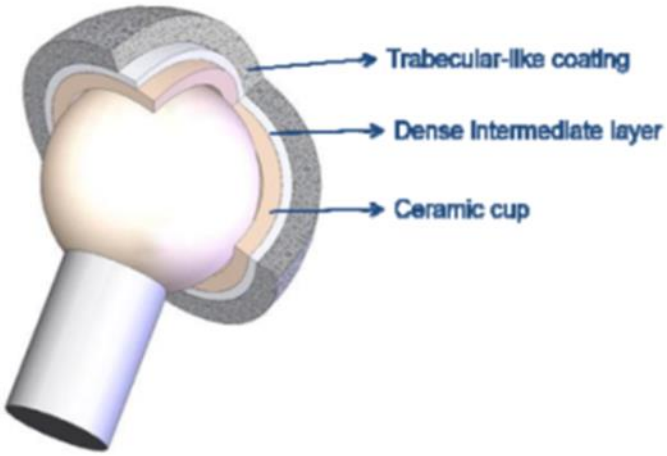

Figure 1 Scheme of the monoblock ceramic cup with trabecular-like coating to be developed in the frame of MATCh project

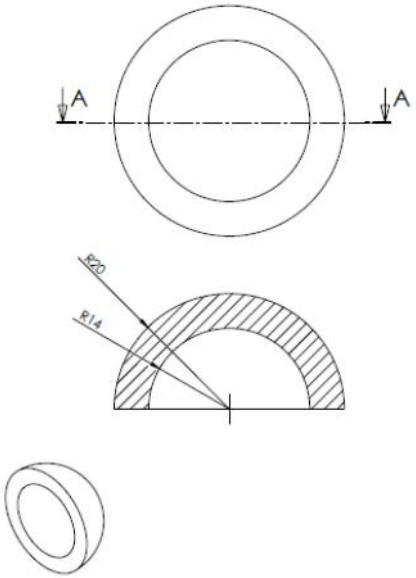

Figure 2 View of the defined ceramic cup to be fabricated in the frame of MATCh Project

Element	Permitted Maximum Level (ppm)
Arsenic, As	3
Cadmium, Cd	5
Mercury, Hg	5
Lead, Pb	10
Antimony, Sb	10 (Pb equivalent)
Copper, Cu	10 (Pb equivalent)
Bismuth, Bi	10 (Pb equivalent)
Tetravalent Tin, Sn	10 (Pb equivalent)

Figure 3 ASTM F1538-03 Heavy Metal Limits

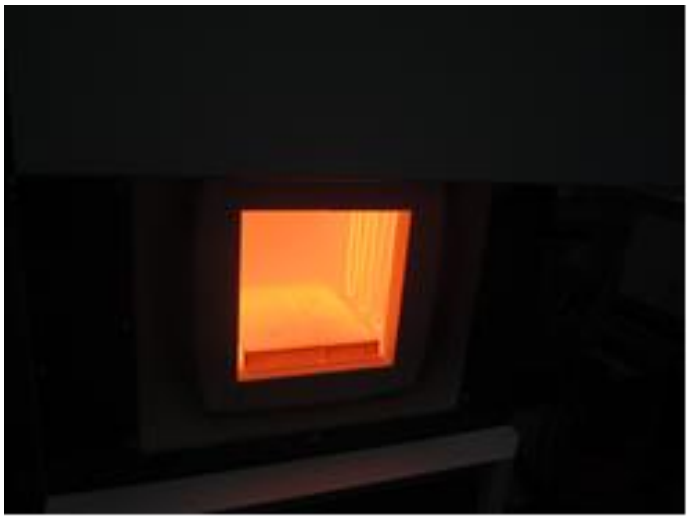

Figure 4 Interior of one of GTS furnace used to produce the biomedical glass

Figure 5 (a and b): Biomedical glass frit and powdered glass after grinding and sieving

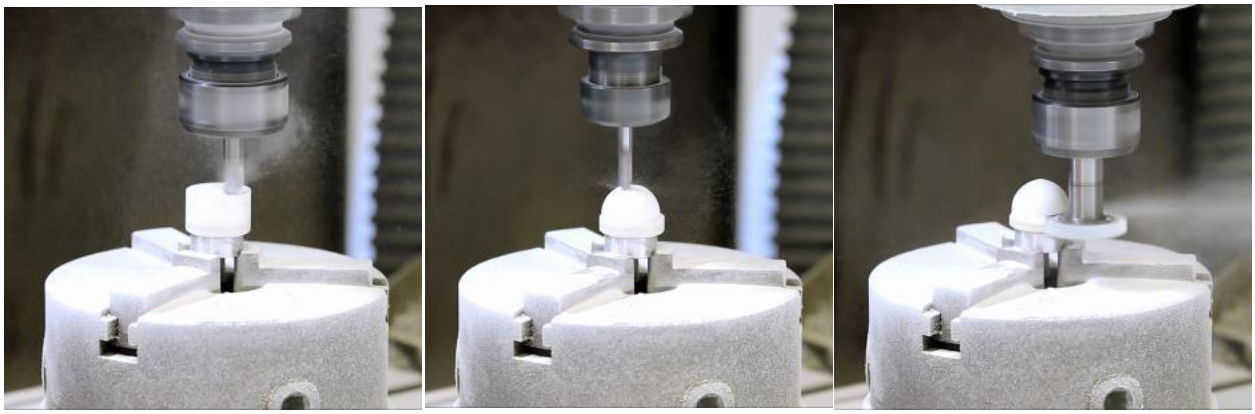

Figure 6 Stages of the machining process: (a) blank sphere machining; (b) finished sphere; (c) planar surfaces

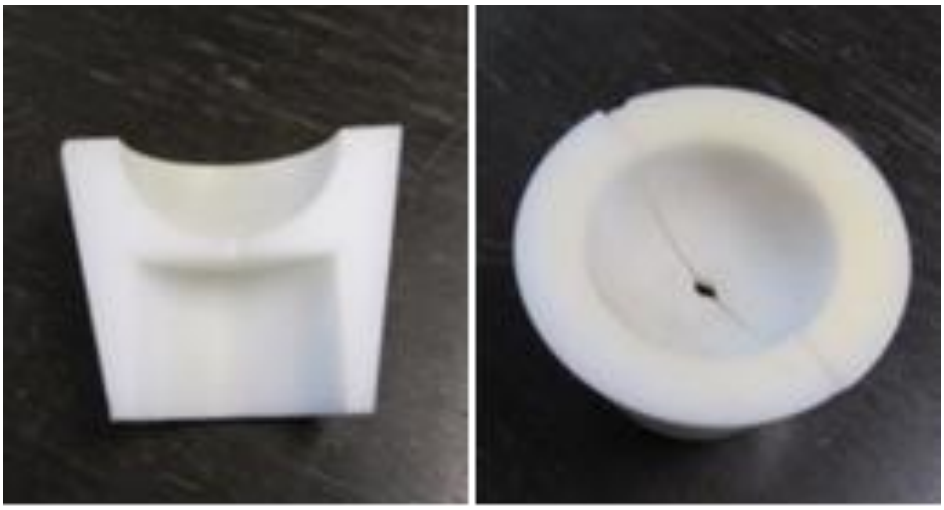

Figure 7 Details of the plastic holders

Figure 8 (a, b and c): Metallic parts of the subjections for the machining of the external face of the ceramic cup

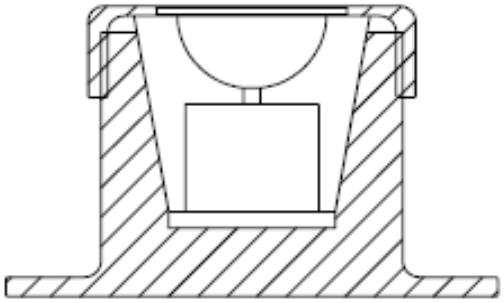

Figure 9 (a and b): Cup mounting system

Figure 10 Machining of the internal face of the ceramic cup once it is subjected with the metallic device

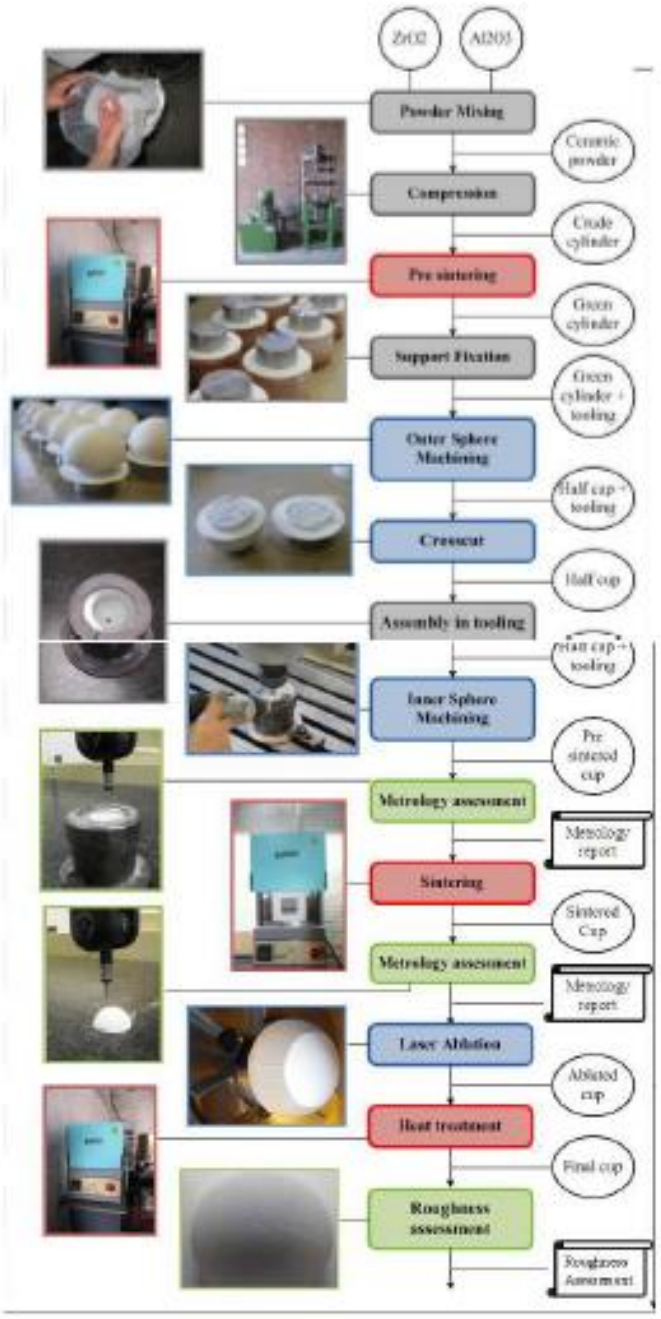

Figure 11 Scheme of the whole composite ceramic cup processing

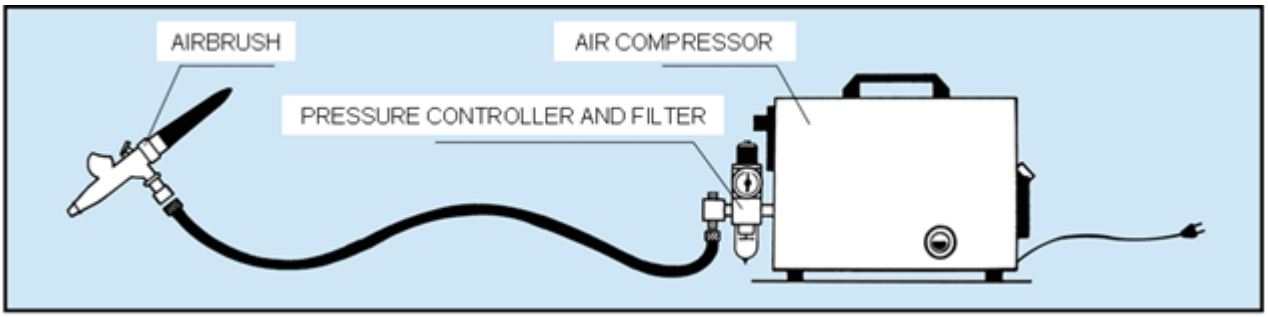

Figure 12 Typical air-brushing system

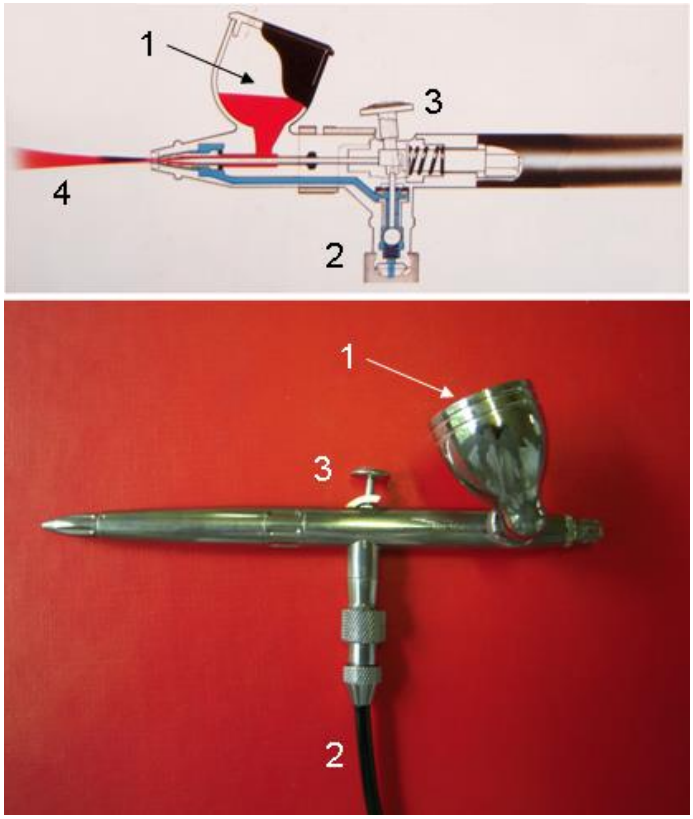

Figure 13 Air-brush used in the frame of MATCh Project

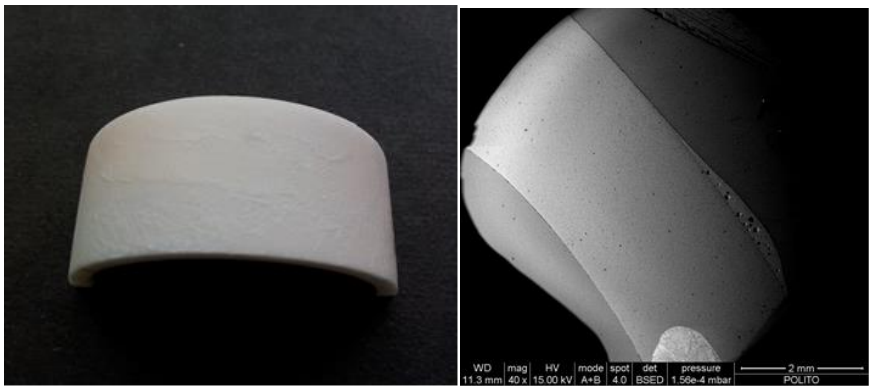

Figure 14 Coating obtained with the air-brushing technique

Figure 15 Spin coater at FAME-MED (Turkey)

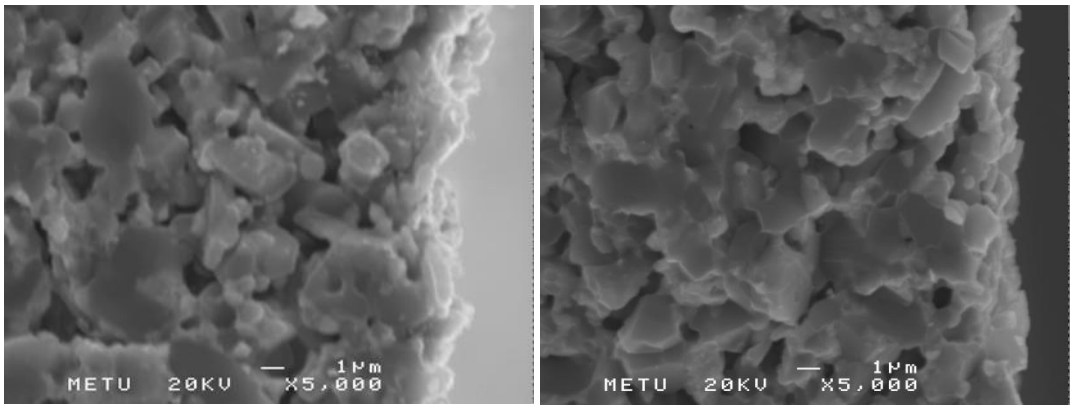

Figure 16 Cross-sectional SEM pictures of (a) spin coated disc and (b) control disc

Figure 17 Use of an ad-hoc sample-holder system for supporting the ceramic cup

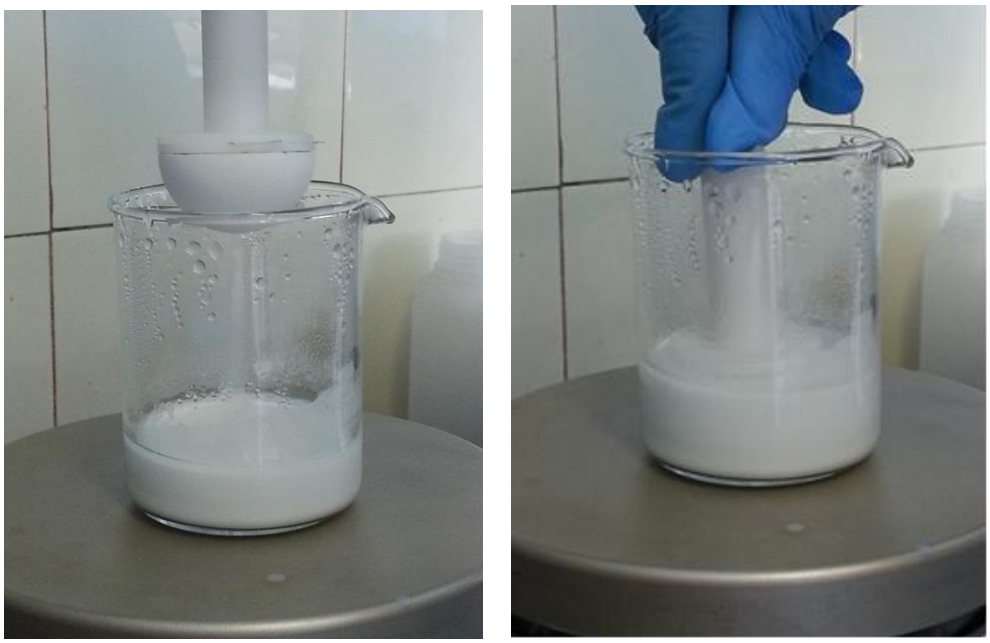

Figure 18 Realisation of the dense layer by dipping at Politecnico di Torino

Figure 19 Intermediate dense layer realised by dipping at Politecnico di Torino on small and large ceramic cups

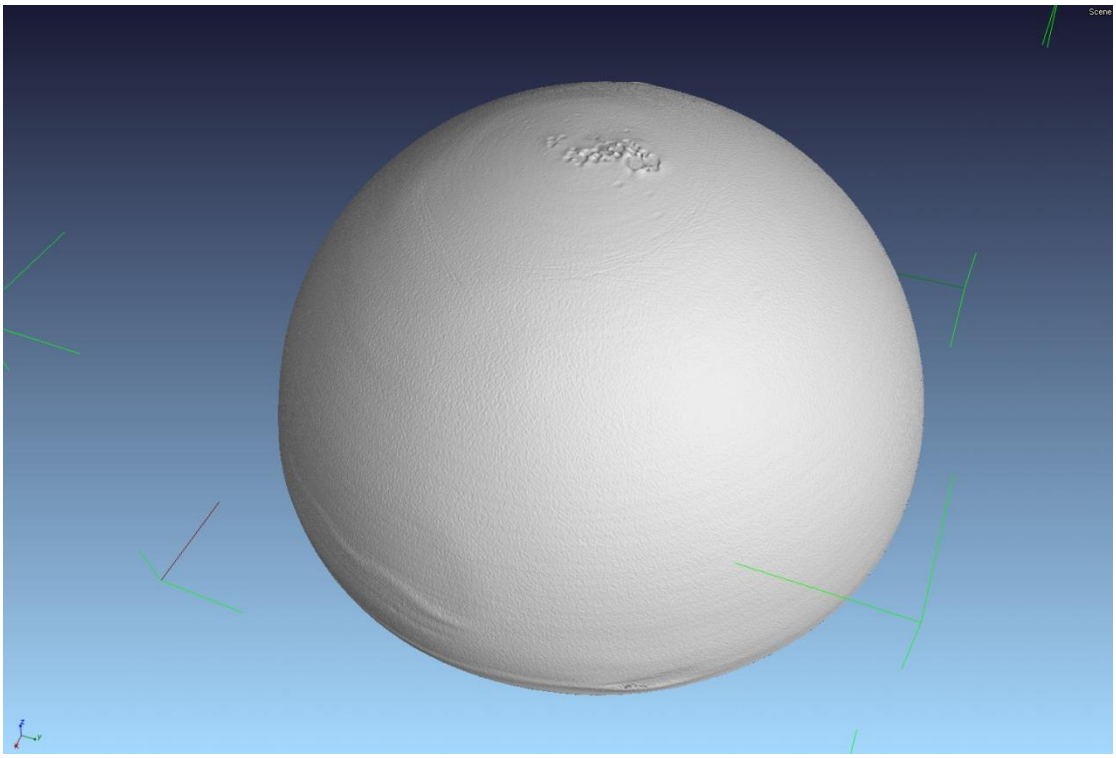

Figure 20 Micro-CT reconstruction of a coated ceramic cup (analysis carried out by ICI-Iceland)

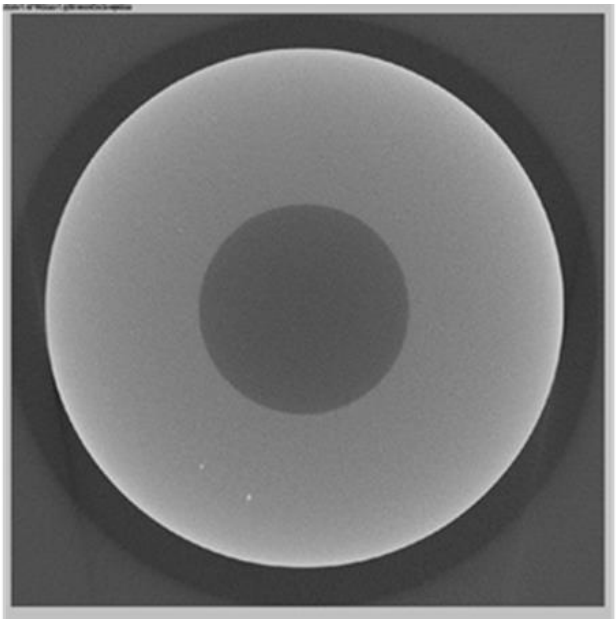

Figure 21 Micro-CT cross-sectional observation of the cup coated with the dense layer (dipping method)

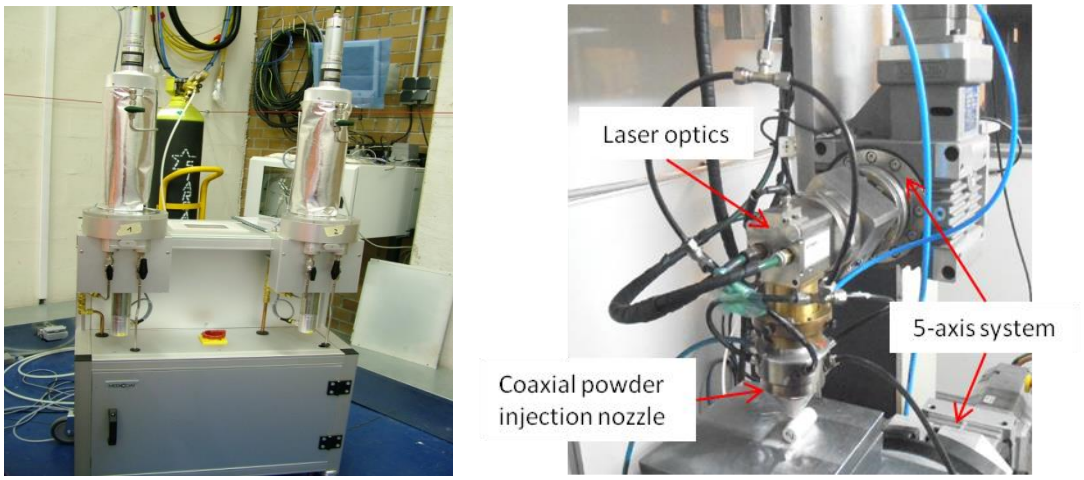

Figure 23 Intermediate dense layer obtained on a flat ceramic substrate with laser cladding (AIMEN)

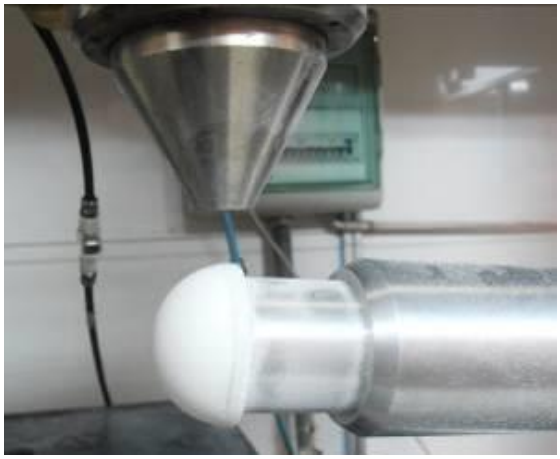

Figure 24 Dense coating realisation on the ceramic cup by laser cladding (AIMEN)

Figure 25 Dense coating prototype (AIMEN-LASER CLADDING)

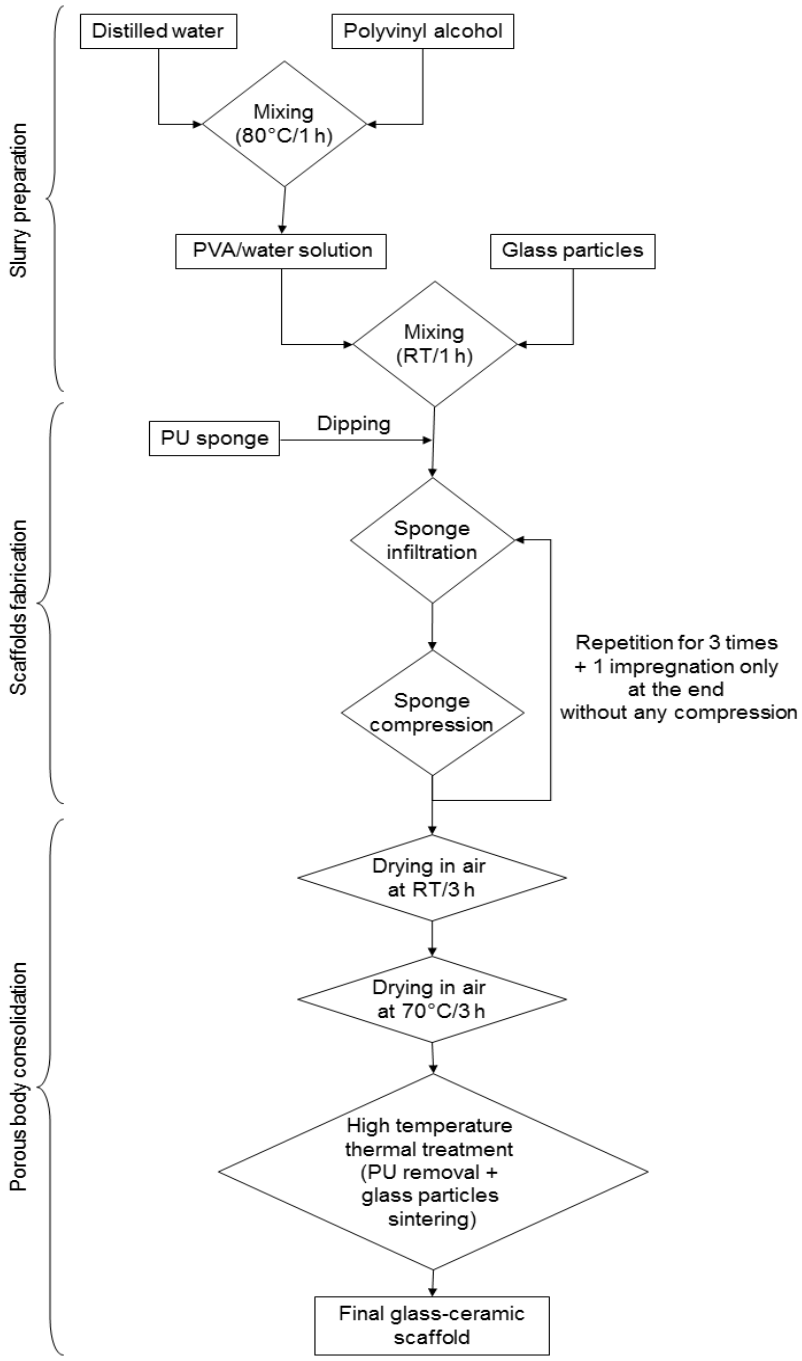

Figure 26 Flow-chart of the sponge replication method

Figure 27 Soaking of the ceramic cup coated with the dense layer and by a PU sponge

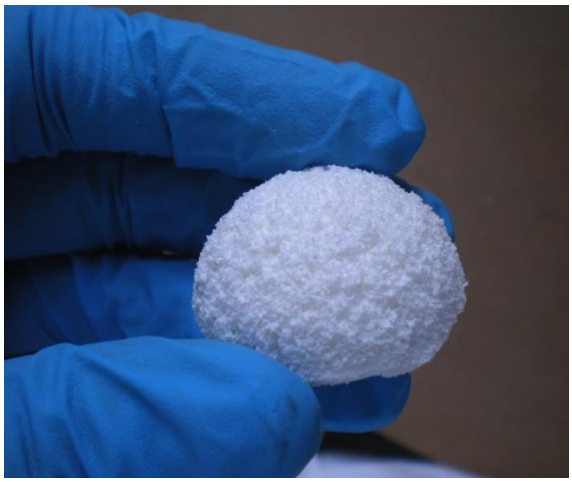

Figure 28 Obtained monoblock acetabular cup prototype

Figure 29 Second embodiment of the monoblock cup prototype obtained at AIMEN

Figure 30 Third embodiment of the monoblock cup prototype obtained at AIMEN