

Prof. Murray Moinester

Tel Aviv University

Friday, April 3, 2015

1:30 – 2:30 PM

Venue: AHC3-214, MMC

Refreshments will be served at 1:15 PM



Abstract: Determining the absolute chronology of ceramic artifacts has significant implications for archaeological and historical research. I describe an archaeological dating clock for precisely dating fired ceramics, based on a moisture-induced chemical (RHX) rehydroxylation reaction.



RHX dating proceeds by measuring the mass of chemically combined water in the ceramics in the form of OH hydroxyls, and the mass gain rate at the Effective Lifetime Temperature (ELT) that the ceramics experienced over its lifetime. I describe how two different ceramics samples can reveal their common ELT with high precision. RHX reaction kinetics are proportional to the fourth root of the ceramic's age, so the amount of hydroxyl chemically combined with the ceramic material provides an 'internal clock' that can be read by a precision microbalance to determine the elapsed time since it was fired. RHX dating has the potential to revolutionize our understanding of the trajectories of historical developments worldwide.

Biography: Murray Moinester, Emeritus Professor of Physics, received his Ph.D. from the University of Rochester in 1968, and then joined the faculty at Tel Aviv University. He served as guest professor for extended periods at many leading universities and accelerator laboratories, has extensive experience in experimental and computational methods, carried out many research programs in high energy particle and nuclear physics, published some 200 scientific papers in refereed journals, authored some 75 conference papers, gave courses in nuclear physics, quantum mechanics, electromagnetism, mechanics, wave motion, electronics, and more; worked as a patent writer, on border security with radiation monitors, on water security via online monitoring of chemical hazards, in the field of Archaeology on infrared imaging & scientific dating, on statistics analysis for the social sciences, and on climate engineering.

The event is free and open to the public.

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