NWS08-2008-000020

Abstract for an Invited Paper
for the NWS08 Meeting of
the American Physical Society

The fusion of neutron-rich nuclei with ^{208}Pb[1]

WALTER LOVELAND, Oregon State University

I report the results of two experiments dealing with the fusion of n-rich nuclei with ^{208}Pb. In the first experiment, the fusion excitation function was measured for the interaction of ^{32,36}S with ^{208}Pb to determine the isospin dependence of fusion enhancement. The deduced fusion barriers for the ^{32,36}S + ^{208}Pb reactions were 152.0 and 142.5 MeV, respectively, a 9.5 MeV downward shift for the n-rich projectile. The implications of this shift for the synthesis of n-rich heavy nuclei will be presented. In the second study, the sub-barrier fusion of ^{9}Li with ^{70}Zn and ^{208}Pb was measured, leading to a finding of enhanced sub-barrier fusion beyond that predicted by coupled channel calculations. The importance of this finding for nuclear astrophysics will be discussed.

[1]Work supported in part by the US Dept of Energy.