	PWM	0.20	0.74	-74	0.88	0.19	101.3	19.8	14.8
Avalon Advanced Materials	6)	TSX	AVL	0.06	0.12	-50	0.16	0.05	247.5	14.9	11.2
NRG Metals		TSX.V	NGZ	0.09	0.47	-81	0.62	0.09	137.7	12.4	9.3
Pure Energy Minerals		TSX	PE	0.08	0.41	-82	0.45	0.07	145.8	10.9	8.2
Dajin Resources		TSX.V	DJI	0.07	0.17	-61	0.20	0.05	152.3	9.9	7.4
Ultra Lithium		TSX.V	ULI	0.14	0.46	-70	51.00	0.14	70.6	9.9	7.4
Aberdeen International		TSX	AAB	0.07	0.19	-66	0.21	0.06	96.1	6.2	4.7
McArthur Minerals		TSX.V	MMS	0.03	0.07	-62	0.08	0.02	190.3	4.8	3.6
Argentina Lithium and Energy		TSX	LIT	0.14	0.36	-61	1.88	0.12	19.0	2.7	2.0
Bacanora Lithium	7)	AIM	BCN	36.50	106.50	-66	100.00	30.00	134.5	49.1	62.6
European Metals Holdings		AIM	EMH	0.19	0.66	-71	0.41	0.17	141.5	26.9	34.3

1) owns 51% of [Talison Lithium](#)

2) owns 49% of [Talison Lithium](#)

3) name change from [Global Geoscience](#) effective November 6, 2018

4) completed C\$ 1.18 billion (US\$ 849 million) financing package at a price of C\$ 1.00 per share on May 30, 2018

5) [NewView Capital](#) of [China](#) to acquire a 19.89% equity interest

6) formerly [Avalon Rare Metals](#)

7) name change from [Bacanora Minerals](#); changed listing from TSX to AIM; effective March 26, 2018

Overview of listed COBALT focused companies (by market capitalization)

November 30, 2018	Trading symbol		Share price		Change in %	12 months prices		Total shares issued million	Market cap. million	
			Nov. 30 2018	Year-end 2017		H	L		million local	US\$
			C\$	C\$		C\$	C\$		C\$	US\$
Katanga Mining	TSX	KAT	0.50	1.85	-73	2.83	0.36	1,907.4	953.7	716.2
Cobalt 27 Capital	TSX.V	KBLT	4.70	12.30	-62	14.00	4.55	84.8	398.6	299.3
Royal Nickel Corp.	1) TSX.V	RNX	0.54	0.18	209	1.18	0.07	378.2	204.2	153.4
eCobalt Solutions	TSX.V	ECS	0.72	1.95	-63	2.10	0.54	160.0	115.2	86.5
First Cobalt	2) TSX.V	FCC	0.23	1.24	-81	1.58	0.19	339.3	78.0	58.6
Canada Cobalt Works	3) TSX.V	CCW	0.56	0.35	60	0.90	0.19	73.7	41.3	31.0
Fortune Minerals	TSX.V	FT	0.11	0.30	-64	0.38	0.09	338.6	35.6	26.7
Cobalt Blockchain	TSX.V	COBC	0.12	0.09	35	0.40	0.02	164.4	18.9	14.2
M2 Cobalt	TSX.V	MC	0.25	0.62	-60	1.00	0.20	63.4	15.5	11.7
Declan Cobalt	CNX	LAN	0.24	1.40	-83	0.42	0.17	41.2	9.9	7.4
Pacific Rim Cobalt	CNX	BOLT	0.14	1.40	-90	1.59	0.10	51.1	7.2	5.4
Cruz Cobalt	TSX.V	CUZ	0.07	0.28	-75	0.41	0.07	78.6	5.5	4.1
Global Energy Metals	TSX.V	GEMC	0.06	0.23	-76	0.27	0.06	47.1	2.6	1.9
Sienna Resources	4) TSX.V	SIE	0.05	0.24	-81	0.39	0.04	53.2	2.4	1.8
Cobalt Power	TSX.V	CPO	0.02	0.20	-92	0.35	0.02	158.6	2.4	1.8
Lico Energy Metals	TSX.V	LIC	0.11	0.12	-4	1.90	0.10	18.6	2.0	1.5
Quantum Cobalt	CNX	QBOT	0.07	0.32	-78	1.85	0.05	27.5	1.9	1.4
			A\$	A\$		A\$	A\$		A\$	
Ardea Resources	ASX	ARL	0.61	1.90	-68	1.95	0.52	105.0	64.1	46.8
Cobalt Blue Holdings	5) ASX	COB	0.22	0.80	-73	1.67	0.20	116.2	25.6	18.7

1) major nickel-cobalt project

2) merger with Cobaltech Mining and Cobalt One; in addition acquisition of US Cobalt, effective June 4, 2018

3) name change from Castle Silver Resources, effective February 22, 2018

4) cobalt-nickel-copper project in Sweden

5) spin-out of Broken Hill Prospecting

Overview of listed GRAPHITE focused companies (by market capitalization)

November 30, 2018	Trading symbol		Share price		Change in %	12 months prices		Total shares issued million	Market cap. million	
			Nov. 30 2018	Year-end 2017		H	L		local	US\$
			A\$	A\$		A\$	A\$		A\$	
Syrah Resources	ASX	SYR	1.63	4.51	-64	4.95	1.36	343.6	560.1	408.8
Magnis Resources	ASX	MNS	0.31	0.46	-33	0.55	0.27	611.1	189.4	138.3
Talga Resources	ASX	TLG	0.45	0.56	-20	0.92	0.37	217.7	98.0	71.5
Bass Metals	ASX	BSM	0.02	0.02	0	0.04	0.02	2,540.0	50.8	37.1
Kibaran Resources	ASX	KNL	0.13	0.14	-7	0.23	0.11	275.7	35.8	26.2
			C\$	C\$		C\$	C\$		C\$	
Mason Graphite	TSX.V	LLG	0.56	2.45	-77	2.87	0.44	136.0	76.2	57.2
Nouveau Monde Graphite	TSX.V	NOU	0.28	0.45	-37	0.50	0.25	174.3	48.8	36.7
NextSource Materials	TSX.V	NEXT	0.10	0.07	46	0.22	0.05	491.3	46.7	35.1
SRG Graphite	TSX.V	SRG	0.75	1.85	-59	2.25	0.70	50.9	38.2	28.7
Zenyatta Ventures	TSX.V	ZEN	0.40	0.67	-40	0.84	0.34	64.9	26.0	19.5
Leading Edge Materials	TSX.V	LEM	0.23	0.91	-75	1.00	0.23	95.5	22.0	16.5
Northern Graphite	TSX.V	NGC	0.27	0.49	-44	0.53	0.18	65.1	17.6	13.2
Canada Carbon	TSX.V	CCB	0.15	0.09	67	0.18	0.04	106.7	16.0	12.0
Graphite One Resources	TSX	GPH	0.04	0.09	-53	0.12	0.04	326.1	13.0	9.8
Focus Graphite	TSX.V	FMS	0.04	0.08	-53	0.10	0.02	348.4	12.2	9.2
Ceylon Graphite	TSX.V	CYL	0.15	0.21	-29	0.26	0.14	54.8	8.2	6.2
Eagle Graphite	1) TSX.V	EGA	0.12	0.30	-62	0.36	0.10	37.8	4.3	3.3
Berkwood Resources	TSX.V	BKR	0.09	0.34	-75	0.37	0.07	39.9	3.4	2.5
Great Lakes Graphite	TSX.V	GLK	0.03	0.06	-58	0.08	0.02	132.7	3.3	2.5
Lomiko Metals	TSX.V	LMR	0.04	0.13	-69	0.31	0.04	51.0	2.0	1.5
			US\$	US\$		US\$	US\$		US\$	
Westwater Resources	2) NASDAQ	WWR	0.19	1.07	-83	1.15	0.15	66.3	12.4	12.4
Next Graphite	OTC	GPNE	0.03	0.03	0	0.07	0.01	51.4	1.5	1.5

1) share consolidation 1 for 10 shares, effective May 4, 2018

2) also lithium and uranium deposits

Overview of VANADIUM focused listed companies (by market capitalization)

November 30, 2018	Trading symbol		Share price		Change in %	12 months prices		Total shares issued million	Market cap. million	
			Nov. 30 2018	Year-end 2017		H	L		local	US\$
			GBp	GBp		GBp	GBp		£	
Bushveld Minerals	AIM	BMN	40.00	8.50	371	50.10	7.88	1,120.0	448.0	571.6
			A\$	A\$		A\$	A\$		A\$	
TNG	1) ASX	TNG	0.10	0.14	-29	0.22	0.10	961.1	96.1	70.2
Australian Vanadium	ASX	AVL	0.03	0.02	50	0.07	0.02	1,700.0	51.0	37.2
Technology Metals Australia	ASX	TMT	0.41	0.20	105	0.85	0.19	70.0	28.7	21.0
Aura Energy	ASX	AEE	0.02	0.02	0	0.04	0.02	1,070.0	21.4	15.6
Tando Resources	ASX	TNO	0.11	0.08	38	0.26	0.04	193.6	21.3	15.5
			C\$	C\$		C\$	C\$		C\$	
Prophecy Development	TSX	PCY	0.50	0.44	14	0.74	0.11	90.8	45.4	34.1
First Vanadium	2) TSX.V	FVAN	1.10	0.22	400	1.96	0.22	37.4	41.1	30.9
Blue Sky Uranium	3) TSX.V	BSK	0.18	0.24	-27	0.32	0.13	109.8	19.2	14.4
Vanadium One Energy	4) TSX.V	VONE	0.18	0.08	125	0.29	0.04	48.1	8.7	6.5
Vanadian Energy	5) TSX.V	VEC	0.10	0.03	300	0.18	0.06	26.5	2.7	2.0

1) vanadium-titanium-iron project

2) name change from Cornerstone Metals effective September 25, 2018

3) uranium-vanadium project

4) vanadium-iron-titanium project

5) name change from Uracan Resources, effective on October 5, 2018

Overview of listed MAGNESIUM focused companies (by market capitalization)

November 30, 2018	Trading symbol		Share price		Year-end 2017	12 months prices		Total shares issued million	Market cap. million	
			Nov. 30 2018	Year-end 2017		H	L		local	US\$
American Manganese	NYSE	AMYZF	US\$ 0.10	US\$ 0.22	-55	US\$ 0.28	US\$ 0.10	166.1	US\$ 16.6	16.6
MGX Minerals	CSE	XMG	C\$ 0.45	C\$ 0.98	-54	C\$ 1.96	C\$ 0.42	125.3	C\$ 56.4	42.3
Giyani Metals	TSX	WDG	C\$ 0.12	C\$ 0.23	-47	C\$ 0.40	C\$ 0.12	81.8	C\$ 9.8	7.4
Element 25	1) ASX	E25	A\$ 0.20	A\$ 0.23	-13	A\$ 0.35	A\$ 0.15	83.9	A\$ 16.8	12.2
Korab Resources	2) ASX	KOR	A\$ 0.03	A\$ 0.03	0	A\$ 0.06	A\$ 0.02	306.9	A\$ 9.2	6.7

1) name change from Montezuma Mining as at May 15, 2018

2) also phosphate, precious metals, cobalt and base metals assets

Overview of listed TUNGSTEN focused companies (by market capitalization)

November 30, 2018	Trading symbol		Share price		Change in %	12 months prices		Total shares issued million	Market cap. million	
			Nov. 30 2018	Year-end 2017		H	L		local	US\$
Almonty Industries	TSX	All	C\$ 0.78	C\$ 0.55	42	C\$ 0.98	C\$ 0.35	181.4	C\$ 141.5	106.3
Wolf Minerals	ASX	WLF	A\$ 0.04	A\$ 0.05	-20	A\$ 0.07	A\$ 0.03	1,090.0	A\$ 43.6	31.8
Specialty Metals Int. 1)	ASX	SEI	A\$ 0.01	A\$ 0.02	-50	A\$ 0.04	A\$ 0.01	554.9	A\$ 5.5	4.1

1) name change from Carbine Tungsten effective 11 December 2017

Overview of listed TITANIUM focused companies (by market capitalization)

November 30, 2018	Trading symbol		Share price		Change 2 months in %	12 months prices		Total shares issued million	Market cap. million	
			Nov. 30 2018	Year-end 2017		H	L		local	US\$
Kronos Worldwide	NYSE	KRO	US\$ 12.37	US\$ 25.77	-52	US\$ 29.15	US\$ 12.08	115.9	US\$ 1,433.7	1,433.7
Tronox	NYSE	TROX	US\$ 10.58	US\$ 20.51	-48	US\$ 27.09	US\$ 9.97	94.2	US\$ 996.6	996.6
Argex Titanium	TSX	RGX	C\$ 0.04	C\$ 0.05	-20	C\$ 0.07	C\$ 0.03	411.5	C\$ 16.5	12.4
Iluka Resources	ASX	ILU	A\$ 8.07	A\$ 10.17	-21	A\$ 12.20	A\$ 7.62	422.4	A\$ 3,408.8	2,488.4
BlueJay Mining	AIM	JAY	GBP 14.75	GBP 22.75	-35	GBP 27.50	GBP 9.34	850.0	£ 125.4	160.0