

ABSTRACT OF THE DISCLOSURE

Methods and apparatus for the recycling and purification of an inorganic metallic precursor. A first gaseous stream containing ruthenium tetroxide is provided, and transformed into a solid phase lower ruthenium oxide. This lower phase ruthenium oxide is reduced with hydrogen to form ruthenium metal. The ruthenium metal is contacted with an oxidizing mixture to produce a stream containing ruthenium tetroxide, and any remaining oxidizing compounds are removed from this stream through a distillation.