Biomedical Ceramics

The medical device industry is finding new, effective ways to utilize ceramics to improve device durability and biocompatibility, which in turn help with patient longevity and quality of life.

Ceramic coatings on medical devices extend the life of orthopedic implants and also allow them to be more easily integrated into the body with coatings such as Hydroxyapatite and Beta-Tricalcium Phosphate.

We offer testing on a wide range of ceramic coatings for production control, to support R&D efforts or overflow testing for your internal lab.

Aerospace Industry

The environment inside modern engines requires a high-performance material, impervious to high-heat conditions. Ceramics have long been used in the aerospace industry due to their durability at elevated temperatures.

IMR is well known for our ability to analyze thermal barrier and other ceramic coatings. We can also provide services on ceramic powders and parts from raw powder analysis to failure analysis of finished components.

Not just data, knowledge

IMR Test Labs
131 Woodedge Drive
Lansing, NY 14882 USA
607.533.7000
sales@imrtest.com

IMR Test Labs - Louisville
4510 Robards Lane
Louisville, KY 40218 USA
502.810.9007
sales@imrlouisville.com

IMR Test Labs - Portland
5687-A SE International Way
Portland, OR 97222 USA
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

www.imrtest.com
www.cwst.com

©2017 IMR Test Labs
Energy

Ceramic materials are key to more efficient energy systems. Power generation components require the ability to withstand harsh environments while providing superior electrical, physical and thermal properties.

IMR Test Labs provides analytical services to many major energy industry suppliers. Our experts have worked with thermal barrier coatings such as plasma and EB-PVD as well as ceramic matrix composites, raw powders and much more.

We provide analytical services that include fatigue, composition, physical properties, metallurgical evaluation and failure analysis.

Electronics Manufacturers

High-quality ceramics improve performance and reliability of electronic devices. Ceramic parts also allow for smaller and more compact devices.

IMR has extensive experience with electronic packaging testing, including RoHS, metallurgical evaluation, failure analysis and raw materials analysis.

We have tested chips, capacitors, resistors and more. We can look at individual components as well as the assembled package, from characterization of multilayer capacitors to solder joints and investigation of shorts and opens.

Chemical Composition

- Heavy Metals Analysis (ASTM F1088)
- ICP-AES Chemical Analysis
- ICP-MS Trace Analysis
- Identification of Unknown Powders
- Particle Size Analysis
- Sieve Analysis
- RoHS Testing
- XRF Chemical Analysis

X-Ray Diffraction Analysis

- Ca:P Ratio of Hydroxyapatite
- Percent Crystallinity
- Phase Identification
- Powder Diffraction

Mechanical Testing

- Abrasion Testing
- Bend Strength
- Density
- Fatigue Testing
  - High Temperature to 1800°F
  - Indentation Toughness
  - Modulus of Rupture (MOR)
  - Single-Edged Notched Beams (SENB)
- Wear Testing

Materialography

- Failure Analysis
- Fractographic Analysis
- Grain Size
- Microhardness (Knoop, Vickers)
- Microstructure

Materials Analyzed

- Alumina/Aluminum Oxide (Al₂O₃)
- Barium Titanate (BaTiO₃)
- Beta-Tricalcium Phosphate
- Bioglass
- Borides
- Boron Carbide (B₄C)
- Carbides
- Ceramic Matrix Composites (CMC)
- Diamond-Like Carbon (DLC)
- Glass
- Hydroxyapatite (HA)
- Nitrides
- Oxides
- Silicon Carbide (SiC)
- Silicon Dioxide (SiO₂)
- Silicon Nitride (Si₃N₄)
- Titanium Dioxide/Titania (TiO₂)
- Tungsten Carbide (WC)
- Yttria Stabilized Zirconia (YSZ, YTZ)
- Zirconium Dioxide/Zirconia (ZrO₂)
- and more...

Dental Ceramics

Dental ceramics are constantly evolving to provide superior strength, wear resistance and durability.

IMR has extensive experience working with these materials and providing routine production control, support for R&D and failure analysis services to numerous dental ceramic manufacturers.

We have tested raw formulations as well as finished materials for a wide range of properties. From basic composition to failure analysis, IMR's labs can provide the answers you need on your dental materials.