

**THE MANUFACTURING OF ZIRCONIUM METAL
POWDER BY MEANS OF A HIGH TEMPERATURE
PLASMA PROCESS**

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The most general application for high purity zirconium metal alloys is for cladding material for nuclear fuel assemblies in nuclear power plants. A process was developed to manufacture zirconium metal powder from $ZrCl_4$ or ZrF_4 with a high temperature DC non - transfer arc plasma. Mg or Ca metal was used as reductant. The reactants were feed directly into the high temperature zone of the plasma flame. A conversion of more than 95 % was achieved. The very fine zirconium powder was collected with a high temperature filter. Different plasma reactor design and plasma conditions were tested.

In this presentation the manufacturing of zirconium metal powder via the chloride route with a plasma process will be discussed.