

"Just print me another computer, will you?"

The World of Plastic Electronics
Professor Henning Sirringhaus

Hitachi Professor of Electron Device Physics, Cavendish Laboratory, University of Cambridge
Chief Scientist of Plastic Logic Limited, Cambridge Science Park

Tuesday 7th February, 7.30 - 9.00 p.m.
The Wolfson Lecture Theatre, Churchill College, Cambridge

NOTE: TUESDAY, NOT MONDAY!!

Chair: to be announced
Vote of Thanks: to be announced

An interview with Professor Sirringhaus

"Professor Henning Sirringhaus is either very lucky, very good, or both. A man who got started in physics with the abstract idea of working on renewable energy, he has gone via a PhD in thin film silicon to leading a research group developing plastic electronics.

The move would not be particularly remarkable if it happened today,...

but in 1998 plastic electronics was a newborn research area with an uncertain future. Uncertain enough for Springhouse's PhD supervisor at Princeton to question his sanity on taking a postdoctoral position with Sir Richard Friend in Cambridge University's Cavendish Lab. There was obviously risk involved in entering such a field, but Sirringhaus clearly is not satisfied with being bored.



"Thin film silicon is a relatively mature area, there are not so many interesting things you can do," he recalls. "Polymer electronics was a very immature, young field at the time. On the fundamental science side there were some interesting things to understand, and then also obviously there was the technological potential."

Today, with that technological potential proved, it is possible to claim that Sirringhaus was lucky to pick a field that delivered on its promise. But he has helped it to deliver, both as v-p for research at Plastic Logic - the Cambridge start-up in the vanguard of firms pushing the processing, materials and architectural technology - and as leader of his own group in the Cavendish Lab.

It is obvious in conversation that the work, with its potential to affect people through products such as electronic paper, satisfies Sirringhaus for similar reasons to those for which renewable energy once appealed. "There aren't many fields

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where you take basic research and very quickly have the chance to affect people's lives," he admits.

The key areas in which plastic electronics are predicted to have that effect are RFID tags and displays. In the former case, the attraction lies in the possibility of inkjet printing tags in high volume at low cost, enabling them to be used on all manner of goods. In the second, it is the technology's ability to handle flexible substrates, especially since amorphous silicon is limited in this respect.

"There is a lot of interest in displays, active matrix displays and particularly flexible displays," says Sirringhaus. "Electronic paper, these bistable displays, require an active matrix driver - you can't drive them with a passive matrix. There is some real potential that the printing approach will be able to deliver a solution not merely based on lower cost, but to be an enabling technology," he says.

However, if this potential is going to be realised, researchers such as Sirringhaus need the funding to continue to develop architectures and improve the performance of the materials. Given his status - he won last year's Royal Society Mullard Award for 'research that has the potential to make a contribution to the national prosperity of the UK' - you might think cash arrives in big parcels in the morning post. Not so.

"We are currently concerned about the level of funding for fundamental academic research," he says. "Many of the recent initiatives, such as the EU integrated projects tend to be industry-led, and focused on applied research, which is a good thing in principle, but it also generates quite some concern for funding of core, fundamental research in universities, at the level required to remain competitive internationally."

The DTI funding schemes following on from the LINK projects are also more industry-led, and funding for basic research from the Research Councils is not increasing. What's more, Research Council funding is so competitive that Sirringhaus says the success rate for grant applications - even if they are evaluated and rated positively - is currently not very high.

He does, however, reserve praise for the DTI's £90m, six-year Micro and Nanotechnology Manufacturing Initiative for research and facilities development, launched last year, which he says could help the UK make some real money out of its research.

"This initiative for capital projects, the UK needs something like that. There are a lot of areas, like the polymer electronics area, where very interesting research has been done of high international standing. I think the challenge is to take that to the next step. Of course we have to see how it comes out, but I think it is a very useful initiative."

Maybe, then, some good news for those looking for the Government to put some financial commitment into exploiting the new wave of ambitious science being developed in the UK.

As we leave the lab Sirringhaus, for whom the path from physics for renewable energy to inkjet printing of semiconducting polymers appears to have run smoothly, is explaining how he arrived in Cambridge, from Zurich, via Princeton. He is clearly excited by his work, but after a short while he turns and says: "I never did get to work on photovoltaics." It's hard to believe he regrets it."

(Original article published in, and copyright of, Electronics Weekly, May 2005)

The CSAR Organising Secretary adds.....

Professor Sirringhaus is a very busy and elusive man! So, instead of our usual format, and in the absence of anything more specific, I have copied the above magazine article. The subject is fascinating, and much of the foundation work was done at the Cavendish Laboratory (of which our President, Sir Sam Edwards, was of course Director for several years!) Do come along!

Coffee and biscuits available, as usual, in the foyer outside the lecture theatre from ~7.00 p.m.
Once again, we shall be charging non-members a nominal sum for entry.

Richard Freeman

CSAR Organising Secretary