



## Production and Processing of Heavy Actinides at Oak Ridge National Laboratory

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As the primary producer of transplutonium isotopes for the Western world, Oak Ridge National Laboratory (ORNL) plays a critical role in industrial applications and fundamental research. The lab's main transplutonium product,  $^{252}\text{Cf}$ , is used as a neutron source in oil exploration, in initiation of nuclear reactors, in power generation, for detection devices, and in medical research. Additionally, the subproducts  $^{249}\text{Bk}$ ,  $^{254}\text{Es}$ , and  $^{257}\text{Fm}$  are in high demand for performing fundamental studies and discovering superheavy elements. Current purification methods rely heavily on established knowledge of these elements, whose chemistry - unlike that of earlier-series members - is predominantly governed by the trivalent oxidation state. This presentation focuses on the recovery of  $^{249}\text{Bk}$ ,  $^{254}\text{Es}$ , and  $^{257}\text{Fm}$  from the C81  $^{252}\text{Cf}$  campaign.