

Abstract Submitted
for the NWS09 Meeting of
The American Physical Society

The Use of Thermal Neutron Fission for Isotope Enrichment

JENNIFER FARLEY, ERNEST NIESCHMIDT, Idaho State University, SHANE HOUGH — The world has many applications for elements enriched in a particular isotope. These find application in medicine, nanostructures, electronics, process control and all forms of research. Some degree of enrichment compared to that provided by natural abundance is supplied by fission products produced by the various forms of fissile and fertile materials. Examples are given of U-235 thermal neutron fission. The most used medical isotope is Tc-99m, produced by Mo-99 beta decay; Mo has seven stable isotopes. In the fission product distribution Mo-92 and Mo-94 are absent and the grandparent of Mo-96 has a half-life of 10^{19} years. These three isotopes represent 41% of natural Mo; consequently the remaining Mo isotopes produced in fission are considerably enriched. This would provide good feed material for further enrichment by any applicable enrichment technique.

Ernest Nieschmidt
Idaho State University

Date submitted: 13 Apr 2009

Electronic form version 1.4