بسم الله الرحمن الرحيم

DATING OF ANCIENT EGYPTIAN POTTERY USING SOME NUCLEAR TECHNIQUES

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BY

NABIL ALI EL-FARAMAWY

B.Sc., Physics, Ain Shams University, 1983
M.Sc., Physics, Ain Shams University, 1988

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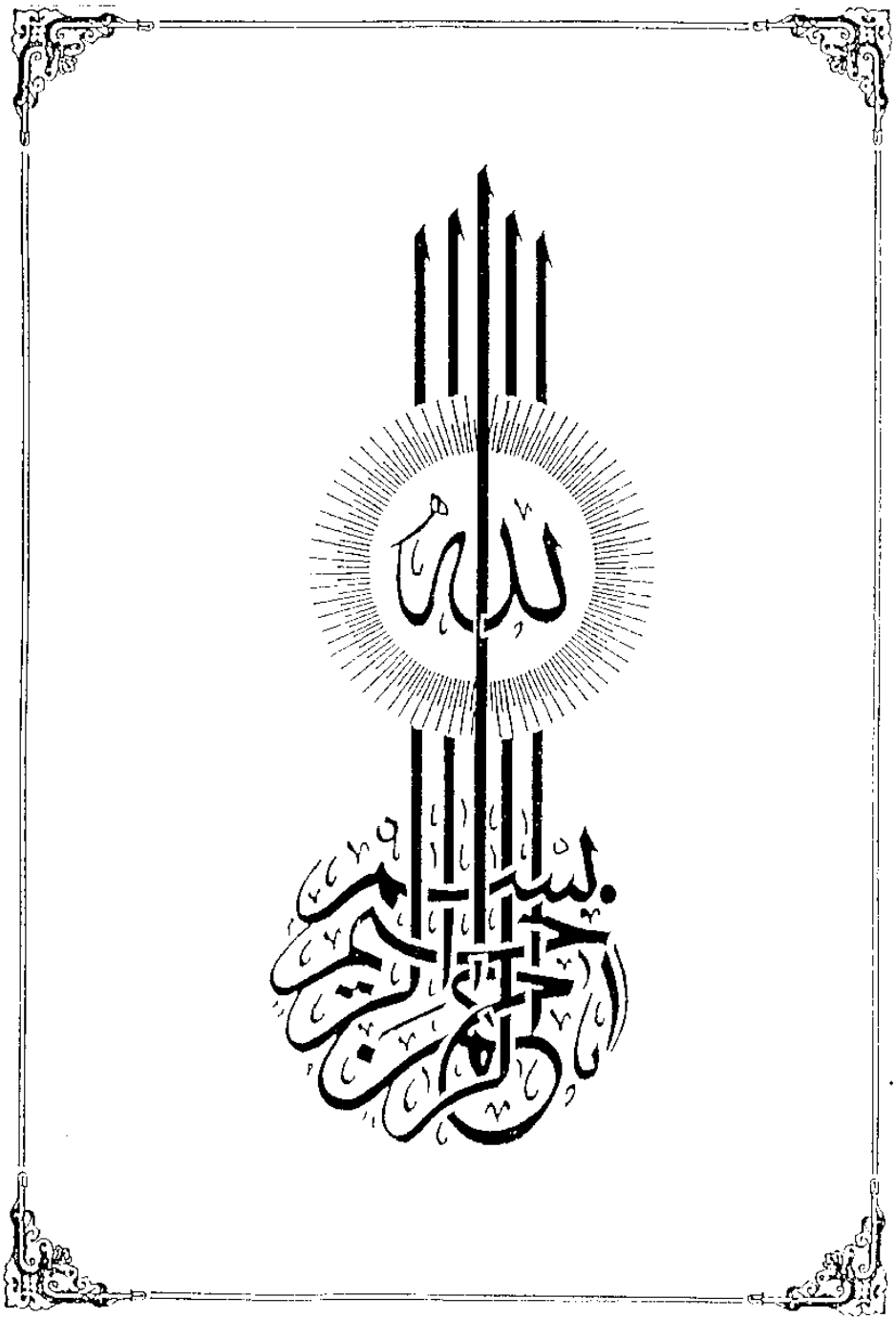

THANKS FOR GOD

TO MY PARENTS

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* Physics Department, Faculty of Science, Ain Shams University.

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SUMMARY

SUMMARY

The importance of archaeological dating in estimation of the historical events and evaluation of the civilizations under investigations inspired researchers to look for many alternative dating techniques. The most widely used techniques are Tree-Ring Counting, Radioactive methods, Fission Track, Electron Spin Resonance, and Thermoluminescence technique.

In the present works, thermoluminescence (TL) dating technique was used for dating of some ancient man-made artifacts. It was used to estimate the ages of some ancient Egyptian pottery sherds. Those sherds were extracted from Pharaonic tombs lie at the south-west of Nazlet El-Samman (Giza Pyramids Zone).

The essential features of the phenomenon of thermoluminescence are as follows. When radiation is incident on the insulating crystals, some of the deposited energy is stored in the lattice at defect sites. Upon heating the crystals, this energy is released and a fraction of it may be emitted as visible light, prior to the onset of black-body radiation. Consequently geological minerals, like quartz emits vast levels of TL when heated in direct reflection of their long period of dosage. So, when pottery is fired during its manufacture the TL stored in its various crystalline components is removed. Thereafter, the TL stored in the quartz crystals will gradually build-up with the absorption of radiation from α, β and γ radioactivity in the surrounding clay matrix. TL-dating therefore