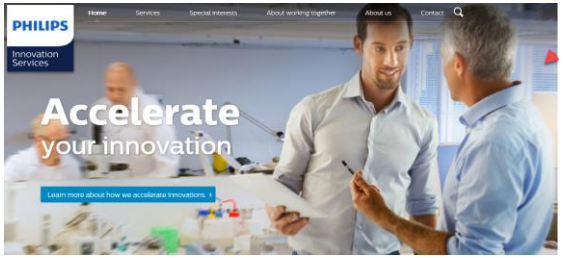

Philips Innovation Services

Welcome at PHILIPS

Philips Innovation labs

Philips Innovation labs: Reliability & Material Analysis

Philips Innovation labs
October 2017

innovation + you

PHILIPS

Your needs today, and tomorrow

What are your biggest challenges at the moment and how can we help?

What can we do to make your life easier and increase customer satisfaction?

How can we serve you add better value to your organization?

Do our services meet your specific market requirements?

How can we better leverage our services to enable you to reduce costs and be more productive?

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Our facts

>10,000
orders a year

>90
experts
at your service

15
dedicated
EMC
test rooms

60
Reliability
test cabinets

35
analytical
techniques

4.6
customer
satisfaction
score
(on a 5 point scale, n=78)

5,000 m^2
lab space

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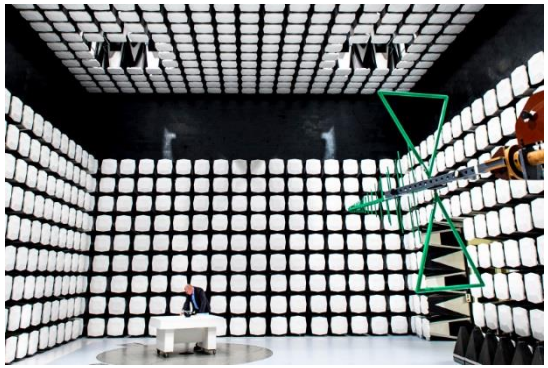
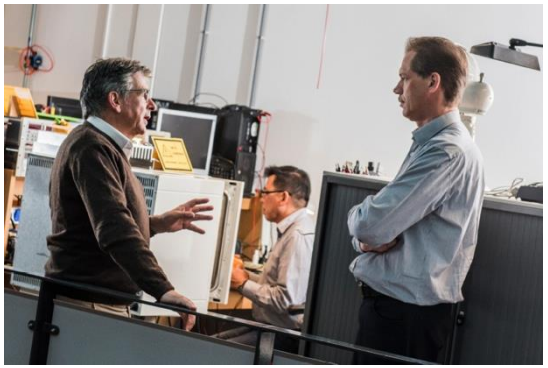
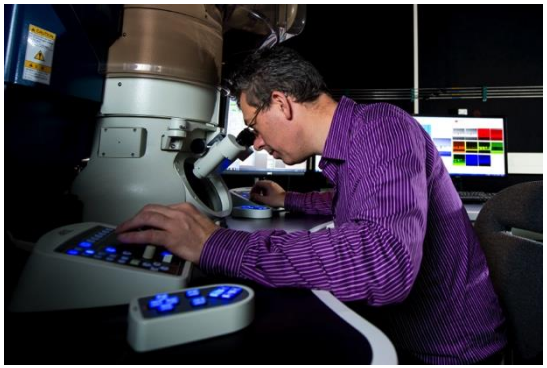
Our **five labs**



Electromagnetic Compatibility & Wireless Connectivity lab



Electronic Design Services lab



Material Analysis lab

Reliability lab

Prototyping lab

5,000 m²
lab space

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Reliability lab

Who we are …

A wide package of environmental simulations

- From HALT and in-situ testing in the development phase to various environmental tests during the full lifetime of a product.
- A package of different loads varying from temperatures, heat damp, mechanical to UV.

Testing, analysis, …. and FINDING solutions

- Providing the measurement services, facilities and expertise for all reliability requests and tests along the value chain

Infrastructure and support for reliability and lifetime testing of prototypes and small series

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Material Analysis lab

Who we are …

A complete package in analytical support

- The compositional & physical inspection of materials and objects
- Identifying their properties and characteristics: for reliability issues, problem solving, quality control support, failure analysis, competitor analysis

Testing, analysis, …. and FINDING solutions

- Providing the measurement services, facilities and expertise for all material analysis requests and tests along the value chain

From analysis to materials characterization, problem solving, materials reliability and materials consultancy

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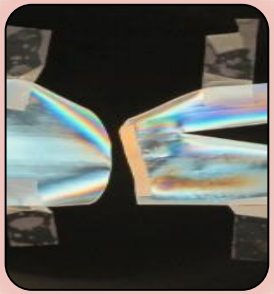
Our Areas of expertise: typical tools used



Ellipsometry, ToF-SIMS, XPS, XRD, Auger

Surface and thin-film

Atomic Spectroscopy, Elemental Analysis FTIR, Raman, GC, LC, NMR, XRF

Compositional analysis

Particle size, BET, thermal analysis, rheology, mechanical testing

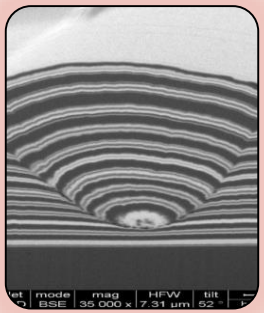
Physical characterization

Hot / Cold Storage, Damp Heat, Temperature Shock, Slow / Fast Cycling, Vacuum, UV Simulation

Environmental testing

O-led Lifetime setup, Monitor (I/V/R vs time), Automated Power Supplies, Event Detection, PTC

Insitu Testing



SEM, TEM, FIB, XRT, AFM, profilometry, thermography

Advanced imaging

HALT, MEOST

HALT

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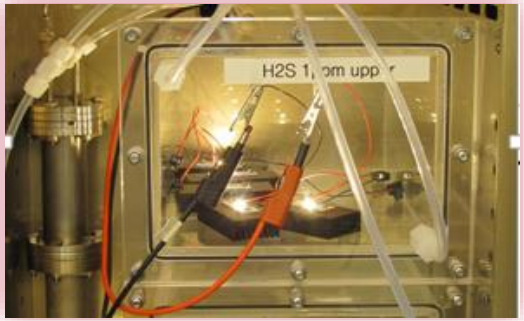
Our main services

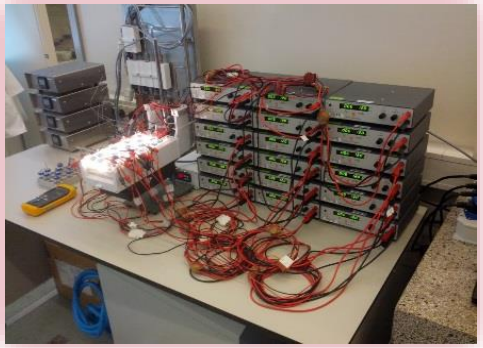
Chemical analysis and physical inspection of materials & objects

Contamination control



Chemical compatibility

Material reliability & consultancy



Analytical methodology

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Services

- Chemical analysis and physical characterization
- Contamination Control
- **Chemical Compatibility**
- Material Reliability
- Analytical Methodology

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Chemical Compatibility

- Various liquids and gasses in the application can lead to rapid degradation or mal-functioning of the device
- There is a strong need for “first time right” sustainable materials in the product design and development cycle(s)

Enabling suitable material selection, testing, failure analysis, supplier contacts, specifications and support in process/material optimizations and troubleshooting

cleaning & disinfections of medical devices

pesticides, defogging etc. in greenhouses

human solids & fluids, lotions, ….

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Services

- Chemical analysis and physical characterization
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- **Material Reliability & Consultancy**
- Analytical Methodology

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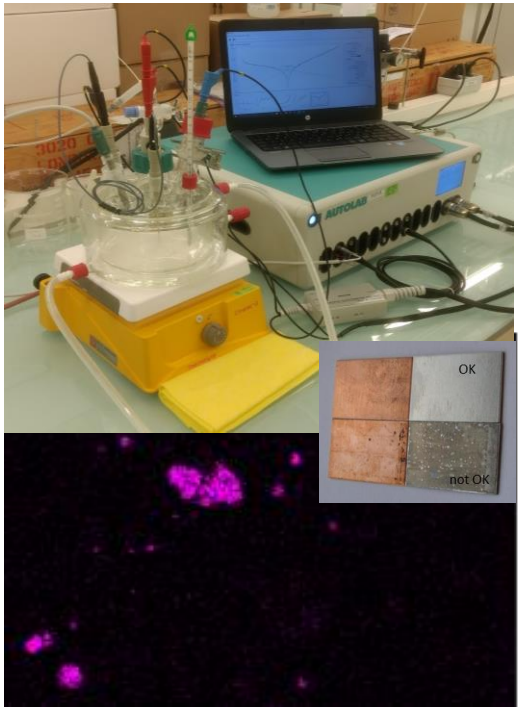
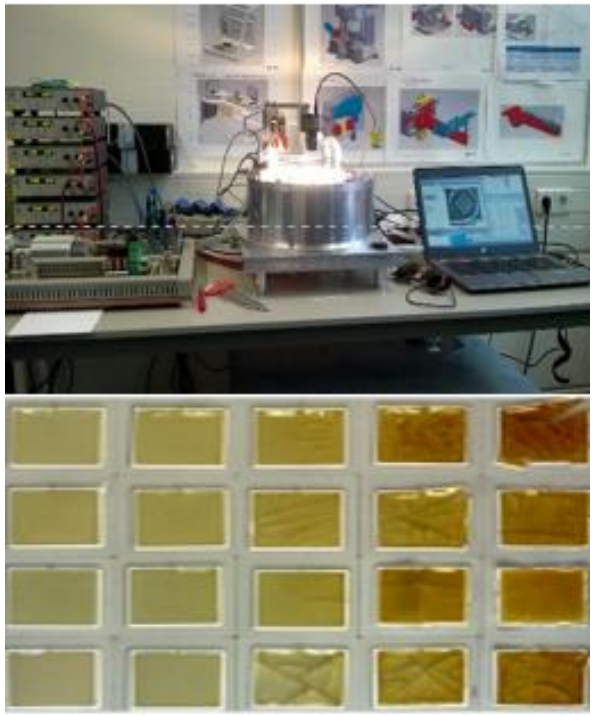
Material Reliability

Accelerated life-time test, set-ups build, characterization of the aged materials, failure mechanism and materials consultancy



Clogging MRI cooling systems

Environmental stress cracking
Failure Analysis



Building of dedicated equipment for reliability testing, towards design rules for polymers/silicones in LED products

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Services

- Chemical analysis and physical characterization
- Contamination Control
- Chemical Compatibility
- Material Reliability & Consultancy
- **Analytical Methodology**

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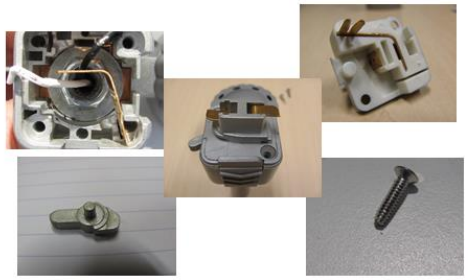
Analytical methodology

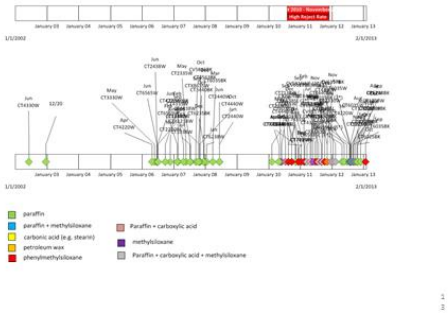
- A structural approach: from effect, to root cause, to failure mechanism, to solutions
- Underpinned with statistical tools, Shainin and DfX
- Defining area's of improvement and operating boundaries, as a base for solutions

"Talk to the parts, they are smarter than engineers"

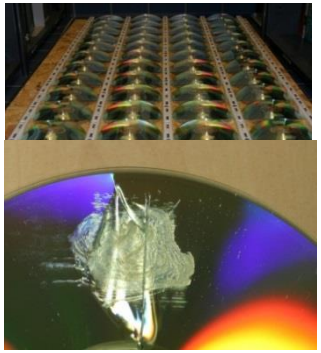


Physical & Chemical Characterization

Results



Distinguish good from Defective



Confirm Route Cause

Test new design

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Ways to work with us

For you

engage us to deliver a customized solution

With you

complement your competences and capabilities with ours

By you

use our facilities and/or equipment

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Local partner, **global reach**

For general questions related to Philips Innovation labs call Ben Broers

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