

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Noble Gas Analysis for the OMEGA Gas Sampling System¹ G.T. YOUNG, S.M. HUPCHER, C.G. FREEMAN, Physics and Astronomy, SUNY Geneseo, M.A. STOYER, Lawrence Livermore National Laboratory, T.C. SANGSTER, LLE, University of Rochester — The OMEGA Gas Sampling System (OGSS) at the Laboratory for Laser Energetics can be used to study a wide variety of implosion parameters in inertial confinement fusion. By doping a target capsule with carefully chosen detector nuclei, nuclear reactions between fusion products and detector nuclei can produce noble gas isotopes. Following a capsule implosion, these gases are pumped out of the target chamber and are collected into sample bottles. We have developed a bench-top analysis station at Geneseo capable of determining the number of noble gas atoms present in the sample bottles. A needle valve is used to admit gas from the sample bottles into a vacuum chamber at a controlled rate. The conductance of the needle valve is a function of pressure and gas type. A residual gas analyzer (RGA) is used to measure the partial pressures of each type of noble gas in the vacuum chamber. The RGA is calibrated with a calibrated leak, which allows known amounts of different gases into the chamber at a constant rate. Analysis of the gasses collected following a D³He implosion is currently underway.

¹Supported in part by the US Department of Energy through the Laboratory for Laser Energetics.

Charles Freeman
Physics and Astronomy, SUNY Geneseo

Date submitted: 19 Jul 2007

Electronic form version 1.4