UNIVERSITY OF CALIFORNIA

Radiation Laboratory

BERKELEY, CALIFORNIA

UCRL-619
No Distribution

UNIVERSITY OF CALIFORNIA

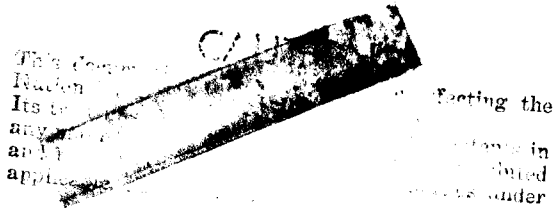
Radiation Laboratory

Contract No. W-7405-eng-48

Element 98

S. G. Thompson, K. Street, Jr., A. Ghiorso, and G. T. Seaborg

February 27, 1950



Berkeley, California

[redacted]

ELEMENT 98

S. G. Thompson, K. Street, Jr., A. Ghiorso and G. T. Seaborg
Radiation Laboratory and Department of Chemistry
University of California, Berkeley, California

Definite identification has been made of an isotope of the element with atomic number 98 through the irradiation of Cm^{242} with 35 Mev helium ions in the Berkeley Crocker Laboratory 60-inch cyclotron. The isotope which has been identified has an observed half-life of about 45 minutes and probably has the mass number 244. The observed mode of decay of the 98^{244} is through the emission of alpha-particles, with energy about 7.1 Mev, which agrees with predictions, and other considerations involving the systematics of radioactivity in this region indicate that it should also be unstable toward decay by electron-capture.

The chemical separation and identification of the new element was accomplished through the use of ion exchange adsorption methods employing the resin Dowex-50. The element 98 isotope appears in the eka-dysprosium position on elution curves containing 4.6-hour Bk^{243} (formed by a d,n reaction in the same bombardment) and the bombarded Cm^{242} as reference points; that is, it preceded berkelium and curium off the column just as dysprosium precedes terbium and gadolinium. The experiments so far have revealed only the tripositive oxidation state of eka-dysprosium character but practically no attempts at oxidation to possible IV and V states have been made as yet.