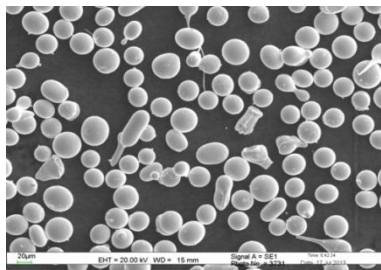


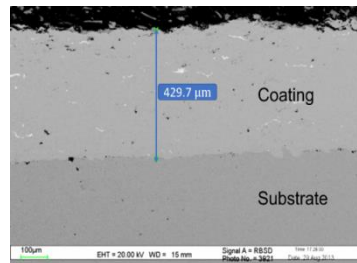
## **Fe based Bulk Metallic glass (BMG) coatings (NMR-FeBMG)**

Bulk metallic glasses (BMGs) do not possess three-dimensional periodic arrangements of atoms and hence do not have “crystalline defects”. As a result, bulk metallic glasses exhibit high strength, hardness, high elastic strain, erosion-corrosion resistance, and soft magnetic properties compared to conventional crystalline metallic materials. BMGs have exceptional elastic strain limit and resilience far exceeding any conventional metallic material.

DRDO lab, NMRL has developed Fe based BMG coatings using HVOF technique. These coatings has hardness ranging minimum from 750 VHN, high corrosion & erosion–corrosion resistance equivalent to wrought super duplex stainless steel. These coatings possess good adhesion strength, porosity less than 2 %, surface finish in microns after grinding. These coatings may be used in the place of hard chrome plating and WC coatings.



**BMG Powder Morphology**



**BMG Coated by HVOF technique**



**Coated Rotor Shaft**

### **Salient features:**

- High hardness
- High corrosion and wear resistance
- High erosion-corrosion resistance
- High adhesion strength
- Less porosity
- Good surface finish
- Good fracture toughness

### **Applications:**

- Journals of turbine rotors, Crank shafts, Hydraulics, Piston rings, valves, shock absorbers and other Civil sectors, Steel mills, oil & gas industry, aerospace and rail road applications