

INFOrum Scientium

Study visit Norrköping

Travel report written by Klas Tybrandt

On the 2nd of June 20 people from Forum Scientium made an afternoon study visit to Norrköping. After taking the campus bus to Norrköping and having lunch, the afternoon was spent visiting ITN and Acreo cleanroom, PEA manufacturing facility and the newly opened Visualization center C.

ITN and Acreo cleanroom

ITN (Dept. of Science and Technology) and Acreo AB share a large cleanroom facility located at the bottom floor of Täftean, campus Norrköping. Originally designed for development and fabrication of large area microelectronic chips, nowadays the facility is mainly used for the development of organic electronics and zinc oxide devices (Prof. Magnus Berggren and Prof. Magnus Willander groups). The visitors were divided into two groups guided by the lab inmates Maria Bolin and Klas Tybrandt. The activities in the lab, the instrumentation and other related information were described during the tour which lasted for approximately 20 min.

PEA manufacturing facility

The second visit was to PEA (Printed Electronics Arena) which is a recently opened center for production and commercialization of research within printed electronics at Acreo AB, Linköping University and others. The idea is to build up a framework and production environment which can host new startup companies within the field. The manufacturing facility currently hosts a



large number of different printing equipments, including roll-to-roll printer, screen printer, inkjet printer, dry phase patterning equipment, UV cures, etc. During the visit, project manager Stefan Svensson guided us around the lab and described the use and possibilities of the equipment. He also informed about the goals of the center and demonstrated some prototypes of printed display in action.

Visualization center C

The last and longest stop of the visit was at the newly opened Visualization center C. Many thanks to Andreas Anglesjö for helping us to organize the visit and allowing us to come so close to the opening! The center is based on the visualization research carried out at Linköping university and is a result of the collaboration between Norrköpings kommun, Linköpings Universitet, Norrköping Science Park and Interactive Institute. The visit featured three parts: the visualization exhibition, the haptic stations for visualization of biochemical reactions and the dome theater. The haptic stations had not yet been moved to the center at the time of the visit so we tried them out at their old location in Kåkenhus with the aid of Dr Gunnar Höst. The system consisted of a mechanical pen which delivered force



feedback to the user, a special mouse-like device to move around the objects, a display showing the content and a pair of 3D-glasses. The biochemical reaction visualized was an enzyme and its interaction with a glucose molecule. The force field had been calculated around the active region of the enzyme and by moving around the glucose molecule with the pen one could mechanically feel the interaction at different positions with the enzyme. Especially at the catalytic site one could feel how the molecule stuck to the enzyme, really cool!

The second floor of the visualization exhibition showed how visualization can aid in the understanding of data and in medicine while the third floor showed an art exhibition with the aid of visualization. There were many things to explore, some of the notables were:

- The famous virtual autopsy board with which one could study the human body interactively
- A heart surgery visualization in which one could see a heart in 3D and feel it beating
- A virtual face which changed accordingly to the person in front of it by interpreting a video signal from a camera
- A mind game which measured the brain signal to score the winner

After coffee and cake we headed to the newly constructed dome theater which features a 15 m in diameter round screen without splices. We were lucky enough to watch two different movies, thanks to Prof. Anders Ynnerman. The first movie was a



stereoscopic animated movie (Fly me to the moon) about the first mission to the moon. The 3D effect and the quality were really impressive. The second movie was a journey from the largest galaxies to the smallest atoms (Allt vi är) and is the first movie which has been produced at the visualization center. After these last experiences it was time to head back to Linköping by the campus bus to end the visit.