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Giza pyramids
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By: Stefan Anitei, Science Editor

Scientists Prove the Egyptian Pyramids Were Cast of Cement

The technology could be employed in the future

The common theory says that the Egyptian pyramids were made of carved giant limestone blocks that were carried up on ramps. But this explanation leaves a large quantity of unsolved questions. Two decades ago, Joseph Davidovits, Director of the Geopolymer Institute in St. Quentin, France, said that the pyramid blocks were made of a type of concrete made from a mixture of limestone, clay, lime, and water. "If the pyramids were indeed cast, someone should have proven it beyond a doubt by now, in this day and age, with just a few hours of electron microscopy", said Michel Barsoum, an Egyptian born professor in the Department of Materials Science and Engineering at Drexel University and ceramics researcher. But nobody has proven this theory till now. After one and a half year research involving also extensive scanning electron microscope (SEM), Barsoum's team discovered that the tiniest structures from the inner and outer parts of the blocks were indeed a reconstituted limestone. The binding employed for the limestone cement was silicon dioxide (the quartz mineral) or a calcium and magnesium-rich silicate mineral. The high water content of the blocks does not fit the normally dry, natural limestone encountered on the Giza plateau, either. Moreover, the blocks have an amorphous structure (with atoms disposed in irregular arrays), while natural sedimentary limestone is normally crystalline (with atoms disposed in a regular pattern). "Therefore, it's very improbable that the outer and inner casing stones that we examined were chiseled from a natural limestone block", said Barsoum. The presence of silicon dioxide nanoscale spheres in one sample clearly showed it was not a natural rock. The finding responds to many questions: why the blocks are so perfectly fitted that not even a human hair can be inserted between them; and why, if the blocks were carved, no copper (ancient Egyptians discovered the iron only very late) chisels have ever been discovered on the Giza Plateau. The concrete explanation may not answer all the questions, but it's more plausible, as it would have been almost impossible to drag the stones to the top. Moreover, the ancient technology could be even used in the future. "The basic raw materials used for this early form of concrete-limestone, lime, and diatomaceous earth-can be found virtually anywhere in the world. Replicating this method of construction would be cost effective, long lasting, and much more environmentally friendly than the current building material of choice: Portland cement that alone pumps roughly 6 billion tons of CO2 annually into the atmosphere when it's manufactured."