

## RADIOACTIVITY AT THE LIMITS: FROM Tc-115 TO Sn-138

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In this paper, recent results for radioactive decay at the current production limits for neutron-rich nuclides from Tc to Sn will be presented and discussed. These studies have been motivated by the need for experimental data in the calculations for the yields of nuclides produced in r-process nucleosynthesis, as well as by the goal of improving the description of nuclear structure and decay as  $N/Z$  increases. At CERN/ISOLDE, Ag, Cd, In, and Sn nuclides are produced by U fission with 1 GeV protons and ionized by a very selective Resonance Ionization Laser Ion Source (RILIS) that permits extraordinary selectivity [1]. Twelve new nuclides have been identified, each of which is the most neutron-rich isobar. Current results include the structure of Sb-134 populated in delayed-neutron emission [2,3]. At MSU, fragmentation of 120 MeV/A beams of Xe-120 has permitted identification of fully stripped fragments of Cd, Ag, Pd, Rh, Ru, and Tc nuclides and study of both their beta decay and isomeric decay of twelve new nuclides [4]. Current results include the structure of Pd-120 and Cd-126 [5]. Several nuclear physics surprises will be discussed, along with the improvements in the description of r-process yields achieved with these new data. Prospects for additional studies motivated by both nuclear physics and astrophysics will also be outlined.

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