



## **Manufacturing of large size Rhodium sputtering targets for Rhodium coated mirrors**

*BIMO TECH has developed under F4E contract a production method of large size, non-segmented rhodium targets for rhodium coated mirrors deposited by magnetron sputtering. Rhodium coated mirrors provide significant advantage due to their high reflectivity, durability and ability to work in extreme environments and can find numerous applications in non-fusion environments such as aerospace, medical imaging, energy, big science and high energy physics.*

### **The technology**

The mirrors are one of the most critical elements of the ITER diagnostic systems. A mirror must survive in an extreme environment (intense UV and x-ray radiations as well as particle fluxes) and has to maintain the required optical performance. Due to its high reflectivity in the visible wavelength range 70%–80% and its low sputtering yield, rhodium was chosen as a good candidate for first mirrors in ITER. A production method of large size, non-segmented Rhodium target has been developed for production of Rhodium coated mirrors deposited by magnetron sputtering. Rhodium layers with thicknesses of 3.175 mm and size of 203.2 mm x 88.9 mm was produced.



### **Optical performances for extreme environment**

Rhodium coated mirrors deposited by sputtering provide significant advantage due to their high reflectivity, durability and ability to work in extreme environments. The manufacturing know-how reached a TRL 8 thanks to this collaboration and can be adapted to new requirements. The method also opens the path for the production of much bigger rhodium targets than the one existing on the market.

### **A solution which can enhance any mirrors applications in various sectors**

Rhodium coated mirrors can find new uses in numerous applications such as aerospace (durable and reflective surfaces for communication and navigation equipment), astronomy (where high reflectivity is required over a broad range of wavelengths), medical imaging (Xray mirrors for imaging equipment and as protective shields for therapeutic equipment), energy (used in solar panels to enhance reflectivity and improve energy conversion efficiency), semiconductor (used in lithography equipment) or Big Science/High Energy Physics (laser optics, surface/material sciences).

### **Collaboration opportunities**

BIMO TECH offers a complete line of sputtering targets. These materials can be manufactured to fit all commercially available systems or specific applications.

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