

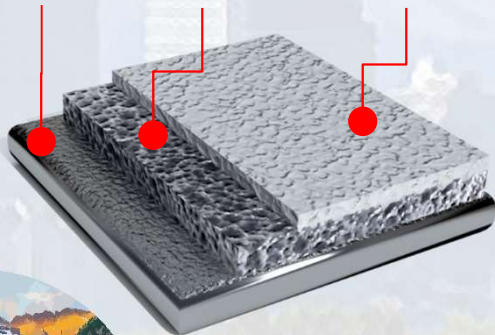
Titanium Medical Thermal Spray Coating Process.

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Porous Metallic coating:

- Optimum pore size for bone ingrowth: 100 - 400 μm .
- Porosity: 15 - 35 %.
- Appropriate roughness for bone on growth and implant anchorage in bone: $R_z > 70 \mu\text{m}$.
- Thickness: 200 - 500 μm (in US up to 800 μm).
- Possible materials:
 - Ti Sponge, CP Ti, Ti-6Al-4V, Co-Cr-Mo

Substrate Titanium Hydroxylapatite



Implant substrate:

- Mechanical strength
- Geometry, size
- Possible materials:
 - Titanium
 - Ti-Al6-V4
 - Co-Cr-Mo
 - stainless steel
 - PEEK

Hydroxyapatite (HAp):

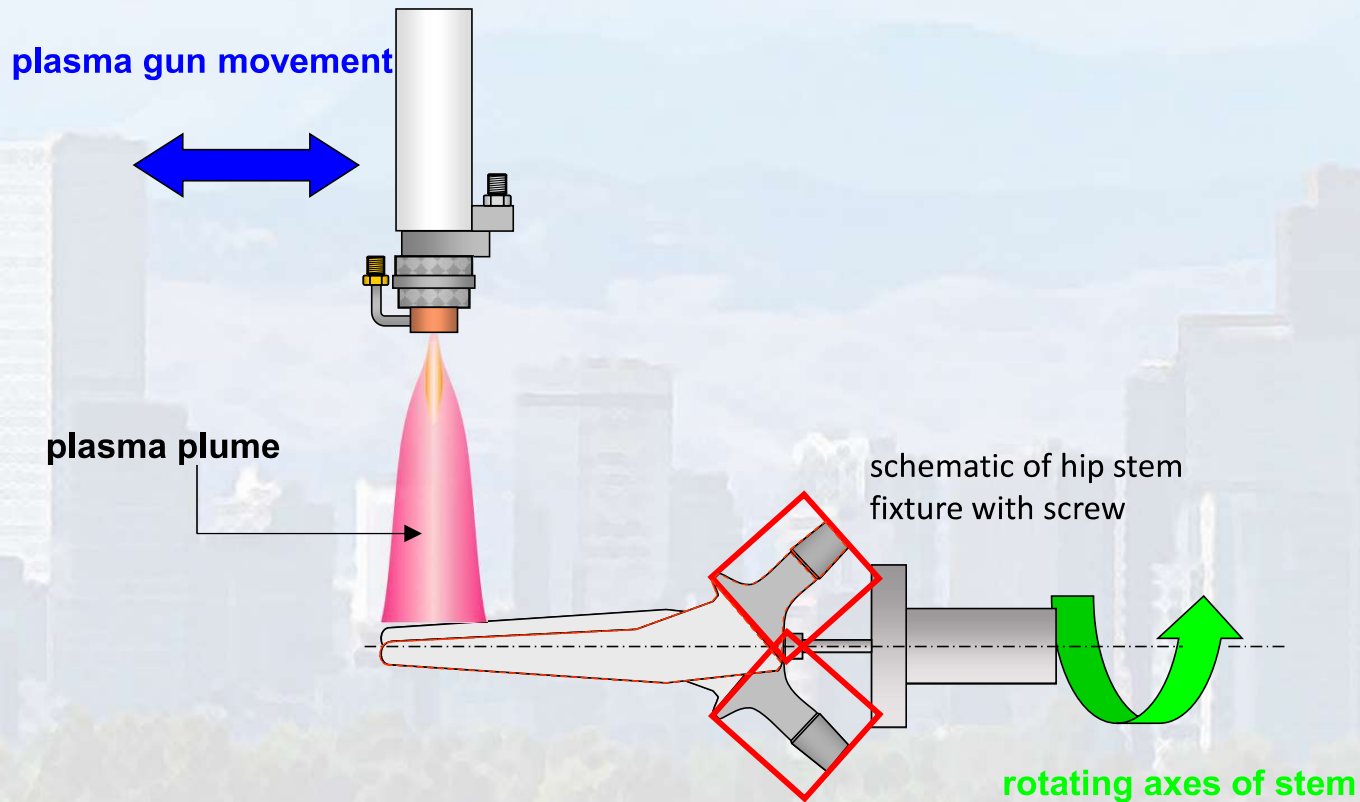
- Hydroxyapatite $[\text{Ca}_5(\text{PO}_4)_3\text{OH}]$
- Porosity: 5 - 15 %
- Thickness: 50 - 200 μm (HA resorbability up to 15 - 30 $\mu\text{m/a}$)
- Biocompatible and bioactive in the human body
- Adheres directly to osseous, soft and muscular tissue

Medical Screw. Grit blasted and then Titanium and HAp TS Coated.



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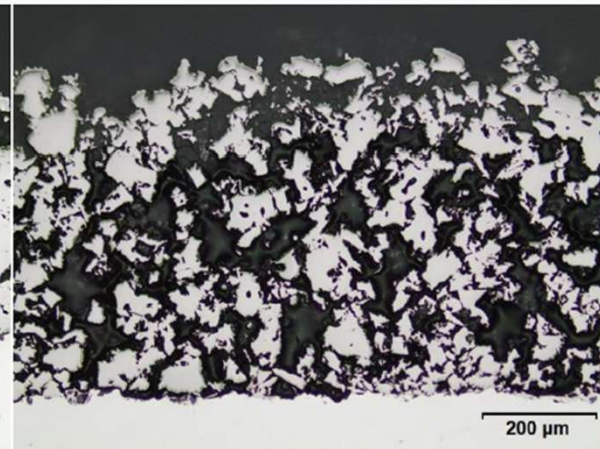
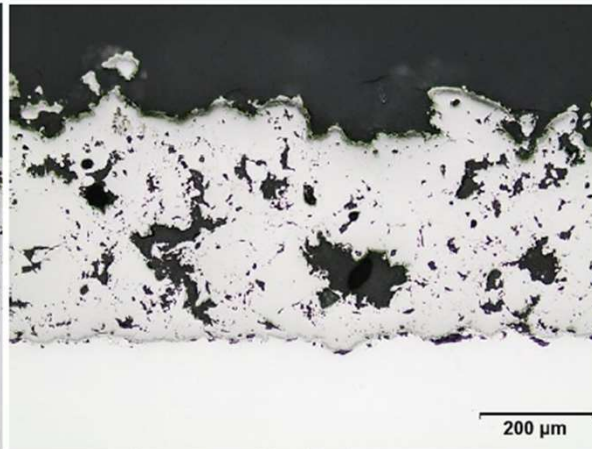
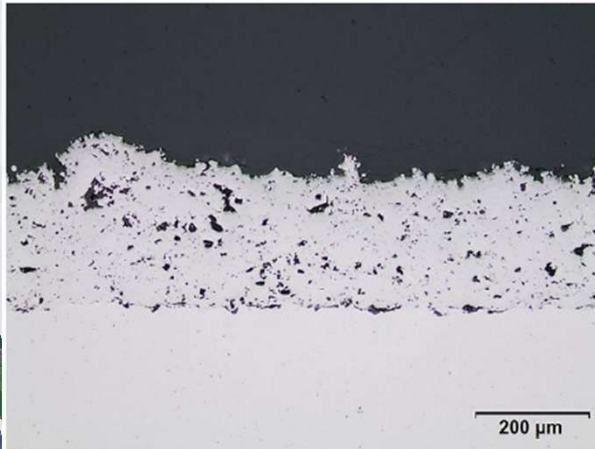
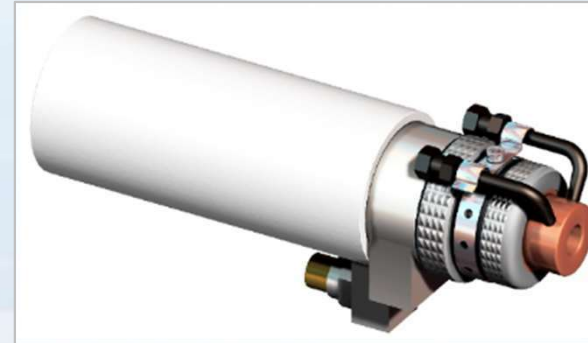


Colin McCracken Ph.D. FIMMM – Product Manager, Biomedical, Titanium

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Parameters	F4-VB Dense Coating	F4-VB Medium Coating	F4-VB Porous Coating
Primary Gas	Ar/He	Ar/He	Ar/He
Bond Coat Grain Size	90 μm	90 μm	90 μm
Topcoat Grain Size	90 μm	180 μm	250 μm
Thickness	150-250 μm	225-325 μm	400-500 μm
Roughness [Ra]	20-30 μm	30-60 μm	30-40 μm
Porosity	18-28%	20-40%	30-40%



Medical Thermal Spray Materials.

(Other alternative Sizes available)*.

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Products	Material	Grade	Size [mm]	Morphology
Metco 4010A*	CP Ti	Grade 4	-90+22	Blocky / Solid
Metco 4010B*	CP Ti	Grade 4	-180+75	Blocky / Solid
Metco 4010C*	CP Ti	Grade 4	-45+11	Blocky / Solid
Metco 4010D*	CP Ti	Grade 4	-250+90	Blocky / Solid
Metco 4010E	CP Ti	Grade 4	-350+200	Blocky / Solid
Metco 4016A	Ti Sponge	Grade 4	-180+75	Blocky / Porous
Metco 4016B	Ti Sponge	Grade 4	-125+90	Blocky / Porous
Metco 4016C	Ti Sponge	Grade 4	-160+45	Blocky / Porous
Metco 4016D	Ti Sponge	Grade 4	-45	Blocky / Porous
Metco 4016E	Ti Sponge	Grade 4	-20	Blocky / Porous
Metco 4016F	Ti Sponge	Grade 4	-350+200	Blocky / Porous
Metco 4016G	Ti Sponge	Grade 4	-250+150	Blocky / Porous
Metco 4030A	Ti-6Al-4V	Grade 5	-250+150	Blocky / Solid
Metco 4030B	Ti-6Al-4V	Grade 5	-180+75	Blocky / Solid
Metco 4030C	Ti-6Al-4V	Grade 5	-106+45	Blocky / Solid
Metco 4032A	Ti-6Al-4V	Grade 23	-106+45	Blocky / Solid

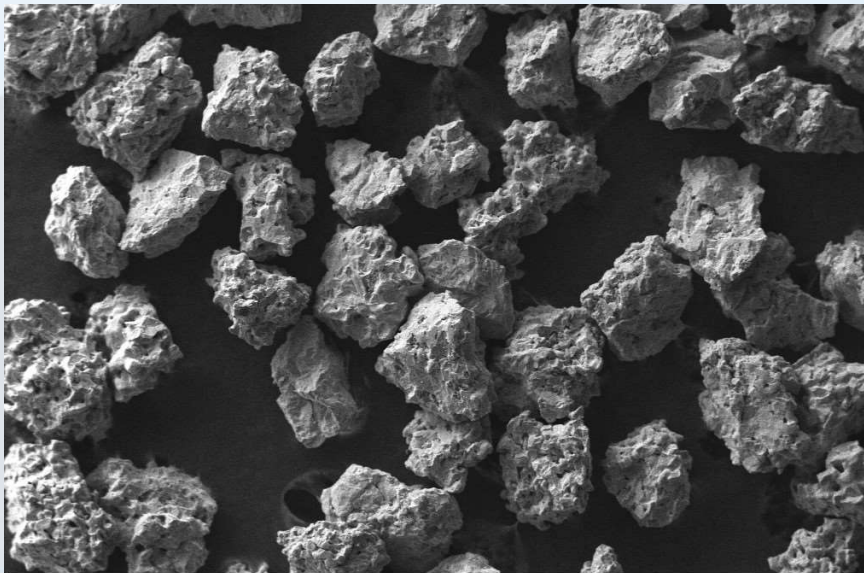


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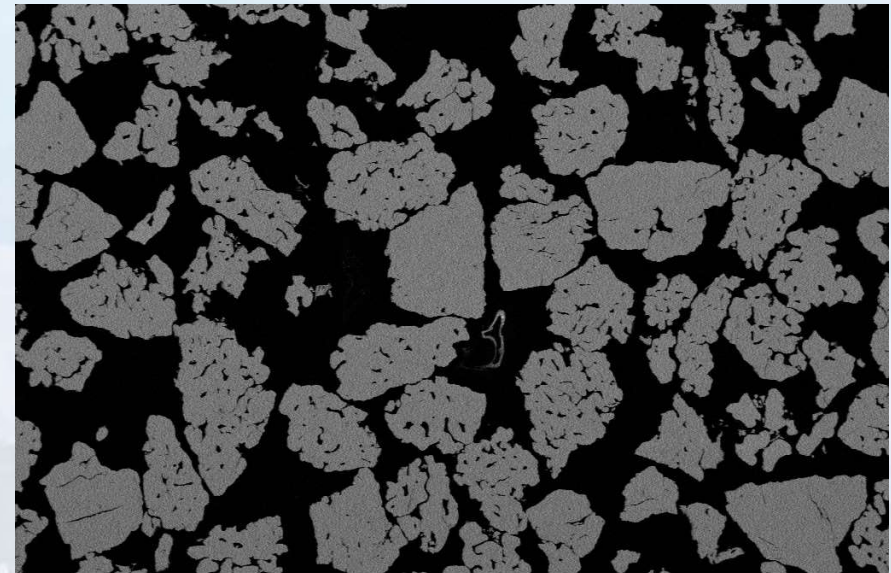
Medical Thermal Spray Materials.

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Latest Product Launched – Metco 4016F (-350+200 μm Ti Sponge Powder)



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Reference Mag = Polaroid 545



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Reference Mag = Polaroid 545



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