COLLOQUIUM BY WARREN S. WARREN

USING NOVEL PHYSICS TO UNDERSTAND CULTURAL HERITAGE

TIME: 5:00-6:00 PM, WEDNESDAY, 30 NOV 2016

VENUE: AB 1079

Using Novel Physics to Understand Cultural Heritage

Speaker: Warren S. Warren, Chair of the Physics Department at Duke University, James B. Duke Professor of Physics, Chemistry, Radiology, and Biomedical Engineering.

ABSTRACT:

Molecular imaging-extracting chemical information to image function instead of merely structure-is opening important new frontiers in clinical medicine; it promises to enable a new generation of techniques that can revolutionize both diagnosis and treatment. Here I put this field in a broader context: investments in such biomedical research have spinoffs in broader fields, such as understanding the world's cultural heritage. For example, our lab has developed new laser technologies that make it possible to see normally invisible features in tissue, which actually improves diagnosis of skin cancer. In recent years we have shown that the same technologies can be used for nondestructive imaging of cultural heritage objects such as Renaissance paintings. I discuss the underlying principles, show a range of applications to organic and inorganic pigments, and speculate on future uses.

BIO:

Warren S. Warren is the chair of the Physics Department at Duke University, and James B. Duke Professor of Physics, Chemistry, Radiology, and Biomedical Engineering. Warren's research interests and 300 papers reflect advances in very fundamental physics or technology, generally using magnetic resonance or nonlinear optics, with applications in extremely complex systems such as clinical imaging and art conservation. He has received national awards from the Optical Society of America, the American Physical Society, and the American Chemical Society. He is also the author of an award winning undergraduate textbook, *The Physical Basis of Chemistry*.