7th European Commission Conference "SAUVEUR", Prague 2006, v.2, pp.716-717

Deterioration factors of Coptic wall paintings in Al Qurna and Wadi El Natrun-Egypt

Moussa (1), B. Christaras (2), J. Stratis (3), M. Ali (1)
(1) Conservation Department-Faculty of Archaeology-Cairo University-Egypt, moussa@geo.auth.gr
(2) Department of Geology-Aristotle University of Thessaloniki- Greece, christar@geo.auth.gr
(3) Department Of Chemistry-Aristotle University of Thessaloniki-Greece, jstratis@chem.auth.gr

- Wadi El-Natrun is a sandy depression located west of the Nile delta, latitude 30°17' and 30°38'N, longitude 30°02' and 30°30'E.
- It is directed NW-SE, about 72 feet under sea level, while Al Qurna is located at the Nile's west bank of Thebes about 25.67°N 32.70°E.
- Its height is about 88m / 288 feet above sea level. Wall paintings in both areas which have two different geological structures are affected by two different climatic conditions -Mediterranean and desert- which were studied analytically following their effect (Figs. 1, 2).
- Temperature and Relative Humidity registering showed a great variation in climatic conditions at the two areas between day and night, summer and winter.
- Rock, stone mortar and pigment analysis were achieved by means of non-destructive methods, chemically and microscopically (Fig. 3). Micro XRF, XRD, scanning electron microscope analysis showed that Copts continued to use the same pigment materials of ancient pharaohs, red pigment is hematite, yellow is goethite, blue is Egyptian blue, green is cerossite, black is mixed of carbon and magnetite, white is gypsum and brown pigment is hematite of Aswan, (Fig. 4).
- As conditions are suitable for microbial growth; bio-deterioration was studied separately, *Aspergillus glaucus* represents the most dominant fungal flora in Wadi El Natrun, while *Aspergillus fumigatus* represents the most dominant fungal flora in Al Qurna (Fig. 5) man made deterioration is one of the effective factors which were studied.
- A conservation plan was put to preserve the Coptic wall paintings in the studied areas.

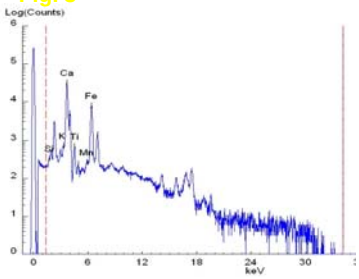

Fig. 4. Mmicro XRF diagram of red pigment Al Qurna

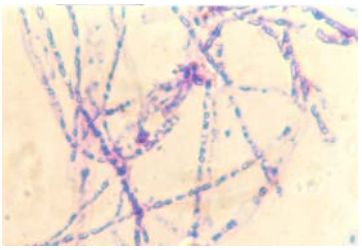

Fig. 5. *Aspergillus glaucus* under microscope-Wadi El Natrun