[LWMC] Light-Weight Mineral-Composite

LWMC is a next generation Nano polymer clay composite that offers the construction industry products with unheard of properties at the price point of engineered cement, featuring value added lightweight, greater strength per pound, moisture control to waterproof, and fire resistance.

OVERVIEW

LWMC can be configured to enhance the performance, look and handling of Structural Insulated Panel [SIP] systems in building construction. With a dry bulk density comparable to green lumber this cementitious composite can be fabricated like ordinary concrete into boards or panels or mixed and applied like plaster to interior surfaces or to exteriors as stucco. When foamed it can act as a fire-proof structural insulation. By deploying our natural mineral resource into existing novel and more sustainable methods of manufacture and installation we give building materials more value than cost while reducing the carbon footprint and saving energy long term, thus promising better sustainability under increasing environmental concerns.

TECHNOLOGY

The technology begins with the distinction in densities of historical unfired or “green” clays and natural pozzolans compared to high energy manufactured, limestone-based Portland cement. This next generation meta cement is formed by breaking down aluminosilicate minerals into colloidal size particles and combining them with water, forming a benign pregnant solution that reacts upon surface contact forming a solid-state bound material composite. Large-scale production has yet to begin in North America, but Europe and Australia are gaining momentum in Portland concrete markets under the name geopolymer cement.

PLAN FOR CALIFORNIA

If selected, we propose to explore a strategic fit for our California/Nevada mineral resource prospects and our mineral owner partners in supplying [vertically integrated mine to market manufactured product to help solve California’s affordable housing crisis.

Additionally we are proposing a construction installation and equipment group to engage our unique innovation in geopolymer plastic clay chemistry to supply shotcrete material and an additive manufacturing apparatus to dispense MetaCrete® (inorganic polymer electrostatic hydro seeding) equipment [IPEHS] for two state funded multi-hundred million dollar infrastructure projects, for transportation and water delivery viaducts in the local Central Valley.
PROJECT SCOPE

Commercial size California deposits of raw clays were last classified by the USGS in 2007 that are on lands planned for future development. The use of these clay minerals as raw and or natural pozzolans in concrete mixtures are well recognized by the Portland cement association.

We need a well-funded and organized campaign to bring recognition to what this natural resource can do in helping reduce carbon dioxide emissions from fossil fuel burning and open-air release of carbon dioxides in powering our “Economy of Things”. The early settlers in California built using “adobe bricks” from the land at hand as evidenced by the still travelled El Camino Real Highway and the series of early Spanish Missions and other public works.

Future building, thanks to advances by the California Air Resources Board [CARB], in tracking earth borne emissions with advanced particulate technology can lead to cleaner, greener, and more sustainable leading energy efficiency designs for architecture [LEED]. We need dedicated Imagineers and market pioneers to take the mined material out of the lab and into Pacific coast and mountain markets in support of the philosophy “everything is connected” and grow wisely and sustainably our built environment.

A 25 ton per day operational proof of concept supply side facility would be the minimum “kick start” to form a tangible source of nano clay catalytic powder. Beginning from the bottom up poses the least investment risk and promises the most environmentally responsible way to reach market engagement. Preliminary calculations indicate that the clay mineral content in a 2000 square foot insulated concrete block home would be met with one day’s milling production output and further, that each mineral acre of pozzolanic clay reserve could provide a raw material source for up to 928 housing units,~ 2000 square foot each dwelling. Expressed another way we have a vetted, but idle 1- acre clay resource near the geographic center of California that can deliver the raw material for up to 260 [Eco-Logic, SMART Homes] per year for the next 101 years, based on a California registered Professional Geologist, (P.G.) who authored a qualified 3rd party, Economic Geological report in 2003.

NOVEL RESEARCH, BUT NOT A NOVELTY, NEW AGE BRICK AND MORTAR CHEMISTRY

Aluminosilicate Clay Composite (MetaCrete wallboard (10mm thickness) [PHOTO 1]. Aluminum oxide, when combined with silicon dioxide in nature is commonly referred to as kaolin clay, a versatile aluminosilicate mineral that when used as part of a cement mixture and cast into thin panels under proper curing procedures and practices can be used in residential and commercial building construction. When sold by the board foot measure it offers a competitive cost for a wide range of general building uses and for applications that require fire resistance, mold, mildew, rot, and vermin control, as well as sound, insulation, and energy conservation benefits.
This synthetic Clay-Board [look and handling of plasterboard or sheetrock] is an environmentally friendly [SIP] building material that develops its strength and durability from inherent solid-state bonds at the nano level. [PHOTO 1 a.,b.,c.]

https://www.google.com/search?q=structural+insulated+panels+%28sips%29+kit+homes&oq=structural+insulated+panels+%28sips%29+kit+homes


Photo 1; actual production roof shingle (Courtesy of Former GeoBond International, Inc.; and woman inventor Patricia Billings) see her story at:

https://www.engineeringcrossing.com/article/300159/Patricia-Billings-From-Artist-to-Inventor/
Photo 1a.

Photo 1b.
Photo 1 c.

Photo’s (1) (a, b, c) are provided for informational and illustrative purposes only, from the **2018 BUILDING MATERIALS CHALLENGE**, [PI] PUGH submittal was sponsored in part by the US Department of Energy, Sto Americas, Atlanta Georgia, and ADL Ventures, Nolan Browne, Founder & Chairman, San Francisco, California.

For further information see:

[https://adlventures.com/about/](https://adlventures.com/about/)

[https://www.stocorp.com/who-we-are-us/](https://www.stocorp.com/who-we-are-us/)

Extracted Ore stockpiled for solar drying prior to transport to nearby milling facility. There presently does not exist a milling facility in California or for that matter anywhere in the United States that can mill to the nano-level gradation in sufficient quantity or quality per hour to meet the market cost point to compete with ordinary Portland concrete ground clinker materials in construction markets. Part of our innovation is the scaling up of a proprietary [IP] trade secret milling proto-type particle disintegration process, that is projected to cost effectively reduce already fine clay particles into nano-size natural powder catalysts. As engineered our proposed California nano-milling facility module could be powered by 100% renewable energy. In the Portland cement industry this sub-micro sizing process is referred to as energetically modified cement [EMC]. Our process is engineered to develop a ~50% lower overall carbon footprint across the California cement supply chain.
This depicts the field condition at time of discovery. This picture is centered within an area of surface measure of about one acre. The ore is visible on the surface and the soil is only able to support limited grass. This is typical of the Northern California inland valley, [aka San Joaquin Valley] western Sierra- Nevada Foothills targeted for extensive planned development over the next 30 years. With improved knowledge, development could occur on these lands that could benefit both man and his environment, with zero degradation one to the other. Developing one acre of this mineral bearing land can avert up to 26,000 tons of carbon dioxide emissions into the atmosphere. Using California native materials used locally produces high paying jobs to support the local community with career opportunity, rather than relying on imported Portland cement- based additives such as coal fuel ash waste to lower carbon dioxide emissions.
We ask you to consider supporting local soil based natural resources that meet the precursor chemistry requirements of MetaCrete® in lowering carbon dioxide emissions by using solar photo voltaic [PV] power to energize Creative Chemistry for Construction. [https://www.studentenergy.org/topics/solar-pv](https://www.studentenergy.org/topics/solar-pv)

TEAM & CAPABILITY

We are a group of volunteer small business owners with a track record of innovation in the built environment with a combined ~130 years’ experience in the creative chemistry and manufacturing methods applicable to these new synthetic technical clays. To some degree we own, operate and have employees that are skilled in the relevant matters at issue to make this venture a success.

Team Members:

- Justin Meloling; [www.rezcast.com](http://www.rezcast.com)
- Robert G. Miller; [www.selectcrete.com](http://www.selectcrete.com)
- David M. Brassard; [www.siliconesolutions.com](http://www.siliconesolutions.com)
- Paul F. Pugh, Jr., [PI]; [www.rioblancodevelopment.com](http://www.rioblancodevelopment.com)

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[https://slideplayer.com/slide/3844051/](https://slideplayer.com/slide/3844051/) Basics of Ancient Pozzolan Chemistry
[https://slideplayer.com/slide/4508699/](https://slideplayer.com/slide/4508699/) Modern Cement Replacement Materials
[https://slideplayer.com/slide/7360646/](https://slideplayer.com/slide/7360646/) 4th Grade Presentation for Tulare, Merced, Kern, Mariposa and Sacramento County. State Mining and Geology Board
4 bedroom, 2 1/2 bath 2300 square foot home New Orleans Model Sustainable Replacement Housing (illustration only)
150 mph wind rating – Florida Product Approval
Exterior SIP walls, SIP roof panels (MGO or CSIP)
First floor elevation +12’, top of roof elevation +40’
Interior partitions framed with metal studs (Not included in SIP building kit)
Second floor framing not included in SIP building kit
Windows not included in SIP building kit
First Floor framing not included in SIP building kit
Exterior wall height 10’
SIP Panel Type: James Hardie Cement Fiber or MGO SIP walls (non-impact), OSB / MGO SIP Roof Panels

Innova SIP Building Weather Tight Material Kit Cost as specified above $22 to $25 per square foot