eurofins

Medical Device Testing

Materials & Chemical Characterization

Choose Eurofins Medical Device Testing to help you:

- ✓ Analyze the physical and chemical composition of materials
- ✓ Customize metallurgical engineering involving contaminant identification, failure analysis and litigation support
- ✓ Perform polymer analysis to investigate biodegredation of an implanted device
- ✓ Investigate microelectronics and materials failures
- ✓ Conduct routine endotoxin, bioburden and microbial identification
- ✓ Assess the morphology of lubricious hydrogel coatings or electropolished surfaces

Metallurgical Engineering & Chracterization

Metallurgical alloys are commonly used in medical device applications owing to their exceptional physical properties. In particular, a variety of implantable alloys (e.g. various stainless steels and nitinol) have been developed allowing for shape memory features and high fatigue applications. Expertise in metallurgical engineering is required to provide insight into materials properties and failure mechanisms.

Instrumentation:

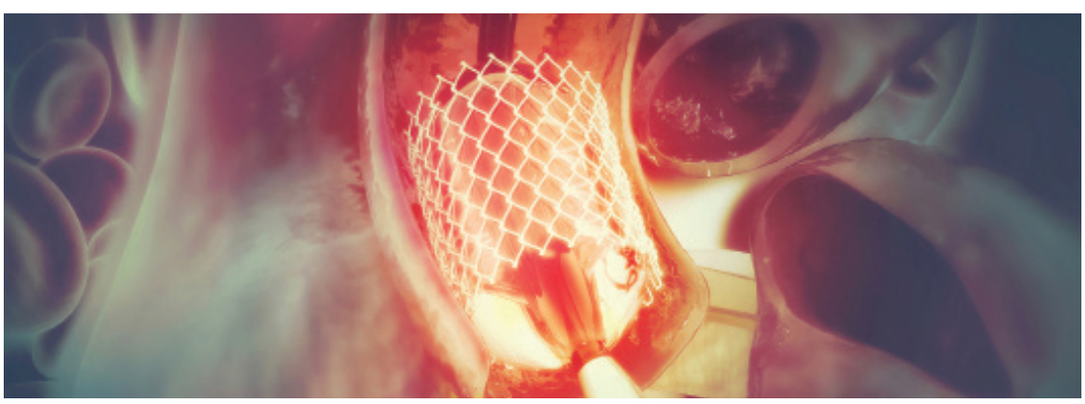
- Elemental: ICP, XRF, EDS, GD-MS, SIMS
- Microscopy: SEM, TEM, FIB, AFM, OP, EBSD
- Surface: XPS/ESCA, TOF-SIMS, Auger
- Corrosion Testing: ASTM F2129

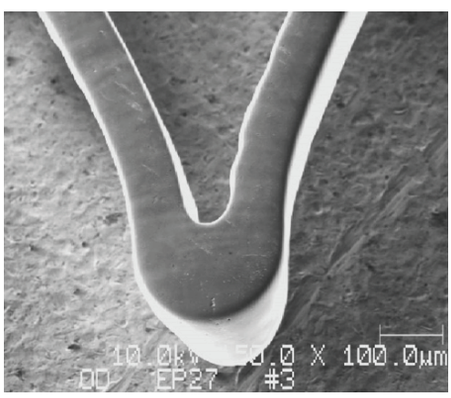
Polymer Chemistry

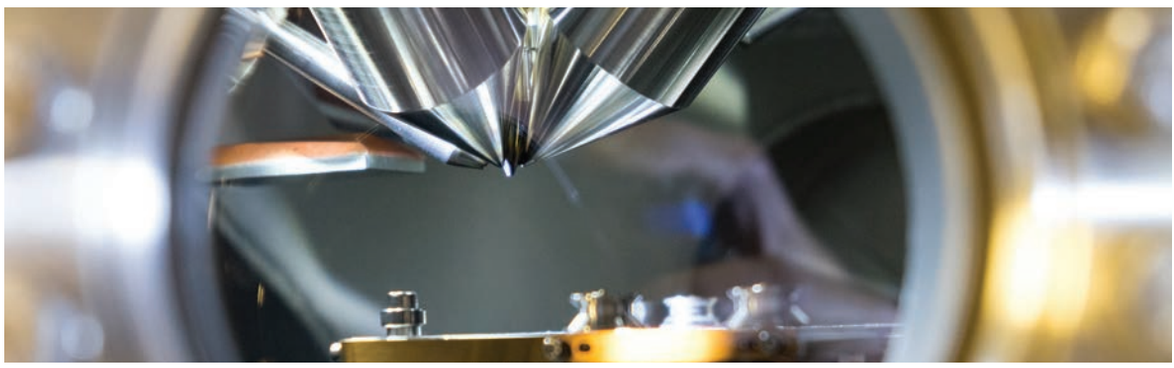
Polymer chemistry is widely used in medical devices to provide desired physical properties, surface characteristics and sterile packaging systems, among other applications. A combination of backbone chemistry, molecular weight properties, processing conditions and additives can have a huge impact on performance. Eurofins Medical Device Testing has extensive expertise in polymer chemistry, with analytical options from basic characterization of materials to investigations involving complex problems.

Instrumentation:

- Spectroscopy: FTIR, NMR, Raman
- Chromatography: GC, LC, GPC, IC
- Mass Spectrometry: LC/MS, GC/MS, Pyrolysis GC/MS
- Thermal: DSC, DTA, TGA, TMA, DMA, Rheology
- Elemental: ICP-OES, ICP-MS, XRF, EDS
- Microscopy: SEM, TEM, FIB, AFM, OP
- Surface: XPS/ESCA, TOF-SIMS, Auger







Microscopy & Morphology

New technologies in medical devices and diagnostics are requiring smaller and smaller features to deliver unique treatment options. Advanced microscopy allows medical device professionals to better visualize materials and observe designed structures and layers. Advancements in microscopy have continued to allow for study of nanometer scale features in conjunction with powerful sample preparation techniques.

Typical techniques used include:

- SEM
- TEM/STEM
- FIB-SEM
- AFM
- Raman
- TOF-SIMS
- Auger

Surface Analysis

Surface chemistry plays an important role in ensuring the proper performance and safety of medical devices. Depending on the medical application, the surface chemistry can be adjusted to improve lubricity, support adhesion, prevent corrosion, and improve biocompatibility. Medical device R&D professionals are involved in developing new surface chemistries for specific applications, while medical device quality professionals may encounter product quality issues with a surface chemical component.

Typical techniques used include:

- XPS/ESCA
- Auger
- TOF-SIMS
- FTIR
- Raman
- AFM
- Optical Profilometry

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