Identification of Gesso Scagliola in The Tomb of the Royal Family 
(Muhammad Ali ) at El Imam El Sharpie area

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1: Abstract
European Artistic style prevailed at the era of Muhammad Ali family. For example Baroque and Rococo decorative styles and Scagliola that has spread widely in Europe in the fifteenth century, in Egypt we can find this style in the Royal jewelry Palace at Alexandria, Campolion palace and sabil “um Abbas” at Saliba Street -Cairo 1867 A.D. The three examples Simulator Natural Marble. Scagliola style implemented in the tomb of the royal family 1805 A.D. at El Imam El Shafei area, in addition to the other stucco works, perforated Windows and gilded stucco. The study was performed in the tomb of the royal family 1805 A.D. using various analytical methods such as X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM) with EDX unit. The data showed that scagliola carried out on two layers the under layer and other surface layer that gives feel similar to natural stone(marble). The under layer components mainly gypsum, Anhydrite, calcite and dolomite in addition to a small percentage of halite salt. EDX analysis confirm component of colored layer zinc oxide, gypsum, calcite, iron and aluminum oxides.

2: Results and Discussion
Scagliola Carried out on two layers suport layer and upper layer that contain colors simulating marble. 

Support layer
Consists of gypsum, dolomite, and calcite.
Upper layer that contain colors Consists of White zinc mix with iron, aluminum oxides and carbon to simulate marble.

Support layer fig(3) consists of five minerals Gypsum about 50% after included the proportion of anhydrite within consider the composition of the gypsum phases this phase is the base of separation the surface layer,due to the difference physical properties. The total mineral dolomite and calcite about 35%, the proportion of halite salt significantly 15% which also explains peel off the outer layer as a result of salt crystal formation Pressure. The upper layer tape (2) basically white zinc oxide about 50% mixed with 32% gypsum and lime 4% aluminium oxide a little bit of iron oxide which explains the presence of brown or reddish that simulate marble . salts halite and sylvite due to the presence of chloride and potassium ions.  

3: Methods & Materials

X-Ray Diffraction equipment model X.Pert PRO with Monochromator 
Cu-radiation (k=1.542A') at 50 K.V, 40 M.A. and scanning speed 0.02/Sec were used. The reflection peaks between 20 -20 and 60°, corresponding spacing (d, A') and relative intensities (I/1) were obtained. The diffraction charts and relative intensities are obtained and compared with ICDID files. 

SEM Model Quanta 250 FEG (Field Emission Gun) attached with EDX Unit (Energy Dispersive X-Ray Analyses), with accelerating voltage 30 K.V, magnification14x up to 100000 and resolution for Gun.1n

Table (1) EDX of the sample A1 (Scagliola falling crust) It consists mainly of zinc oxide about 30% and the presence of sulfur, carbon, calcium, iron, aluminum, chlorine and potassium oxides.

4: Conclusion
1. Scagliola is consider one of the Architectural stucco works.
2. Its Implementation differs from other kinds as two layers support and upper one and the colors added to the upper one.
3. The thickness of the upper layer about 2 -5 Mm. 

which explains the scaling and loss of this upper layer. so Scagliola is not a type of Murals, due to its composition in basic minerals Gypsum, calcite and dolomite, which is matching with what Giorgio Torraca said.

5: References

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Table (1) shows the composition of the elements in the sample A1.

Table (2) shows the approximate percentages of the elements in the sample A1.