Ancient Crystalline Materials for the Arts of Beauty

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Dedicated to the memory of HUBERT CURIEN

Recent progress in the analysis and structural characterisation of materials has had an increasing impact on studies of archaeological specimens. We shall mainly focus on cosmetic chemicals, also used as pigments and medicines. Many crystalline compounds found in Egyptian tombs have been identified. The structural information has ultimately revealed that the Egyptians had developed a *wet chemical synthesis of lead-containing compounds not occurring in nature.* Archaeological data (2000-1200 BC) and Greco-Roman texts (50 AD) have been crucial in tracing back this technology about 1500 years earlier than it has been previously assumed [1].

Greek texts from the 4th century BC describe a remarkable method of synthesis and comment on the widespread use of ceruse (lead white) still continuing until the present day. A marked difference in the historical use of cosmetics by the Egyptian and Greco-Roman societies will be emphasised.

The archaeological materials may suffer alterations over the centuries. Time may be then viewed as a "fourth dimension" for the purpose of approaching the significance of *"molecular messengers"* in *"Molecular and Structural Archaeology"*. Thus we have observed by X-ray diffraction a keratin α-helix, still perfectly preserved, in human hair 2500 years old. In contrast the structure of skin elements has been altered by the mummification process.

[1] Walter P., Martinetto P., Tsoucaris G., Breniaux R., Lefebvre M.A., Richard G., Talabot J., Dooryhée E., *Nature*, 1999, **397**, 483-484.

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