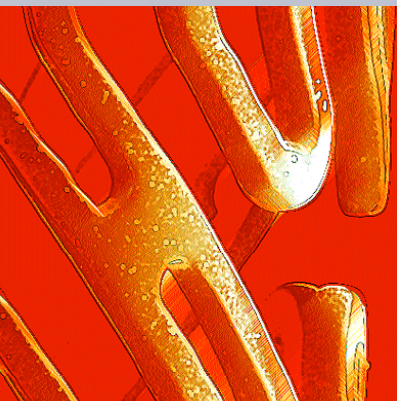


Surfaces –
for human health



axymed

surfaces – for human health

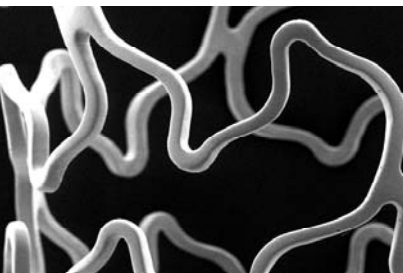
axyntec : services

AxynTeC offers as a service provider in the surface and thin film technology **material screenings**, customer specific **coating and process development**, **contract coating** and **coating plants**. Surface properties like hardness, friction coefficient and wear resistance as well as biocompatibility of joint and vascular implants or surgical instruments can be optimized and with that long-time stability can be increased. The technologies allow a **surface modification** by **ion implantation** processes as well as by a deposition of different **functional coatings**.

axyprotect : medical

Diamond-like carbon coatings (DLC, a:C-H) are a material class with excellent mechanical and chemical properties. The combination of **high hardness**, **low friction coefficient**, chemical stability as well as biocompatibility enables axyprotect ideal to be applied on medical components. The friction coefficient of **axyprotect** for example is 3 to 10 times lower in contrast to surgical metals like titanium or stainless steel. Therefore abrasive wear can be reduced in a tribological system or adhesive wear can be stopped in a titanium/titanium contact of an implant system for example. The patented **plasmaimpax** technology allows the deposition of smooth, dense and corrosion-resistant hard coatings which can also reduce the diffusion of allergenic ions (e.g.Ni) out of substrate materials.

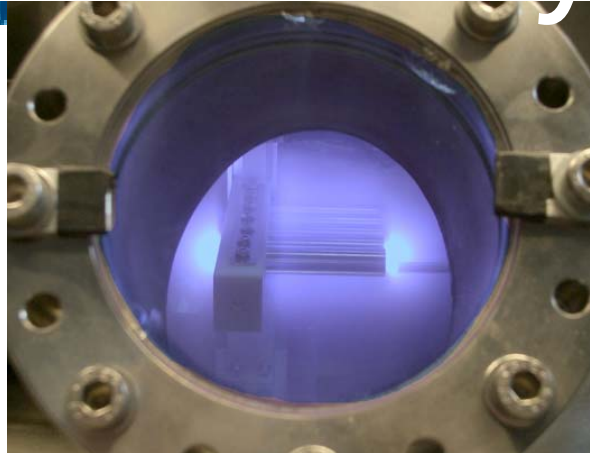
Courtesy of Boston Scientific Corporation



friction coefficient (against steel, dry):	<i>0.05 - 0.15</i>
hardness (Martens hardness):	<i>15 - 25 GPa</i>
elasticity:	<i>120 - 180 GPa</i>
coating thickness:	<i>1 - 4 μm</i>
coating colour:	<i>anthracite-black</i>
biocompatibility:	<i>toxicity, proliferation, osteogenetic differentiation</i>
chemical resistance:	<i>sterilizability, diffusion barrier</i>



axymed



axynit : *medical*

To **increase hardness and wear resistance** and with it for example the long-time stability of the biocompatible titanium surface of human implants a surface modification without deposition is possible by axynit-processes with the **plasmaimpax** technology. The top surface layer of substrate materials will be modified well defined through a three dimensional ion implantation out of a plasma.

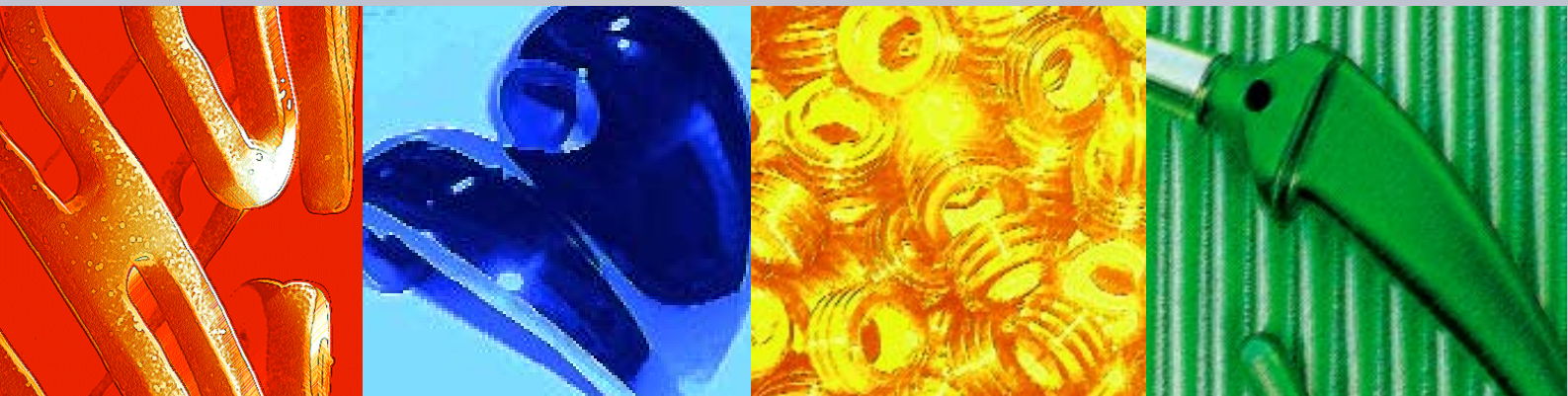
hardness (Martens hardness):	<i>10 - 20 GPa</i>
modification depth:	<i>0.1 - 2 μm</i>
surface colour:	<i>blue-violet, grey</i>
biocompatibility:	<i>toxicity, proliferation</i>
chemical resistance:	<i>sterilizability</i>

axyvital : *medical*

Different functional ceramic coatings (bioinert, biocompatible, bioactive) can be deposited already at temperatures starting at 50 °C by Pulsed Laser Deposition (PLD) for example on joint- or vascular implants. PLD is a special and very flexible physical vapour deposition (PVD) technique. Based on this process technology and the complete inorganic material spectrum accessible we develop surface properties according to your ideas to realize an optimal interface between implants and the human body.

surfaces – for human health

axymed



AXYNTEC Dünnschichttechnik GmbH
Am Mittleren Moos 48, 86167 Augsburg, Germany
Telefon: +49 (0)821-74 999 140, Telefax: +49 (0)821-74 999 144
e-mail: info@axyntec.de, internet: www.axyntec.de