Recovering Ancient Inscriptions by X-ray Fluorescence Imaging
JUDSON POWERS, NORA DIMITROVA, Cornell University, RONG HUANG, Advanced Photon Source, DETLEF-M. SMILGIES, DON BILDERBACK, Cornell High-Energy Synchrotron Source, KEVIN CLINTON, ROBERT THORNE, Cornell University — For many ancient cultures including those of the Mediterranean, carved stone inscriptions provide our most detailed historical record. Over the ages the surfaces of many of these inscriptions have been eroded so that the original text can no longer be distinguished. A method that allowed at least partial recovery of this lost text would provide a major breakthrough for the study of these cultures. The scope of analytical techniques that can be applied to stone tablets is limited by their large size and weight. We have applied X-ray fluorescence imaging to study the text of ancient stone inscriptions [1]. This method allows the concentrations of trace elements, including those introduced during inscription and painting, to be measured and mapped. The images created in this way correspond exactly to the published text of the inscription, both when traces of letters are visible with the naked eye and when they are barely detectable. [1] J. Powers et al., Zeitschrift für Papyrologie und Epigraphik 152: 221-227 (2005).