

Abstract Submitted
for the APR13 Meeting of
The American Physical Society

Production of Nuclides Near the $N = 126$ Shell Using Projectiles with $Z > 20$ CHARLES FOLDEN, Texas A&M University — Recent experiments at Texas A&M University have shown that the cross sections for fusion-evaporation products in the reactions of ^{48}Ca , ^{45}Sc , ^{50}Ti , and ^{54}Cr with lanthanide targets are heavily influenced by the atomic number of the projectile. In particular, the cross sections for the $4n$ evaporation channel in the ^{48}Ca -induced reactions are substantially larger than for the other projectiles. The compound nuclei in these reactions are near the $N = 126$ shell, and the sharp decrease in cross section is attributed to an enhancement of the fission level density, along with a smaller change in the probability of compound nucleus formation. Through careful correction for the neutron binding energy, fission barrier, and excitation energy available for neutron emission, it may be possible to use these results to make inferences on the likelihood of future superheavy element synthesis. This talk will discuss recent results and the difficulty of synthesizing evaporation residues using projectiles with $Z > 20$.

Charles Folden
Texas A&M University

Date submitted: 11 Jan 2013

Electronic form version 1.4