Understanding and Recreation of a 4500 Year Old Reconstituted Limestone

Michel Barsoum, Drexel University, DMR 0907430

* How the Great Pyramids of Egypt were built remains an enduring mystery. In 2006 we showed showed that at least some of the limestone blocks in the pyramids of Khufu were synthetic most probably made with lime and diatomaceous earth. This 1 yr proposal was based on that work. Recently we have shown, mostly on Bent pyramid outer casing samples.

* Submicron silicon-rich, amorphous areas not found in natural limestones and incompatible with our understanding of silica in 50 million yr old limestone.

*Shown that it is possible to make a fine-aggregate limestone concrete using lime and diatomaceous earth.

* In one sample, partially dissolved diatoms were found that were very reminiscent of ones we found in our synthetic limestone. The major implication is that at one time the environment of the diatoms was highly basic.

* NMR showed evidence for amorphous Ca-silicates.

* Carbon dating of pyramid samples showed presence of ^{14}C. However, C-dating is necessary but not sufficient condition.