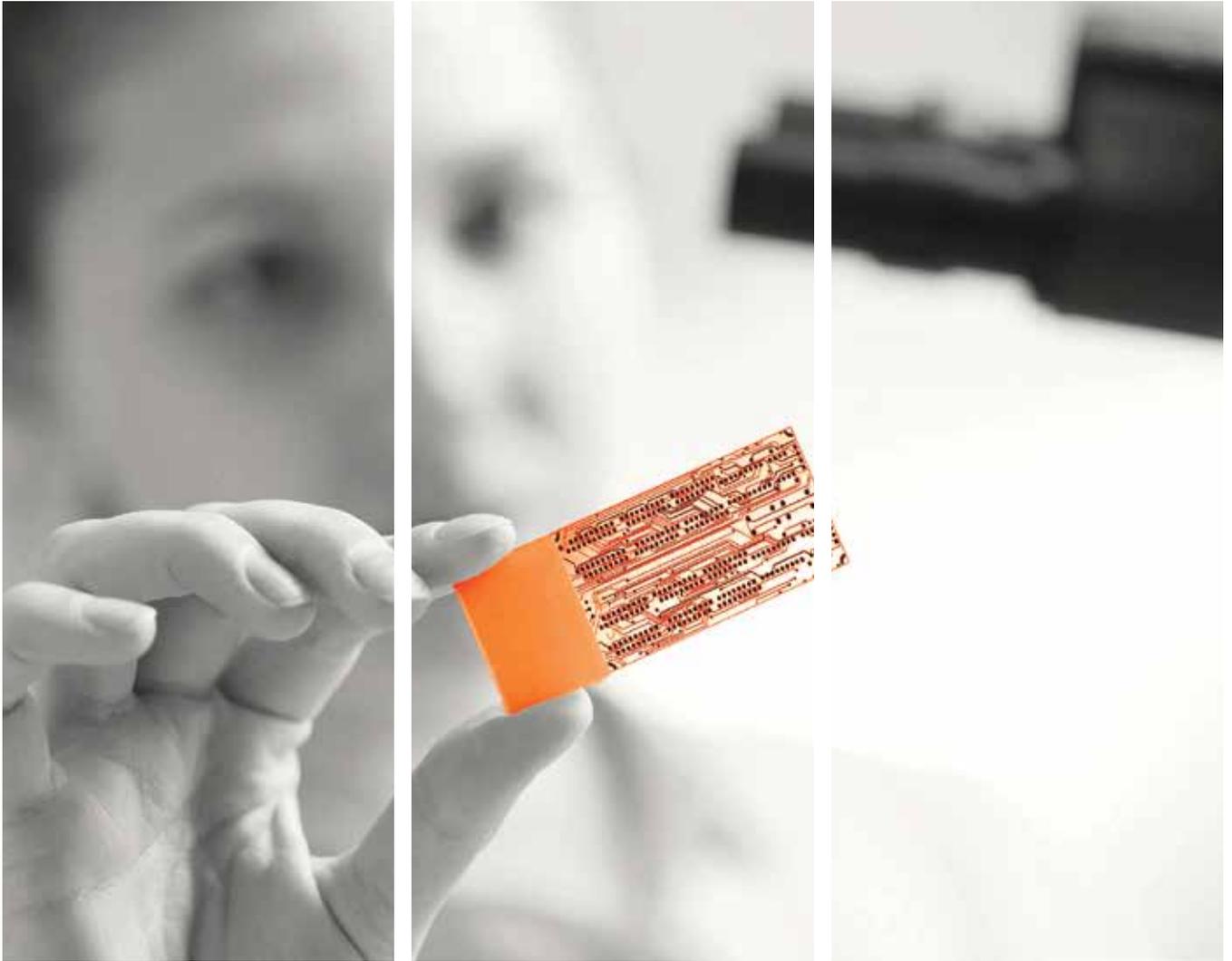


CONSUMER TESTING SERVICES  
ELECTRICAL & ELECTRONICS  
MICROELECTRONICS SERVICES



# HIGH-TECH REQUIRES **HIGH-PRECISION** **MICROELECTRONICS** SERVICES

WORLDWIDE **ANALYSIS**, TESTING & CERTIFICATION

**SGS**

# LOCALLY AVAILABLE WORLDWIDE

Electrical and electronic product manufacturers and retailers are under increasing pressure from clued in consumers who know about sustainability, energy efficiency and green issues. Partner with SGS to deliver well designed, desirable goods that are trusted for real life whilst ensuring quality, safety and sustainability for manufacturers and consumers.

## WHO IS SGS?

SGS is the world's leading inspection, verification, testing and certification company. SGS is recognised as the global benchmark for quality and integrity. With **80,000 employees**, SGS operates a network of over **1,650 offices** and laboratories around the world. As a result, our expertise provides a single consolidated source to reduce your risk, improve efficiency and quality, and ensure compliance.

## SOLUTIONS

- Hazardous substances
- Product safety
- EMC (Electromagnetic Compatibility)
- Audit & certification
- Performance & reliability
- Product inspection
- Analytical services
- Sustainability (ErP - Energy related Products, Ecodesign, Energy Efficiency, PEP - Product Environmental Profile, etc.)

## NEW MARKETS AND PRODUCTS

- Electro medical devices
- Wireless devices & applications
- Photovoltaic modules

## COVERING ALL CONSUMER ELECTRONICS

- Household appliances
- Luminaries
- Batteries
- Power supplies
- Information Technology (IT)
- Audio/Video equipment
- Power tools
- Automotive parts

## THINKING SUSTAINABLY

Across our global network of sustainability experts we can support your company in its strategy by offering a range of services covering the environmental, safety and social aspects of sustainability:

- Restricted substances management
- Social responsibility solutions
- Ecodesign services



# MICROELECTRONICS & NANOTECHNOLOGY

The Microelectronics division of SGS is a leading provider of analytical services for the semiconductor industry and its components suppliers.

## HIGH-TECH ANALYSIS AT ANOTHER SCALE

The microelectronics division focuses especially on areas that imply the use of Micro- and Nanostructures or thin film technologies.

Our key knowledge with materials, surfaces and layers enables us to support our customers through individualized chemical and physical analyses throughout all value added chain phases, from product and technology development to processes control and final products.

## SPECTRUM OF CAPABILITIES

- Analytical support of research & development
- Quality control throughout the supply chain
- Reliability, environmental simulation
- Failure and damage analysis
- Reverse engineering
- Outsourcing solutions
- Certification
- Green testing (WEEE / RoHS)



# A SMALL & COMPACT FUTURE

## RESEARCH & DEVELOPMENT

In the development of innovative products, thin layer systems that include new, alternative material combinations play an important role, increasing the functionality, quality and reliability of your product.

Our services will help you develop innovative products and technologies. We are the go-to laboratory partner for R&D projects with a technological dimension.

## PROCESS MEDIA & AUXILIARY MATERIALS

The quality, characteristics and stability of the process media determine the quality of the final product.

We offer the services of independent, external process control organization to ensure the optimal material and properties of your product.



## QUALITY CONTROL ALONG THE PRODUCTION CHAIN

- Analysis of process media
- Characterization of wafers
- Dopant profiling
- Layer characterization
- Failure analysis of integrated circuits
- Analyses for packaging and assembly

## RELIABILITY TESTS

To succeed, products should be more than just high-tech, they should also be reliable. We conduct reliability testing through various environmental simulations and analyse potential consequences by:

- Metallographic preparation
- Light & electron microscopy
- Material analysis

# BE THOROUGHLY PREPARED

## ROOT CAUSE ANALYSES OF FAILURES & DAMAGES

Our experienced staff and high performance equipment allow us to pinpoint and identify failures that could cause malfunctions, quality problems and reduced reliability.

We help you avoid and prevent failures through:

- Failure and damage analysis
- Evaluation and research
- Development and evaluation of test and analysis methods
- Assistance in implementing quality assurance systems

## CERTIFICATIONS

To our 100 years experience in enterprise certification and world leading capabilities in integrated audits, we add a wealth of trainings and seminars on quality management and safety.

We offer certifications according to:

- ISO 9000
- ISO 14000
- ISO/TS 16949

## OUTSOURCING SOLUTIONS

We will guide your outsourcing strategy, from the initial idea to the final optimised concept with start-to-finish project management. In our sustainable operating models, we define demanding service levels and measure key performance indicators. We create win-win situations by cost-effectively re-engineering processes and resources while leveraging the contributions of our laboratory network.

## GREEN TESTING (WEEE / RoHS)

Products based on micro- and nanotechnologies must comply with regulations that minimize the content of hazardous substances. We offer in depth consulting and chemical analysis for RoHS and issues beyond.



# FOR COMPLETE PIECE OF MIND

## MEASURING & ANALYSIS TECHNIQUES

- Materialography, Microscopy
- Focused Ion Beam (FIB)
- Scanning Electron Microscopy (SEM)
- Atomic Force Microscopy (AFM)
- X-ray Diffraction Analysis (XRD)
- Transmission Electron Microscopy (TEM)
- Computer Tomography (CT)
- X-ray Photo Electron Spectroscopy (XPS)
- Auger Electron Spectrometry (AES/SAM)
- Electron Probe Micro Analysis (EPMA)
- Secondary Ion Mass Spectrometry (SIMS)
- Time-of-Flight SIMS (TOF-SIMS)
- Spreading Resistance Profiling (SRP)
- Infrared Spectroscopy (FTIR)
- Thermal Analysis (TGA, DMA, DSC)
- Chemical Analysis (IC, HPLC, GC-MS, ICP-OES, ICP-MS)
- VPD ICP-MS, TXRF

## SURFACE CONTAMINATION AND PARTICLES

Surface contaminants on technological equipment, substrates or devices in the form of granular or fibrous particles or thin films influence the following technological processes and therefore the quality and reliability of high-tech products. We support you in identifying contaminants using our imaging and analytical techniques.



# OUR SOLUTIONS FOR OTHER HIGH-TECH INDUSTRIES

## **SURFACE & THIN FILM TECHNIQUES**

Many different engineering disciplines use micro- and nanotechnological processes to create thin layers and small structures. We can support you in determining the structure and chemical composition of those components.

## **MATERIALS FOR MEDICAL TECHNOLOGY**

The surfaces of modern surgical equipment as well as that of long or short term medical implants have to constantly withstand extreme conditions. SGS Microelectronics is your right partner for evaluating the quality of materials and surfaces.

## **PHOTOVOLTAICS**

Photovoltaics is one of the most ecologically sustainable forms of energy generation. The need to enhance efficiency requires strong efforts in the R&D field. SGS Microelectronics clients can profit from our experience and analysis methods in Photovoltaics and from the comprehensive know-how of our semiconductor specialists.

With us you have constant access to the latest chemical, surface and thin film analytical methods.

## **GLASS & OPTICAL LAYERS**

In the field of optics and technical glass, manufacturers need to keep close to the strict demands that govern this industrial branch. We can support you during manufacturing and process control by examining precisely the structural conditions and chemical composition of the product.

# CONNECT WITH **SGS**

We identify the applicable regulations and standards for your specific product and your target markets. SGS can help you reduce risk, improve efficiency and ensure compliance to contractual or regulatory requirements in all your manufacturing, sourcing, distribution and retailing operations.

## **CONTACT US**

SGS is your global partner to provide you with tailored services and consulting solutions that meet your needs, objectives and budget.

For more information on how our E&E services can help your business, visit: [www.sgs.com/ee](http://www.sgs.com/ee) or contact us at: [ee.global@sgs.com](mailto:ee.global@sgs.com).

## **STAY UP TO DATE**

As you consider your company's compliance challenges, let SGS help you to make the best decisions for your business.

To keep abreast of the developments reshaping your industry sector, subscribe to our free publications at: [www.sgs.com/subscribe](http://www.sgs.com/subscribe).

**SGS IS THE WORLD'S LEADING INSPECTION, VERIFICATION, TESTING AND CERTIFICATION COMPANY.**



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WHEN YOU NEED TO BE SURE

