

The image features a stylized logo consisting of the letters 'MAXIV' in a bold, grey, sans-serif font. A vibrant yellow swoosh, resembling a comet tail or a stylized 'C', curves over the letters 'A', 'X', and 'I', starting from the right side of the 'A' and ending above the 'I'.

MAXIV

Slides courtesy of Tutti Falk and Axel Steuwer



# MAX IV Laboratory

September 2014

MAXIV

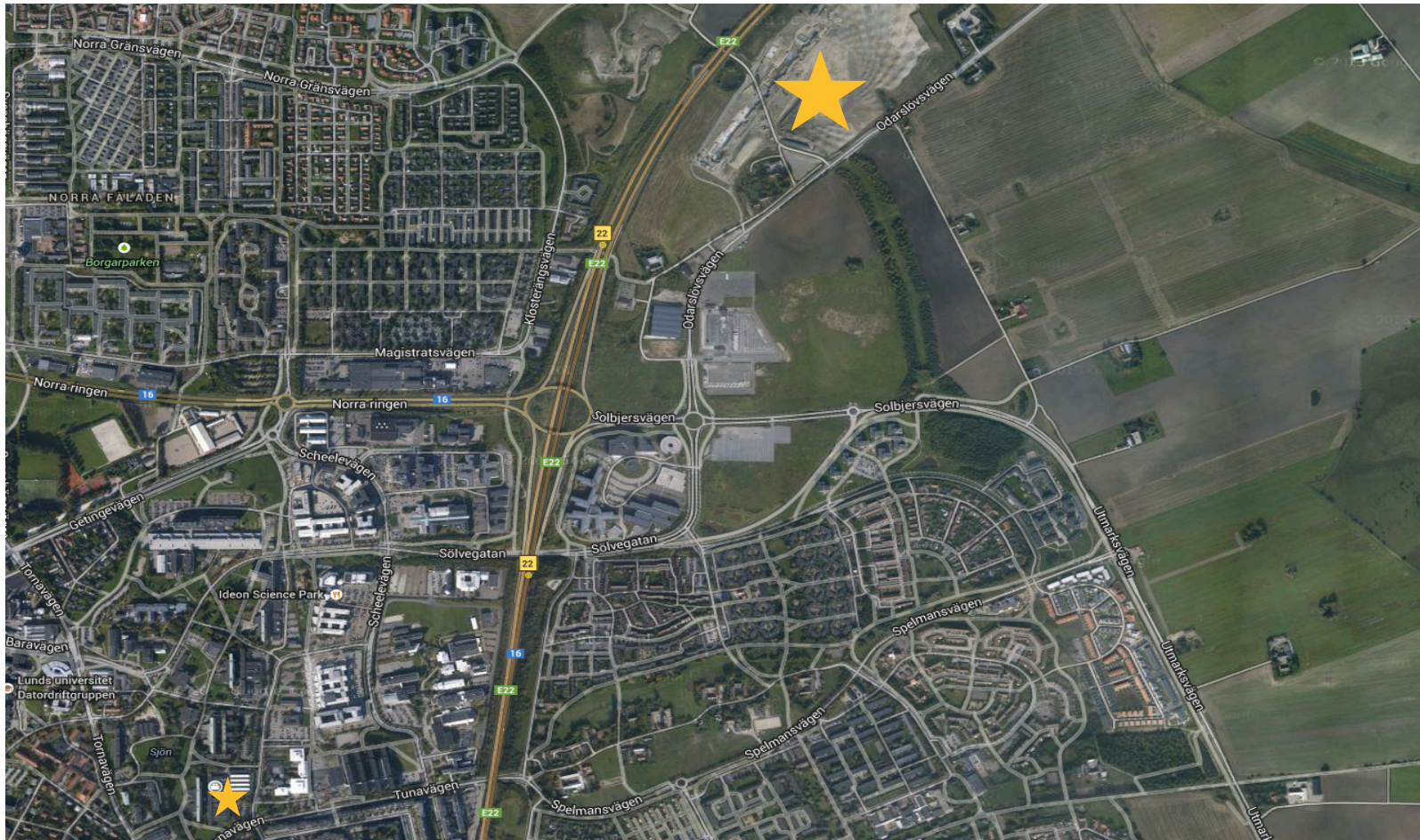
# MAX IV Laboratory



# MAX IV Laboratory

- MAX I inaugurated 1987, MAX II 1995 and MAX III 2007
- MAX IV Laboratory constructed in July 2010 as a Swedish, national synchrotron laboratory operated by Lund University
- Consists of MAX-lab (MAX I, II & III) and the construction of MAX IV at Brunshög in north-east Lund
- Investors: Swedish Research Council, Lund University, VINNOVA, Region Skåne, Knut & Alice Wallenberg foundation and 11 Swedish universities
- Investment:
  - Conventional facilities: 2 billion SEK – contractor is ML4, Lund University tenant
  - Accelerator: 1,3 billion SEK
  - Beamlines: 2,5 – 3,0 billion SEK for a total of circa 26 beamlines

# MAX IV Laboratory



# MAX IV Laboratory

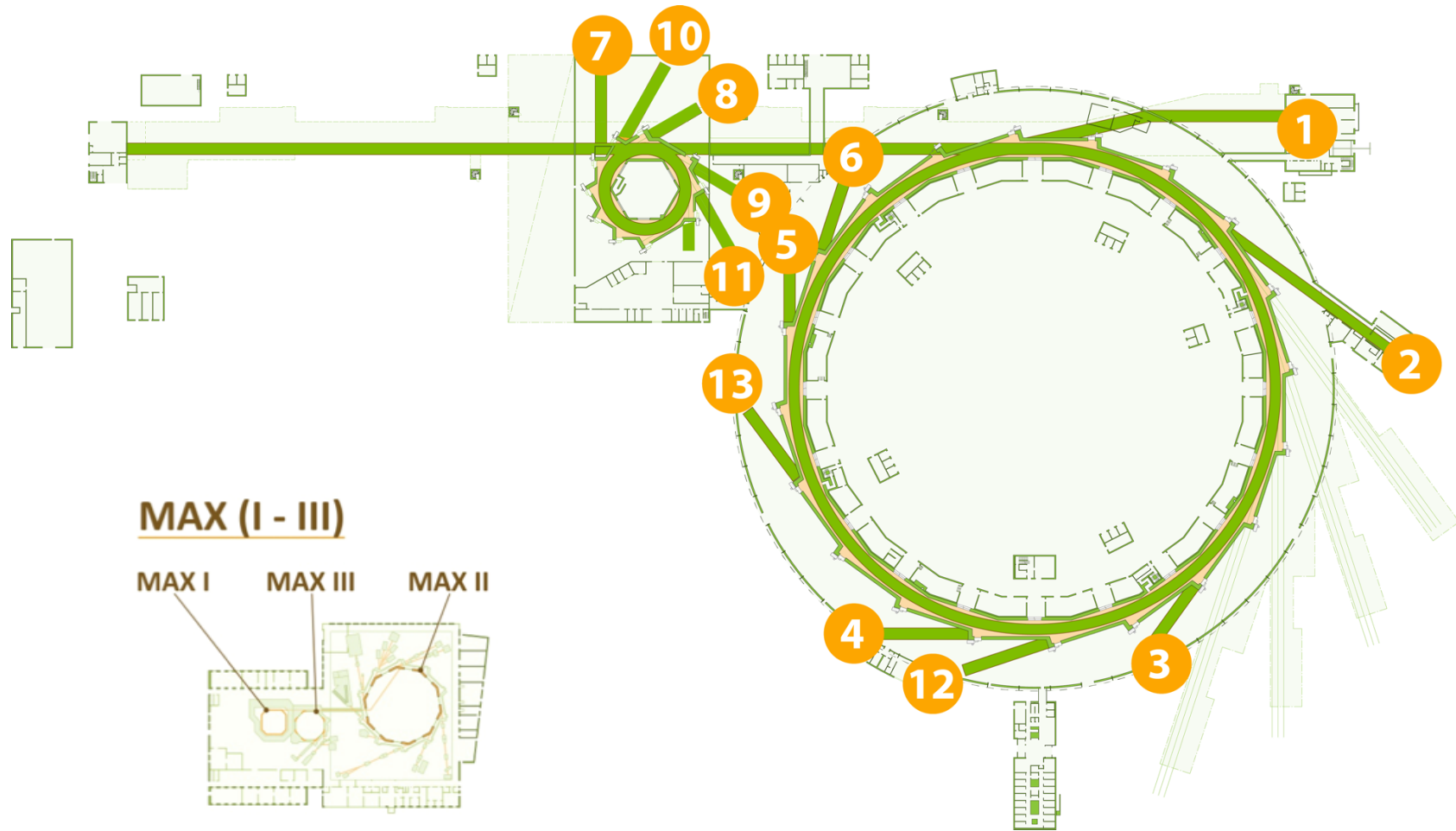


# MAX IV Laboratory



Photo: Perry Nordeng

# MAX IV Laboratory



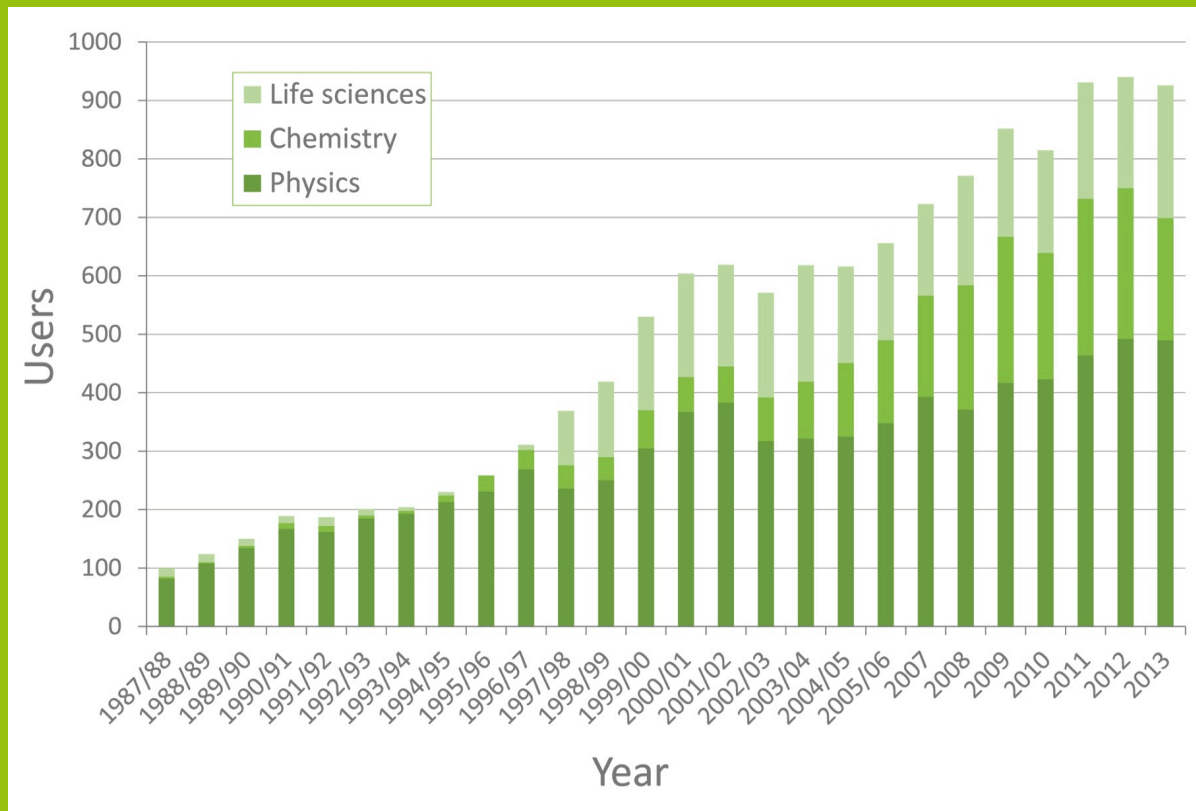


# Research

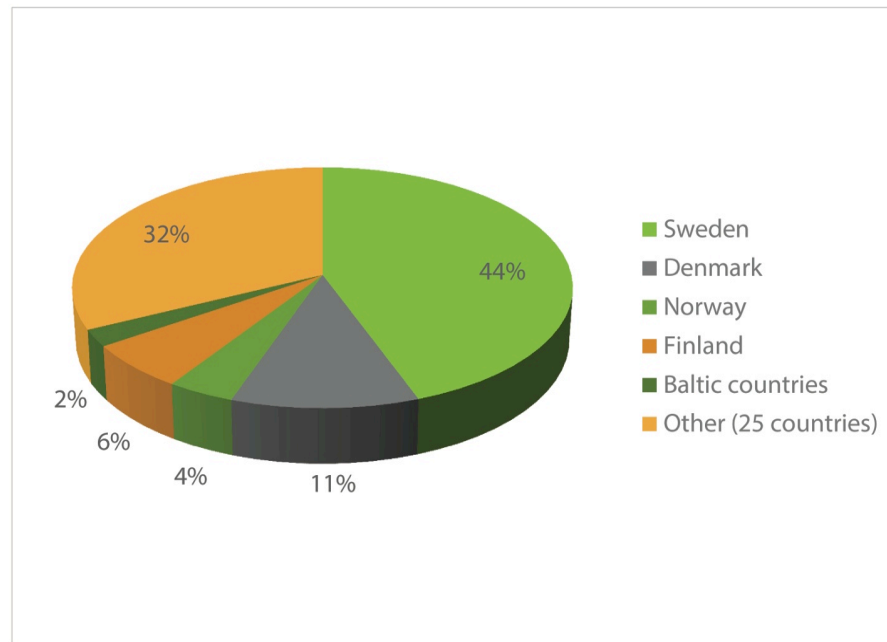
- Synchrotron light is a tool
  - Fields: physics, chemistry, biology, engineering
  - Applications: medicine, material, climate and environment, structural biology, geology, palaeontology, archaeology etc.
- Industry – increasing interest
- Science for Society – growth & welfare



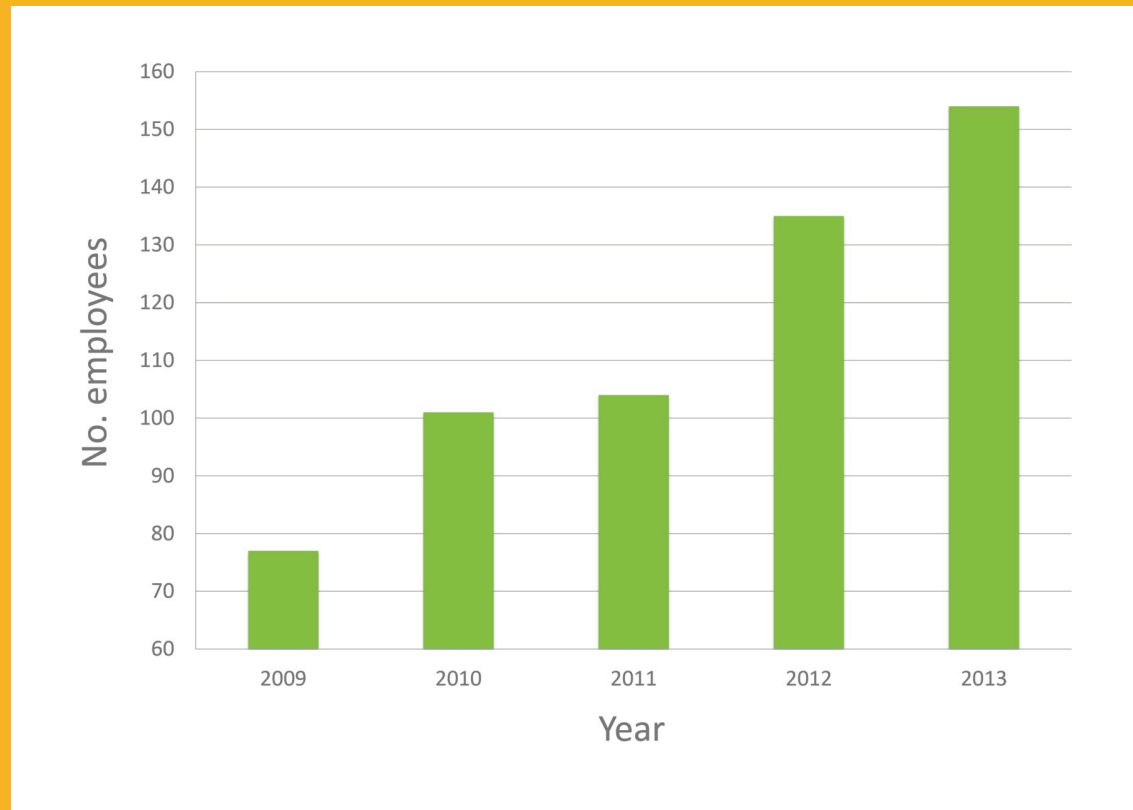
# Research - users




# Research – users 2013



# Employees



An aerial night photograph of a city, likely in the Netherlands, showing a large stadium (the MAX IV synchrotron) and a river. The stadium is illuminated with bright lights, and the surrounding city is lit up with streetlights and building lights. The river is visible in the foreground, and the city extends to the horizon under a dark sky.

MAX IV inauguration: 21 June 2016, 13:08:55

# Join us!

[www.maxiv.se](http://www.maxiv.se)

[facebook.com/MAXIVLAB](https://facebook.com/MAXIVLAB)

[twitter.com/MAXIVlab](https://twitter.com/MAXIVlab)

[linkedin.com/company/max-lab](https://linkedin.com/company/max-lab)

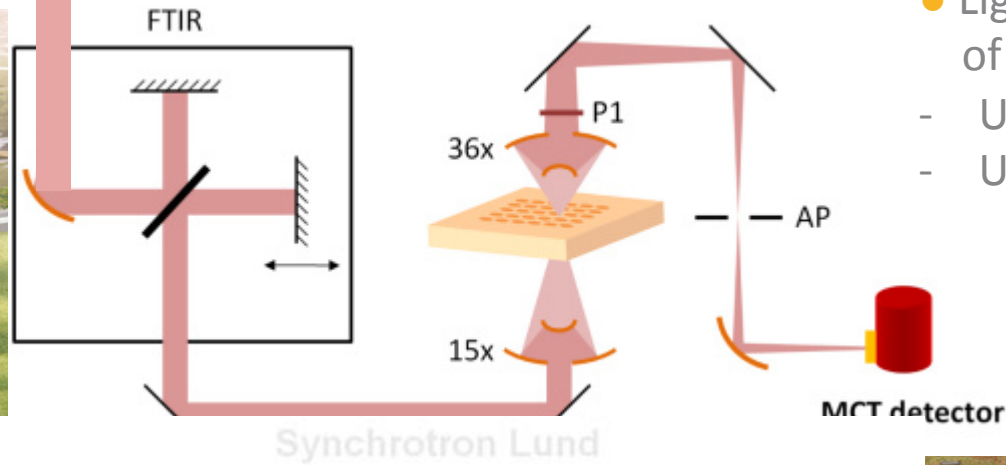
[instagram.com/maxivlaboratory](https://instagram.com/maxivlaboratory)

[vimeo.com/maxiv](https://vimeo.com/maxiv)

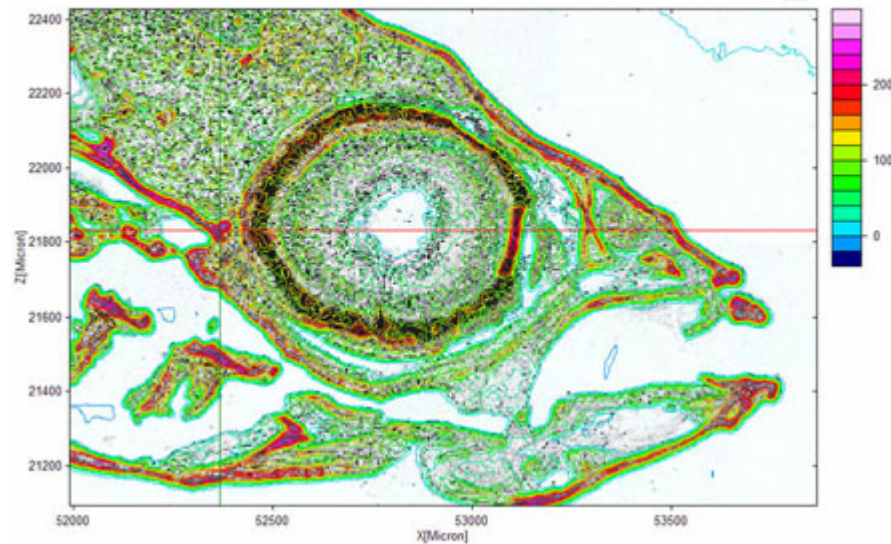
[Youtube.com/user/MAXIVLaboratory](https://Youtube.com/user/MAXIVLaboratory)

beam

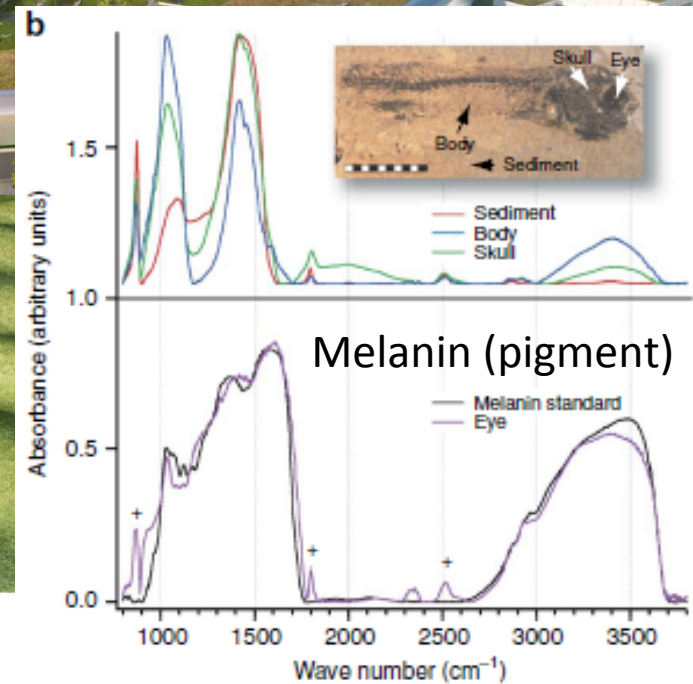
# R spectromicroscopy



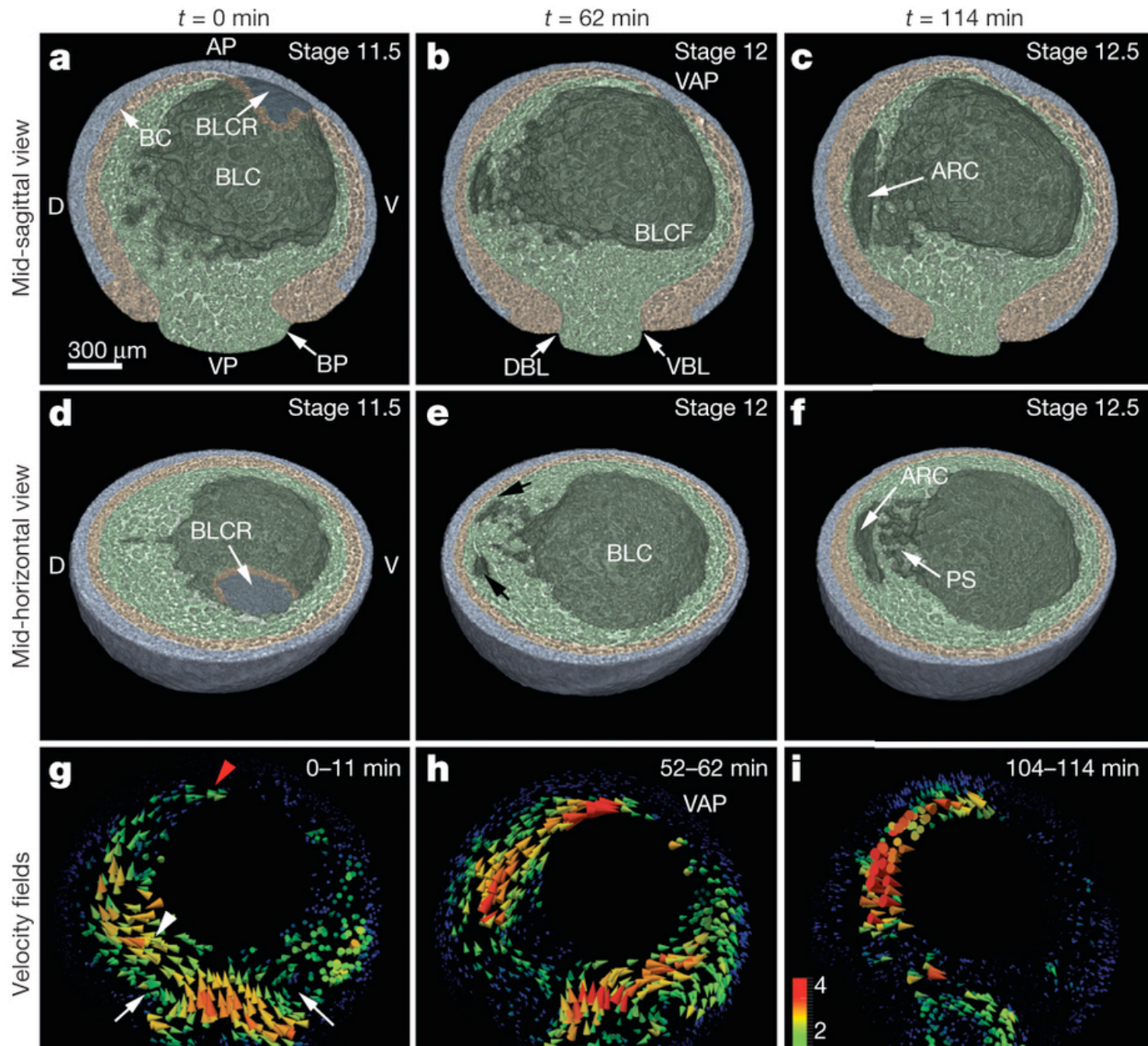
- Light absorption in IR is like a fingerprint of the molecules (characteristic vibrations)
- Use it to image (microscopy)
- Use it to identify molecules (spectroscopy)



ye

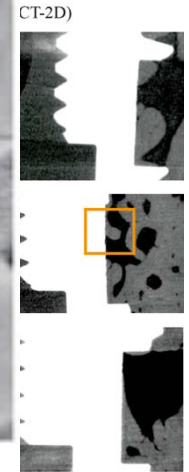
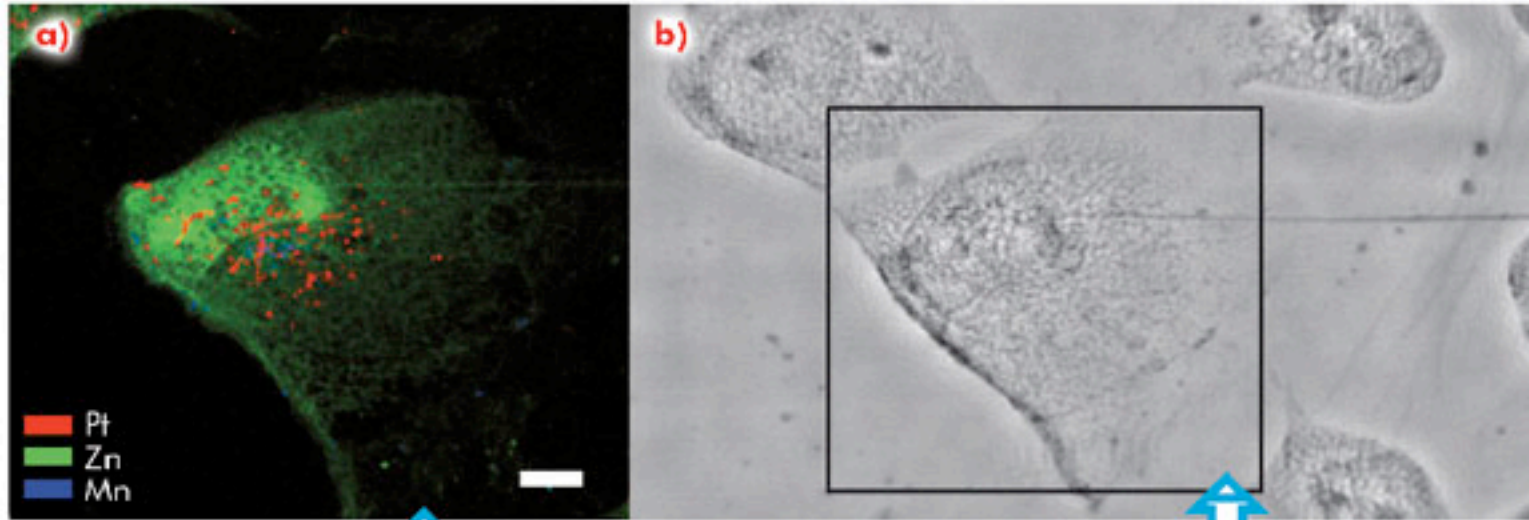


# Pha



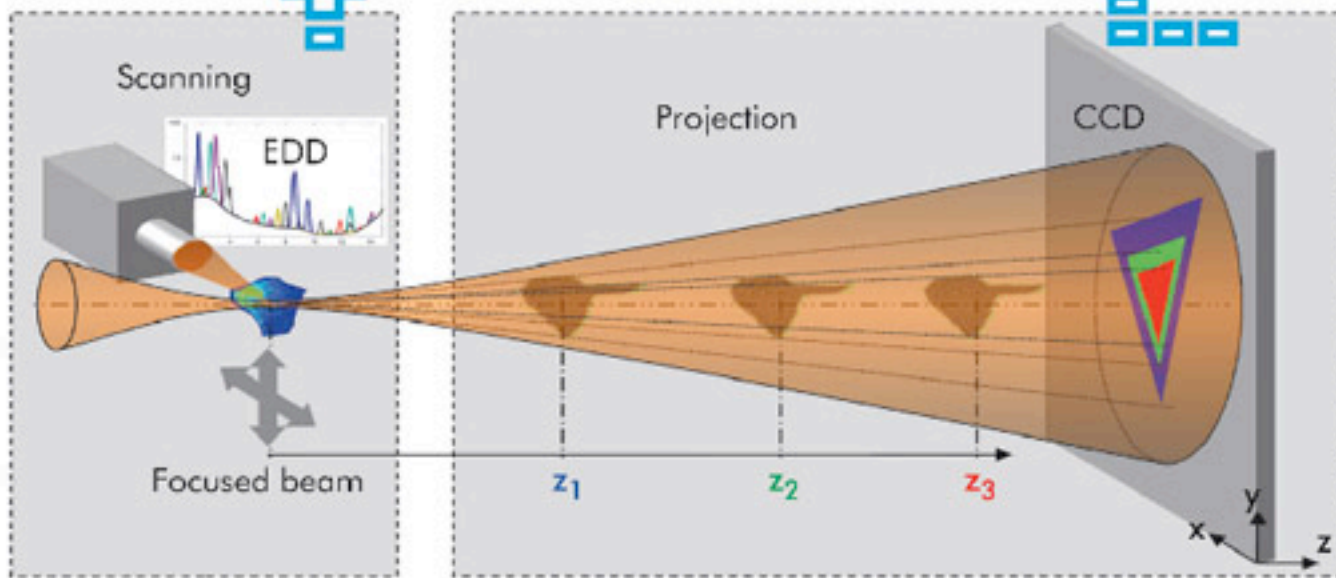


# Medical & Nano-Imaging



implant  
logical

m



Phase-cc

Pfeiffer et al., *Phys. Med. Biol.* 52:6923, 2007

Bernhardt et al., *ECM* 23:237, 2012



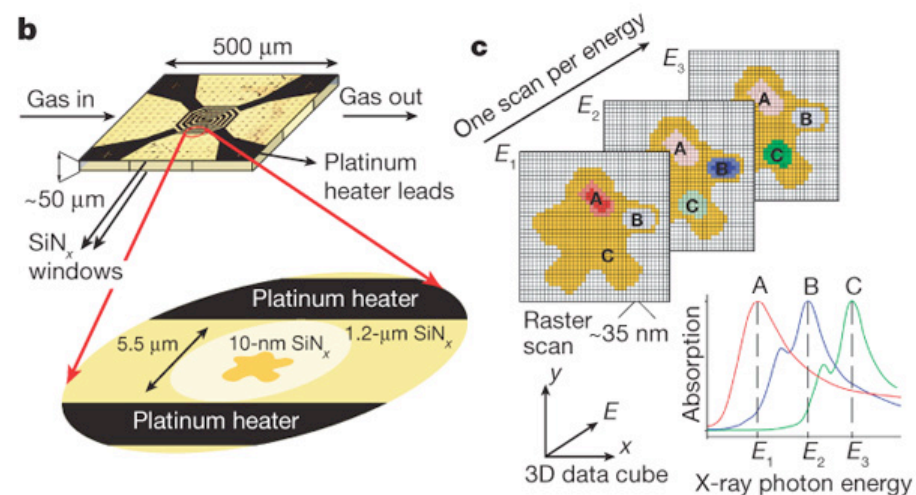
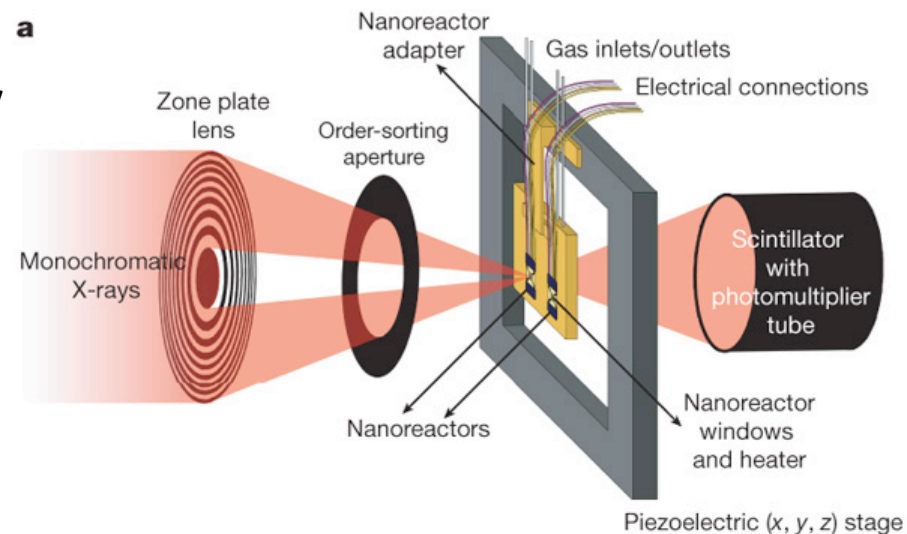
# STXM

## Scanning Transmission X-ray Microscopy

### Nanoscale chemical imaging of a working catalyst by scanning transmission X-ray microscopy

Emiel de Smit , Ingmar Swart , J. Fredrik Creemer , Gerard H. Hoveling , Mary K. Gilles , Tolek Tyliczszak , Patricia J. Kooyman , Henny W. Zandbergen , Cynthia Morin , Bert M. Weckhuysen & Frank M. F. de Groot

*Nature* **456**, 222-225



# Vasa

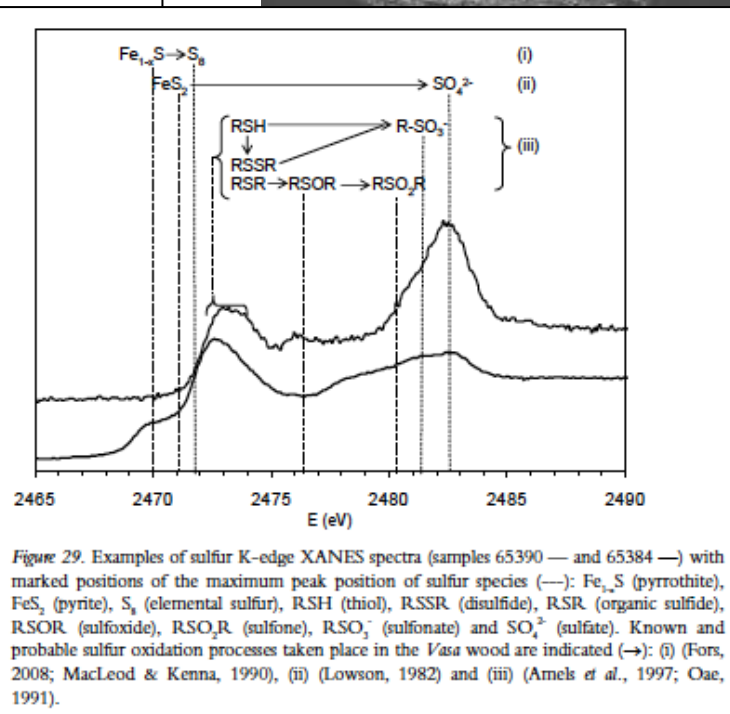
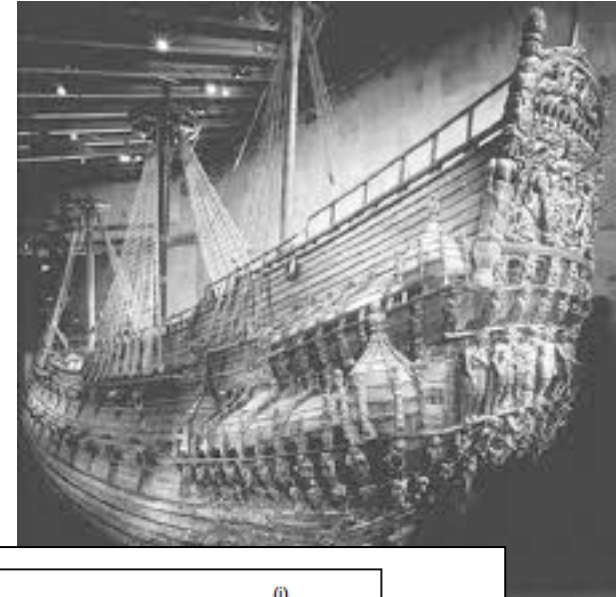
## The Chemistry of the Vasa

- Iron, Acids and Degradation

Gunnar Almkvist

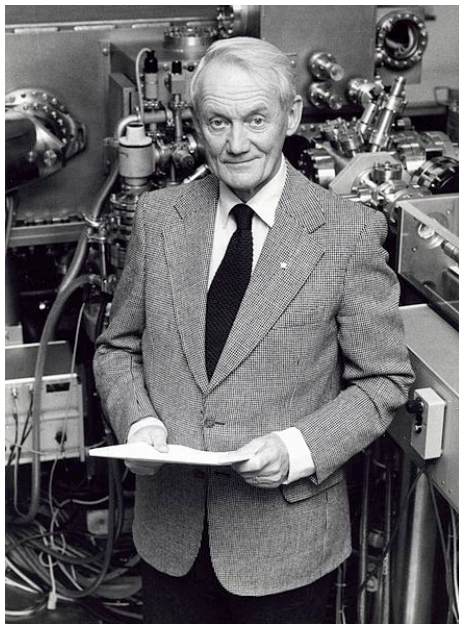
Faculty of Natural Resources and Agricultural Science  
Department of Chemistry  
Uppsala

Doctoral Thesis  
Swedish University of Agricultural Sciences  
Uppsala 2008



# Tradition in Sweden.

- Kai Siegbahn, Nobel Prize 1981 (shared)
- Manne Siegbahn, Nobel Prize 1925



Electron Spectroscopy for Chemical Analysis (ESCA), now usually described as X-ray photoelectron spectroscopy (XPS)

Discoveries and  
research in the field  
of X-ray  
spectroscopy

