

ELECTROCHEMICAL REDUCTION OF
PLUTONIUM (III) IN MOLTEN NaCl-KCl AT
740-750C

Walter J. Griego, Kevin J. Martinez, Lawrence
J. Vigil
Los Alamos National Laboratory
P.O. Box 1663, Los Alamos, New Mexico
87545

High purity plutonium is prepared by electrorefining impure plutonium metal in an equimolar NaCl-KCl melt at 740-750C. The electrochemical reduction occurs via a three-electron reversible process at a tungsten electrode with the product metal being deposited at the annulus of a concentric magnesium oxide crucible. In addition to serving as a means of preparing high purity plutonium metal, the process is used to recycle plutonium metal scrap. Principles of operation, cell components, materials of construction, corrosion, and hardware improvements will be discussed.