

CULTURAL HERITAGE STUDIES WITH HIGH-ENERGY X-RAYS AT THE APS 1-ID BEAMLINE

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The 1-ID beamline at the Advanced Photon Source is one of the world's premier sources of high energy x-rays (50 – 120 keV, 0.10 – 0.25 Å). Experiments at this facility cover a wide range of scientific subjects, and several studies have been carried out in collaboration with major area museums on artifacts with importance for cultural heritage. For example, high-energy XRD, XRF, and radiography have been used to non-invasively examine antique astrolabes, ancient Chinese bronzes, and ancient bronze bracelets from the Middle East. Results from these experiments have helped to uncover information on the manufacturing technology used to make these artifacts and to determine the state of preservation for the various specimens. Advantages and disadvantages of the use of high-energy x-rays and synchrotrons for studies of cultural heritage will be discussed.

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