

Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Influence of Z and N on Fusion-Evaporation Cross Sections for Heavy Element Synthesis CHARLES FOLDEN, Texas AM University — A number of major experiments in recent years have attempted to discover the currently unknown elements 119 and 120. There are no widely accepted reports of decay chains that can be attributed to these elements even though these experiments have reported very small upper limit fusion-evaporation cross sections. These reactions, which have utilized projectiles heavier than ^{48}Ca , have cross sections that are much smaller than those for ^{48}Ca reacting with the same target. In the current research, the influence of Z and N in both the projectile and target on fusion-evaporation cross sections has been investigated. Projectiles of $^{44,48}\text{Ca}$, ^{45}Sc , ^{50}Ti , and ^{54}Cr reacted with lanthanide targets, and a large number of xn and pxn excitations functions have been measured using the MARS spectrometer at Texas A&M University. The data have been analyzed using a simple model which suggests that the properties of the compound nucleus are critical to the successful formation of fusion-evaporation products. This talk will give an overview of the experiments, the theoretical model, and the implications for the formation of new superheavy elements.

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Date submitted: 08 Jan 2021

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