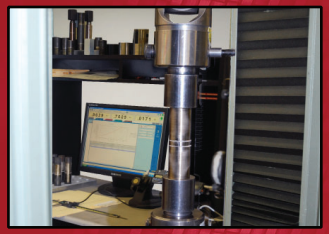
Coatings Analysis

Powder Analysis - We provide chemical analysis (ICP-MS, ICP-AES), percent crystallinity, particle size (Microtrac), and morphology (XRD, SEM & optical) to fully characterize your starting powder.

Metallography - Our team employs many advanced mounting, polishing and examination techniques to thoroughly evaluate the most advanced coatings.



Tensile Testing - IMR provides coating adhesion testing of samples, both as coupons or on part geometries.

Fatigue Testing - We provide shear strength and shear fatigue testing of samples from test bars to actual coated parts.

Rotating Beam Fatigue Testing - A valuable tool for evaluating coatings under reverse bending conditions

Hydrogen Embrittlement - An important technique to evaluate the effects of the coating process on material strength.

Wear Testing - IMR offers a number of different wear tests including Taber, cyclic, falling sand and erosion testing.

Failure Analysis - Our experienced team of metallurgists and material scientists possesses the specialized knowledge to determine why coatings fail.

IMR Test Labs
131 Woodsedge Drive
Lansing, NY 14882 USA
1.607.533.7000
sales@imrtest.com

IMR Test Labs - Louisville
4510 Robards Lane
Louisville, KY 40218 USA
1.502.810.9007
sales@imrlouisville.com

IMR Test Labs - Portland
5687-A SE International Way
Portland, OR 97222 USA
1.503.653.2904
sales@imrportland.com

IMR Test Labs - Singapore
30 Loyang Way #03-16
Singapore 508769
+65 6592.5325
sales@imrsingapore.com

IMR Test Labs - Suzhou
Jiangpu Road 75, Shengpu Town
Suzhou Industrial Park
Jiangsu, China 215126
+86 0512.6295.2682
sales@imrsuzhou.com

Nadcap Administered by PRI
ACCREDITED
Materials Testing Laboratories
Non Metallic Materials Testing

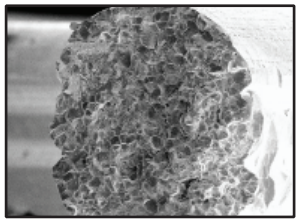
A2LA ACCREDITED

CURTISS-WRIGHT
IMR TEST LABS

Analytical Services for the Medical Device Industry

www.imrtest.com

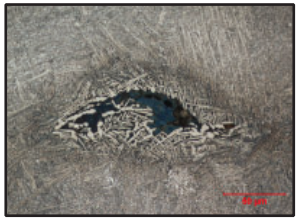
Metallurgical Evaluations



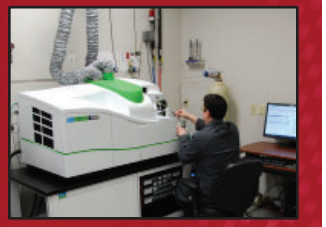
- Alpha Case
- Beta Transus
- Carbide Rating
- Case Depth
- Coatings Metallography
- EDS Analysis
- Failure analysis
- Grain Size
- Inclusion Rating
- Intergranular attack/oxidation(IGA/IGO)
- Machined surface evaluation
- Microhardness (Vickers, Knoop)
- Microstructure Evaluation
- Plating Thickness
- Root cause analysis
- SEM Analysis
- Solderability
- Stress Corrosion Cracking Susceptibility (SCC)
- Thermal Spray Analysis
- Weld evaluation

Materials Tested

- Beta-Tricalcium Phosphate
- Cobalt Alloys
- Diffusion Coatings
- Hydroxyapatite
- Plating/Anodizing
- Polymers
- Porous Materials
- Stainless Steel
- Thermal Spray Coatings
- Titanium



Chemical Analysis



- Alloy Chemistry/ Verification
- Chemical Resistance
- Contaminant Analysis
- Hazardous Substances
- Heavy Metal Impurities
- ICP-AES Analysis
- ICP-MS Analysis for Trace Elements
- Ionic Contamination
- Particle Size Analysis
- Phthalates
- Polymer Additives via GC/MS with Thermal Desorption
- Polymer Identification (FTIR)
- RoHS Testing
- Surface Cleanliness
- Thermal Analysis
- Total Extractables
- SEM-EDX

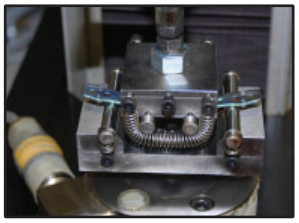
XRD Analysis

IMR primarily utilizes X-Ray Diffraction (XRD) in the identification of crystalline phases for powders and thin-film samples. This includes the analysis of corrosion products, ceramics, clays, oxide or nitride coatings and more.

- Ca:P Ratio of Hydroxyapatite
- Phase Identification
- Contaminant ID
- Compound Morphology
- Powder Diffraction

Mechanical Testing

- Bond Strength/Coating Adhesion
- Coating Shear
- Compression Testing
- Fatigue Testing
- High Temperature up to 1800°F
- Flexural Testing
- Hardness
- Passivation Testing for Stainless Steel (ASTM A967, QQ-P-416)
- Rotating Beam
- Tensile, Yield Elongation
- TMA
- Wear Testing



Cleanliness/Biocompatibility

IMR offers both characterization and quantification of residues and particulates to help you quickly eliminate sources of contamination.

We offer biocompatibility testing services on surgical devices and surgical tools.

With a range of techniques from micro-FTIR, optical microscopy and scanning electron microscopy (SEM, SEM-EDX), IMR is equipped to test for contaminants including:

- Cutting Fluids
- Detergents/Cleaning Solutions
- Oils
- Anions/Cations
- Halogens
- Residues
- Particulates
- Packaging Contamination