

possibility of studying the tracer chemical properties of element 93 as a thesis problem, a suggestion which he was happy to accept. This, and related work on element 94, was carried on in collaboration with Dr. Joseph W. Kennedy who, like myself, was at that time an instructor in the Department of Chemistry at the University of California. After Dr. McMillan's departure from Berkeley in November, 1940, and his gracious assent to our continuation of the search for, and possible identification of element 94, our group turned its major efforts to this problem.

A bombardment of uranium oxide with the 16 Mev deuterons from the 60-inch-cyclotron was performed in December, 1940. Alpha radioactivity was found to grow into the chemically separated element 93 fraction, and this alpha activity was chemically separated from the neighboring elements, especially elements 90 to 93 inclusive, in experiments performed during the following months. These experiments, which constituted the positive identification (1,2) of element 94, showed that this element has at least two oxidation states, distinguishable by their precipitation chemistry, and that it requires stronger oxidizing agents to oxidize element 94 to the upper state than is the case for element 93. The particular isotope identified has been shown to be of mass number 238 and the reactions for its preparation are shown in the first slide (Figure 1).

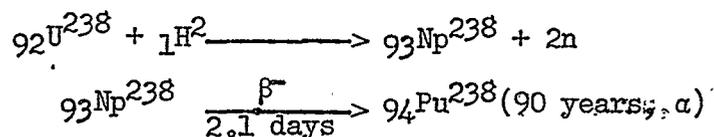


Figure 1