

Art, Archeology, and Chemistry

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Allison Road Classroom Room 203

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Chemistry as a discipline has a great potential to vastly expand the landscape of archaeology and art history. Considerable progresses in nanotechnology, spectroscopic and imaging techniques, have made it possible to perform non-invasive study of archeological artifacts and art work at molecular level. For example, multi-spectral analysis revealed the fingerprint of Leonardo da Vinci on a painting previously thought to be not authentic, boosting its market value from \$19,000 to over \$150 million; the synchrotron radiation based X-ray fluorescence elemental mapping uncovered another layer of painting underneath Vincent van Gogh's famous painting "Patch of Grass"; and the atomic absorption spectroscopy allows detection of huge amount of mercury inside the Mausoleum of the First Emperor Qin Shihuang (r. 246-210 BCE) confirming the literature record that mercury was used to simulate rivers and seas in an empire model. The amazing progress in DNA sequencing and bioinformatics has now allowed scientists to peek into the genome of Neanderthals who roamed in Southern Europe more than 20,000 years ago and opens up fascinating stories on human evolution and paleoanthropology. The seminar course will use these stories to illustrate how the chemistry is used to enhance our understanding of art history and to advance the field of archeology. The goal is to deepen the appreciation of the tremendous synergy that chemistry can bring to the field of social sciences and humanity.

KUANG YU CHEN is Professor II of Chemistry and Chemical Biology. His research group has been interested in the function of polyamines and eIF5A protein, particularly their role in cancer. His lab has also done research in the area of nutraceutical and disease prevention. He is also an Adjunct Professor in the Department of Asian Languages and Cultures, where his research interest is in Early China (2000-500 BCE), with particular focus on oracle bone inscription and Shang civilization.