PLASMA SPRAYED BIOCOMPATIBLE COATINGS ON PEEK IMPLANTS

New advanced polymeric biomaterials such as implantable poly(etheretherketone) (PEEK) are changing the face of the implantable medical device industry.

Due to its bioactive behavior in vivo, hydroxyapatite (HA) coatings are used to improve the bone growth and to repair around metallic implant. The objective of this work was to study the feasibility of plasma sprayed hydroxyapatite coating on PEEK material. Different PEEK (unfilled and composite) specimens were successfully coated with a 150 µm thick coating. Chemical and crystallographic compositions, adhesions and microstructures of HA coatings on PEEK and on Ti-6Al-4V were compared.

The results showed that the structure of HA coatings were appreciably equivalent. Mechanical tests showed that the plasma spraying process did not severely degrade the initial properties of the PEEK substrate and due to its bioactive behavior in vivo, HA can be used to improve bone regrowth around the PEEK implant.

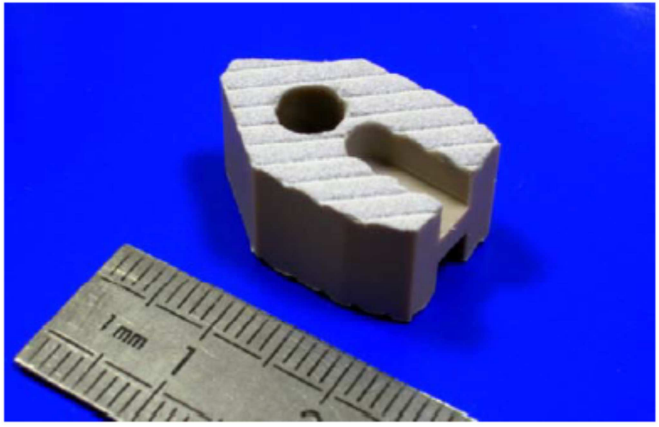

Figure 2: HA coated pure PEEK demonstrator (150 µm).

Associated publication: Plasma Sprayed Biocompatible Coatings on PEEK Implants - S. Beauvais, O. Decaux - TeroLab Surface S.A.S, Villeuneuve-le-Roi, France - Thermal Spray 2007: Global Coating Solutions