



# SEMINAR

## ***Recent Innovations from Delft in Electron Microscopy, Electron Lithography and Focused Ion Beams***

**Professor Pieter Kruit**

**Delft University of Technology,  
The Netherlands**

**Wednesday 26 November, 2014  
2.00pm – 3.00pm  
Science Lecture Theatre S10, Building 25**

### **Abstract**

Using nanotechnology, it is possible to create a new generation of instruments. We use arrays of tiny electron lenses to create a scanning electron microscope with 196 beams scanning in parallel. Our spin-off company MAPPER takes this idea up to another level and is constructing an electron lithography machine with more than half a million beams. In a new type of ion source for focused ion beams, we concentrate the electron impact ionization volume to 100x100x100nm<sup>3</sup>.

In a different direction, we have integrated light microscopy and electron microscopy in such a way that images can be taken simultaneously without compromising the quality of either. This creates amazing possibilities in biological research and photonics.

### **Biography**

Pieter Kruit is full professor of physics at Delft University of Technology in the Netherlands. He has had a chair in charged particle optics since 1989. He is (co-)author of 200 publications, author of 50 international patents, and supervisor of 35 PhD dissertations.

His research is always related to the development of electron- and ion-optical instruments. He has had research programs on nm-resolution electron spectroscopy, developments of low energy-spread electron- and ion sources and multi-beam optics for microscopy and lithography. Most of his work is performed in cooperation with industry. Based on his work in electron lithography he founded, with two of his graduates, MAPPER Lithography, now grown to 240 employees. With some of his coworkers and students he also started DELMIC, a company involved in simultaneous electron- and light microscopy. Among his organizational responsibilities was the editorship of Ultramicroscopy.

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