

THE YIN AND YAN OF XRF ANALYSIS AS A TOOL IN THE INVESTIGATION OF CULTURAL HERITAGE WORKS

By Dr. Bruce Kaiser, Bruker AXS, Kennewick, WA

Over the past 8 years I have been privileged to support several museums and universities in the application of xrf technology in their quest to better understand the elemental make up of cultural heritage works of all types. This paper will go into the detailed xrf setup and analytical approaches that have been developed for 7 specific measurement challenges. In discussing the development of these applications not only the technique will be discussed but also the interaction physics that underlies the approaches chosen. Also, the limits and of strengths of xrf analysis in these applications will be discussed. The specific topics are the determination of trace elements in bulk materials, the determination of the location of elements in layered materials, the identification and quantification of chlorine and sulfur contamination on various substrates, the quantification of titanium in the presence of barium, general xrf quantification (when it works and when it does not), the measurement of various patinas on Cu alloys, and the quantification of elements in a paper substrates.