

Mission Statement

Integrity Testing Laboratory is a materials solutions company that provides superior value in testing, consulting, problem solving and R&D services. We are dedicated to serving the manufacturing sector, as well as academic and government institutions through:

- Awareness of modern scientific and engineering problems
- Creation of leading edge, cost-effective technologies
- Optimal selection of new and emerging materials

Each member of the ITL team is committed to delivering timely, high-quality solutions to customer needs.

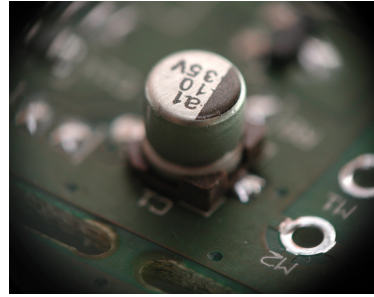
Organization and Service

Founded in 1989, Integrity Testing Laboratory (ITL) Inc. is a high-tech, diversified technology-oriented laboratory that provides services to the industrial and scientific communities in Canada and abroad.

Since its establishment, ITL has provided the following services to more than 200 industrial companies, government agencies and educational institutions.

- **Materials Testing & Characterization**
- **Troubleshooting & Problem Solving**
- **Consulting**
- **Engineering & Design**
- **Research & Development**

ITL offers a wide-range of services related to metal, ceramic, plastic, rubber, polymer, adhesive and similar products.



We are well aware of the problems typical to your industry, and we have the knowledge and experience necessary to solve them.

The ITL Team

The ITL staff is lead by Dr. Jacob Kleiman, an internationally recognized scientist and Adjunct Professor at the University of Toronto. His extensive experience, exceptional leadership ability and customer relations skills allow him to lead ITL to continued success.

The ITL staff, comprised of 14 scientists and engineers, 8 of whom hold Ph.D. degrees, contribute to an accomplished team capable of overcoming any challenge.

Location

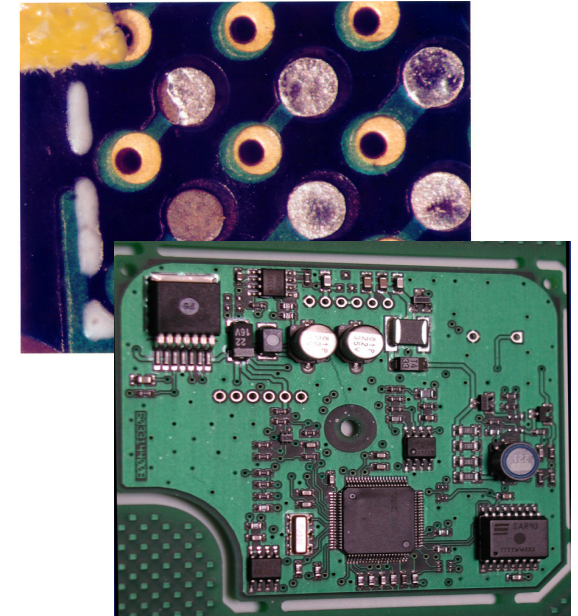


**Integrity Testing
Laboratory Inc.**

Your Material Solutions Experts

Electronics Industry

Material Testing & Characterization,
Problem Solving & Troubleshooting,
R&D and Consulting



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ITL Advantages

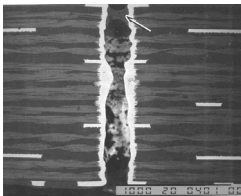
- **Fast, affordable and complete** services
- **High quality, dependable** interpretation of results - we often use **different techniques** to effectively verify results
- Diverse backgrounds allow us to employ a **multidisciplinary approach**
- **Superior customer service** - Our highly qualified staff is always willing to put in the extra time and effort to provide you with the solution to an **urgent issue**
- We can provide you with **unique, customized** measurements, methods & prototypes
- We treat our customers as **partners**, using our outstanding problem solving skills to **advise** them on the best approach
- **Industry-focused** programs – we give you the **personalized attention** you require
- Combined 200 years of **industry experience**
- **ISO 9001:2000** registered

Services Provided

Testing & Analysis:

Metals

- Failure Analysis
- Chemical Analysis
- Microstructure
- Density & Porosity
- Hardness, microhardness



Polymers- Plastics, Adhesives, Elastomers

- Differential Scanning Calorimetry
- Thermogravimetric Analysis
- Thermomechanical Analysis
- Hardness
- Density
- Shear
- Viscosity
- Tension/Compression

- Creep
- Vicat test – softening temperature

General Material Testing

- **Failure Analysis & Fracture Detection** - Scanning Electron Microscopy & X-Ray Microanalysis
- **Surface Analysis** – Auger system to detect corrosion, erosion and contamination



System Tests

- **Environmental Testing** – Salt spray, QUV
- **Residual Stress Management** – redistribute stress to prolong fatigue life, eliminate distortion

Problem Solving/Characterization:

- Troubleshooting
- Reverse Engineering
- Solution Implementation

Research & Development:

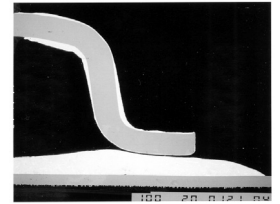
Surface Modification:

Several patented technologies, which allow for the following improvements:

- Increased **erosion and oxidation resistance** of polymeric materials
- Improved **thermal oxidative stability**
- Improved **mechanical, electrical, frictional and optical properties**
- Optimized **wettability, adhesion and permeability** of liquids and gases
- Modified surface energy -creation of **super-hydrophilic** or **super-hydrophobic** surfaces
- Reduced **glare** and increase **diffuse reflection** on Teflon surfaces.
- Enhanced **release performance**

Analytical Facilities

- Scanning Electron Microscope (SEM)
- Energy Dispersive X-ray Microanalyzer (EDS)
- Auger Surface Analyzer
- X-ray Imaging Equipment
- Fourier Transform Infra-Red Spectrometer
- UV-VIS-IR Spectrometer
- Polarized Light Optical Microscope
- Optical Interferometer/Profilometer
- Contact Angle Measurement System
- Tension/Compression Tester
- High Temperature Thermal Physical Systems (up to 1800° C)
- Thermal Mechanical Analyzer (TMA)
- Differential Scanning Calorimeter (DSC)
- Thermogravimetric Analyzer (TGA)
- Surface Roughness Tester
- Adhesion/Release Peel Tester
- Viscometer



Selected Applications

ITL developed experience in numerous problem solving and root cause analysis solutions for companies in the electroplating, PWB manufacturing, BGA assembly, and SMT technology industries.

We have particularly strong expertise in problem solving associated with failure analysis, troubleshooting and root cause analysis of soldering, new generation BGA placement, precise cross-sectioning, x-ray imaging analysis and internal visuals, “black pad”, degree of curing and water content in PWB’s.

We are confident that we can be your partner in solving many of your existing problems and in helping prevent future issues.