



## Sustainable, smart communication technology

**Communication technology – the lifeblood of our civilisation – will become accessible to all, sustainable and smarter, thanks to nanotechnology.**

People's ability to communicate, store and process large amounts of information has developed dramatically in a short time and has revolutionised our entire civilisation.

The transistor that controls the signals in all digital equipment has been crucial in this rapid change. It has quite simply transformed our culture.

In simple terms, the transistor is a sort of control system in the processing of data in computers, for example. The technical development of transistors has been enormous, but it has now reached the end of the road with current technology.

We have become used to being mobile while communicating and consuming information. The volume of data is growing and, with it, the requirements for increased capacity in all our communication equipment.

One obstacle to continued development of current transistor-based communication technology is the energy requirement. Computers and data traffic account for as much as 15–20 % of global electricity consumption. With current development, the energy requirements will increase unless we can come up with more energy efficient communication technology.

Another obstacle with current transistor technology is size. In this respect, as well, we have reached the end of the road with today's technology.

World-leading nanotechnology research based on nanowires is being conducted at Lund University. Nanowires have proven

very suitable to make transistors even smaller and more energy efficient.

With nanotechnology, the researchers at NanoLund have also shown that so-called biocomputers based on completely new approaches using proteins instead of electrons could, in the future, be a fast, smart and energy-saving complement to the current digital, transistor-based computers.

Using nanotechnology, computers can also mimic the functioning of the human brain and take decisions based on patterns and associations. The computers can simply use nanotechnology to copy the nervous system, develop the ability to learn and become more intelligent.

In the development of nanotechnology for the new generation of computers, Nanolab Science Village will be a crucial asset! Imagine this being possible thanks to you!

### CONTACT

**Pia Siljeklint**

Head of Development Office, Lund University

*E-mail:* [pia.siljeklint@fsi.lu.se](mailto:pia.siljeklint@fsi.lu.se)

*Phone:* +46 46 222 34 39

*Cell Phone:* +46 70 640 48 09