Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

A Benchmark Experiment for Photoionized Plasma Emission from Accretion-Powered X-ray Sources G. LOISEL, J. BAILEY, T. NAGAYAMA, S. HANSEN, G. ROCHAU, Sandia National Laboratories, D. LIEDAHL, Lawrence Livermore National Laboratory, C. FONTES, Los Alamos National Laboratory, T. KALLMAN, Goddard Space Flight Center, R. MANCINI, University of Nevada, Reno — Accretion-powered emission from X-ray binaries or black-hole accretion in Active Galactic Nuclei is a powerful diagnostic for their behavior and structure. Interpretation of x-ray emission from these objects requires a spectral synthesis model for *photoionized* plasma. Models must predict the photoionized charge state distribution, the photon emission processes, and the radiation transport influence on the observed emission. At the Z facility, we have measured simultaneously emission and absorption from a photoionized silicon plasma suitable to benchmark photoionization and spectrum formation models with 5% reproducibility and E/dE >2500 spectral resolution. Plasma density, temperature, and charge state distribution are determined with absorption spectroscopy. Self-emission measured at adjustable column densities tests radiation transport effects. Observation of 14 transitions in He-like silicon will help understand population mechanisms in a photoionized plasma. First observation of radiative recombination continuum in a photoionized plasma will be presented. Sandia National Laboratories is a multimission laboratory managed and operated by National Technology and Engineering Solutions of Sandia, LLC., a wholly owned subsidiary of Honeywell International, Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA-0003525.

G. Loisel
Sandia National Laboratories

Date submitted: 13 Jul 2017 Electronic form version 1.4