



Mining The Moon: Spacefaring Silicon Carbide, Helium-3 For Nuclear Fusion & The New Astro-Metallurgical Frontier

Hub & Spoke

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Stirling Larkin, CIO



Mining in space is coming and most forget becoming an Ultra High Net Worth (UHNW) investor or maintaining an existing UHNW corpus involves identifying [Megatrends](#) or [Supercycles](#) early and [proactively positioning accordingly](#) (after all, [gasoline wasn't an obvious progression during the era of whale oil street lamps](#)).

Within the next global [business cycle](#) (likely [second half of 2024 onwards](#)) prospecting and quarrying our moon will become *à la mode* and the greatest financial fortunes since the [robber barons](#) will be once again amassed.

Cite:- [China's Space Silk Road](#), 26 August 2019

Our moon is a source of helium, oxygen, silicon, deuterium, aluminium, iron, manganese, titanium and [martial-legal ambiguities](#).

Unsurprisingly, [terrestrial tensions have found their way into lunar legalese](#). So, for investors seeking investment exposure to some of the [newest frontiers, understanding the legacy is as important as identifying untapped opportunities](#).

But like any gold rush, [the proactive are not wasting time](#) and waiting for [international jurisprudence to catch up with progress](#), with the [private Japanese initiative](#) of [Hakuto-R Mission 1 crashing upon descent of the lunar surface last Wednesday](#) and many [other private enterprises rushing to collect sellable data to international conglomerates ready to transport mining equipment to the moon](#) and potentially, passing asteroids.

Cite:- [Picking Winners Not An Exact Science](#), 20 September 2014

Cite:- [All Crossroads Pass Through India: Biotech, Commodities, Digitalisation, Space Race & The Great Pacific War](#), 20 May 2021

In December 1972, NASA Geologist [Harrison Schmitt](#) and his colleague, Commander [Gene Cernan](#), spent three earth days conducting experiments on the moon, gathering up lunar rocks to take back home for analysis.

That mission, just over fifty years ago, was the last time any person set foot on the lunar surface, the final triumph of NASA's pivotal [Apollo program](#). Of the dozen men to have ever walked on the moon, Schmitt was the only one who [began his career as a trained scientist](#), rather than a [test pilot](#).

By some accounts, Schmitt was the photographer behind the famous first full picture of Earth from space, ["the blue marble"](#), an image that [captured a vision of a small, fragile and precious planet](#).

Schmitt brought more home with him than a sense of renewed perspective, his three days on the moon and his Doctorate in geology, coalesced into a new mission: to encourage mining the isotope Helium-3 (^3He) from moon rock, to [harness a new form of renewable energy](#).

In [2006 Schmitt penned a volume called "Return to the Moon"](#); in it, he made the legal and

Map of main active global launch and reentry sites

Russia, China, France, Japan, South Korea, North Korea, Israel, India, Kazakhstan and the US manage the most active facilities



scientific case for returning to the moon to mine ^3He . He claimed that because fossil fuels were in limited supply and precipitating dangerous global warming, power should be generated cleanly through an as yet undemonstrated nuclear fusion reaction between the isotope's deuterium and helium-3.

Cite:- [Fusion Power, Thorium & The Near Future Of Energy Capex](#), 20 March 2022

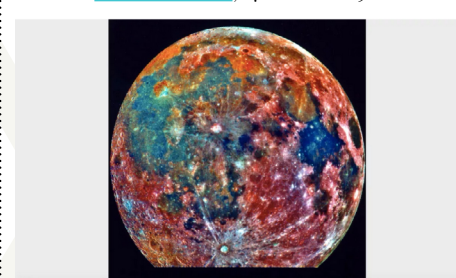
Because ^3He is incredibly scarce on earth, he looked to the moon as the ideal source and subsequently so have [many others both in the private and public sectors](#).

The moon has comparatively higher concentrations of ^3He because, in the absence of a protective atmospheric coating, it has been scoured by isotope-laden solar winds over its more than four billion years of existence.

Nuclear fusion of ^3He and deuterium has been posited for decades as a possible source of energy, because the reaction could, in theory, produce vast amounts of energy without making surrounding materials radioactive. By [some estimates, just forty metric tonnes could power the US for an entire year](#) – if the fusion process could be perfected.

Thus far, the high heats required for the reaction and the risk of dangerous chain reactions have been prohibitive to the realisation of this idealised "wunderfuel" but opens the door to another burgeoning industrial science; the production of Silicon Carbide, which would benefit from the [cooler elliptical perigee](#) and [help sovereign manned missions to Mars throughout the 2030's](#).

Cite:- [Silicon Carbide](#), 27 March 2019



This false-color photograph is a composite of 15 images of the moon taken through three color filters by NASA's Galileo Jupiter probe during the spacecraft's passage through the Earth-moon system on Dec. 8, 1992. Areas appearing red generally correspond to the lunar highlands, while blue to orange shades indicate the ancient volcanic lava flow of a mare, or lunar sea. Bluer mare areas contain more titanium than to the orange regions. (Image credit: NASA/JPL-Caltech)

In 2011, [NASA further reported scientists had discovered titanium ore, tenfold times richer than the ore found on earth, on the surface of the moon](#) – when mixed with aluminium or iron, titanium ore makes an alloy that is lightweight, [strong, corrosion-resistant](#) and temperature resistant.

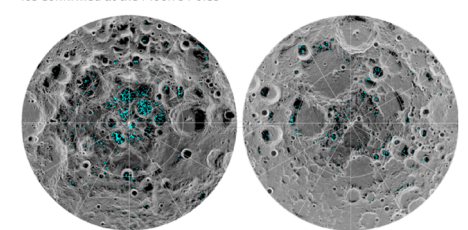
That could make it an ideal candidate for building structures on the moon, which will have to [contend with massive shifts in temperature, intense solar winds and the corrosive effects of tiny, sharp particles of moon-dust](#).

The [lunar surface is also known to contain the so-called rare-earth metals](#) that are critical for the green energy revolution and which can be found in engines, batteries, electronic devices, radar systems and more.

Cite:- [Relative Magnetism Of Rare Earths For Real-Money Investors: Green Capex, The Great Pacific War & Digital Revolution](#), 14 October 2021

Then, there's the dark side of the moon, where [scientists are fairly convinced that those permanently shadowed regions, or PSR's, play host to water ice](#) which could both bolster Mars missions but also [lunar industrial complexes supporting terrestrial-conglomerates](#).

Ice Confirmed at the Moon's Poles



This image shows the distribution of water ice on the Moon's north pole (left) and south pole (right), detected by NASA's Moon Mineralogy Mapper instrument. Blue represents the locations, and the size of the blue patches, which the grey scale corresponds to surface temperature (darker representing colder areas and lighter shades indicating warmer areas). The area represented at the bottom and right corners, in the shaded or orange, is the crater floor. The crater floor is sometimes been shown to contain deposits of water or ice. (Image credit: NASA)

Existing UHNW investors also appreciate that proactively investing requires [a high degree of risk management planning along the arc](#) of any present [Supercycle](#) and spacefaring investing in 2023 brings with it a raft of [conflating and mitigating considerations](#).

Best summated in [2009 by George Friedman](#) in his speculative nonfiction book, ["The Next 100 Years: A Forecast for the 21st Century"](#), among the technological predictions made in the book are the development of [hypersonic aircraft and missiles, new space-based technology that will foster the development of military bases on the moon](#) and crewed military orbiting platforms (referred to in the book as ["Battle Stars"](#)) and [armoured robotic battle suits for soldiers that run on solar power](#). In addition, the earth will come to be powered by solar energy collected from satellites beaming the energy down in the form of radiation to receiving stations on earth, which will end dependence on hydrocarbons and [dramatic advances in robotics and genetic science will lead to a great increase in labor productivity, and significant increases in human longevity](#).

Cite:- [All Eyes On Taiwan: Microprocessors, Hypersonics & The Opportunity Set Across The Defence Complex](#), 20 May 2022

Cite:- [Defence Complex Investments](#), 4 July 2018

Cite:- [Benefiting From Belligerence: Defence Boon, Balloons & The Hard Commodities Complex](#), 1 March 2023

Lunar investing may be bold and go where no one has gone before, but what may appear to be one small step for some hopefully won't become one giant leap for others. ■

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