

# Henk van Houten

## *Programme manager LDMS*

In the March issue of *Circle*, you could read about the new management structure in Philips Research. In the *Nat.Lab. Journaal*, we will tell you more about each programme, based on an interview with its programme manager. In this issue, you will meet Henk van Houten, programme manager of Lighting, Devices & Microsystems (LDMS).

### **What is the main purpose of your programme?**


The Devices & Microsystems part of the programme has the aim to help realize several company-wide strategic themes (Ambient Intelligence, Displays, Connectivity, Storage, Molecular Diagnostics for Healthcare), based on innovation at the physical device level, enhanced by electronics. The long-range technical objectives (LRTOs) are: Solid-State Storage, 'Displays Everywhere', RF Front-end Modules, Sensors and Actuators in Microsystems, Soft Electronics.

The Lighting part of the programme is mainly aimed at business creation and breakthrough technologies for Philips Lighting. There are three LRTOs: Gas Discharge Lamps, Solid-State Lighting, Energy and Light Management. For external customers (FEI, ASML), we carry out challenging projects on electron microscopy and lithography.

### **How do you see your role?**

Of course, many of the good ideas for research projects come from researchers or group leaders. As programme manager, I am developing a shared strategy. It is important to structure the programme and focus on the most promising options for innovation, out of an incredibly wide variety of possibilities. Also, we must make clear what we want to achieve in terms of devices or systems with a clear end-user benefit. This is why we radically changed from a capability-oriented programme management style towards application-oriented LRTOs.

I am acting as a sparring partner for the group leaders responsible for formulating these LRTOs, and I am also trying to keep an overall perspective. I interface with key customers, in particular with Philips Lighting, for which I act as the Research account manager, but also with



Philips Semiconductors. Stimulating collaboration between groups, sectors, labs and programmes is also a major role. I think we are making good progress in this area.

### **Who are involved in this programme?**

About 230 researchers are involved in the LDMS programme. You can find them in the Materials & Process Technology sector of Bertus Pals in the Nat.Lab. (groups of Maarten Buijs, Hans Hofstraat, Gerjan van de Walle and Ronald Wolf), in my Technical Physics & Chemistry sector in Aachen (groups of Albert Comberg, Hans Nikol and Ulrich Schiebel) and in the group of Gert Bruning in Briarcliff. Significant contributions are also being made by the groups of Jos van Haaren and Coen Liedenbaum, and we are strengthening the ties to our lab in Leuven. Collaboration with other companies and research institutes is taking place through publicly funded projects, or through joint development activities with suppliers such as chemical companies (e.g. in the field of polymer LEDs). Also, we are working with 'Customers of our Customer', such as Nokia in the field of RF modules, or sensors for mobile phones.



#### How is the cooperation organized?

We have a Programme Management Team consisting of all group leaders in the programme. We have plenary meetings where the programme strategy and content are discussed. Each group leader is responsible for one of the LRTOs. This includes chairing a sounding board for the LRTO, in which other group leaders, key researchers and customers take part. We also have a Lighting Account Management Team, in which we coordinate the contacts with Philips Lighting.

In addition, we have many joint projects, crossing boundaries between groups, sectors and labs. We stimulate the sharing of information and the organization of joint activities, such as workshops involving

researchers from different groups and labs. We are also creating a Centre for Microsystems and Nanotechnologies at the campus (in the new WAG). The mission is to grow into a world-class interdisciplinary centre for applied research, with the aim of business creation in the field of microsystems and nanotechnologies. We think that this centre will foster collaboration, within Philips Research and with our customers, as well as with third parties.

#### What are the most important projects at this moment?

For Philips Lighting, solid-state lighting will be a disruptive technology. Key projects are phosphors for white inorganic LEDs, multi-LED modules with clever control algorithms, and organic LEDs for large-area light sources. A new theme is energy and light management. We are working for example on solar energy converters, which is a big business opportunity. In the area of gas discharge lamps, we are extending the application range of UHP lamps to consumer projection, and we are working on a breakthrough approach to increase the luminous efficiency of low-pressure and high-pressure discharge lamps towards 200 lm/W. A promising new business initiative is UV-emitting lamps for water purification, based on dielectric barrier discharges.

An important trend for Philips Semiconductors is 'System-in-Package' (SiP). To quote Gerjan van de Walle: 'There is more than Moore'. We think that value can be generated by hybrid integration (e.g. RF MEMS, or bulk-acoustic wave filters for mobile-phone RF front-end modules) or by putting more functionality in a package than offered by 'System-on-Chip' (SoC). You can think of sensors and actuators. A new project addresses autonomous wireless sensors, which 'scavenge' their energy from the environment. Continuously adjustable lenses for camera modules, based on electrowetting or other techniques, are also promising. A very interesting opportunity is biosensors for medical diagnostic applications.

In the area of displays, we have a number of projects focused on low-cost 'ubiquitous' displays, such as paintable or printable displays. Flexible displays is a very important theme as well. The 'garage project' on rollable displays based on E-ink and plastic electronics, and the flexible polymer LED display are two of the promising options.

*We are trying to provide a physical basis for Ambient Intelligence*

#### What do you see as advantages of programme management?

It stimulates collaboration over organizational boundaries, and it helps us to focus our often scattered research efforts towards optimal value generation. Also, it helps to articulate and communicate more clearly what we are trying to achieve with our research organization. This is very important: if we do not do this well, our future is at stake. The new Research Management Team is a forum where we can really discuss the overall strategy of Research.