

## Treatment and Conservation of an Antique Stone Stela by Nano Calcium Hydroxide with Nano Silica in Egyptian Museum of Cairo

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**Abstract :** An ancient limestone stela dating back to the epoch of the middle kingdom and displayed in the exhibition hall of the middle kingdom, it was discovered in Lisht in Giza, registered with No. 3045 and as a result of its display in an inappropriate display as a result of the use of natural lighting in the display, Represented in sunlight through windows opened day and night. The alternation of these daily changes between the temperature degrees of night and day, both daily and seasonally, causes the expansion and contraction of the rocks and then weakens their cohesion, causing fragmentation. This is indeed the current situation of this stela displayed in the hall, in addition to the damage and fading of colors, as well as the use of a high-viscosity restoration material in the consolidation that led to the attraction of dust and dirt and its adhesion to the surface. The color faded as a result of the lack of lighting control inside the exhibition hall, the remnants of the existing colors were blurred as a result of applying a consolidation material with a high viscosity, which led to the attraction of dust and dirt, and then blurring the colors on the inscription. Examinations and analyzes were carried out on the block, and the results of the examination with a polarized microscope showed that it is of primitive limestone, which contains fossils and microorganisms, which helps to damage. The analysis using the Raman device also showed that the high-viscosity material used in restoration in the past is Paralloid B72. The stone stela was consolidated by using two materials; Nano calcium hydroxide with Nano silica in the form of (Core-shell) at a concentration of 10% and it was applied using the brush.

**Keywords :** Egyptian museum, stone stela, treatment, nano materials, nano silica

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