



Prof. Ute Kaiser, director of the SALVE project and co-director Dr. Johannes Biskupek (both University of Ulm) welcome together with Prof. Maximilian Haider, director of the CEOS company, the arrival of the SALVE microscope at Ulm University

Super-Microscope SALVE moves to University Ulm

Since today Ulm University offers another superlative: the most advanced low-voltage electron microscope in the world

September 29th, 2017 - It costs 10.6 million euros. It is located in a vibration-damped and fully air-conditioned new building for nearly four million euros. It can make atoms and atomic movements visible in the billionth of a millimeter range. It is intended to promote the research of quantum physicists, chemists and physicians with seven league boots. It is unique in the world - and it has been on the upper Eselsberg since Thursday: the SALVE electron microscope.

Manager of the project is Prof. Ute Kaiser, Head of the group of Materials Science Electron Microscopy at the University of Ulm. She had a double reason to be pleased today as she also celebrated her birthday in parallel to the moving of the super microscope.

Daily to Heidelberg

Kaiser and her 24-member team are working with SALVE for a year, but until now, however, in Heidelberg, 200 km away from Ulm. Here the low-voltage transmission electron microscope, owned by the University of Ulm was on rented premises at the project partner CEOS Company.

Because of the tramway construction on the University Ulm campus, there was initially no suitable place for the highly sensitive instrument. With the Oberberghof a location sufficiently far away from the tram could be found and there the microscope is now able to move in. „Now travelling ended, now we can really move on,“ says Kaiser.

„Two spectacles“

There are many powerful electron microscopes. They operate with higher voltages. The consequence of this is that the investigated materials can incur radiation damage or even be destroyed, „because the electrons run on the samples almost at the speed of the light,“ as Kaiser explained. SALVE saves the materials, it operates with lower voltages. The instrument still has clear vision, because it - and this makes it unique - combines low operating voltages with a new corrector system. „Our microscope has, so to speak, two spectacles,“ explains the material scientist, who has been pursuing and implementing the idea since 2008.

How does science benefit from this? SALVE can make the movements and interactions of atoms visible using low voltages „with unprecedented resolution“ , says Kaiser. One main focus is the investigation of novel materials that are so „thin“ that they consist only of two dimensions. Such building elements, which are only one atom thick, are necessary also for the construction of efficient computers of the future, for example, quantum computers.

Medicine could benefit

In the area of battery research, SALVE is intended to



The four-meter-high housing of the SALVE microscope is mounted

help to make electrochemical processes visible at the atomic level and thus enable more powerful batteries. And medicine, such as AIDS research, could benefit from the ability of the microscope to image single peptides - just to name a few.

The name SALVE has nothing to do with the Latin word for „be greeted“. The abbreviation stands for „Sub-Angstrom Low Voltage Electron Microscopy“. The cost of the instrument is borne by the Federal republic of Germany in the form of the German Research Foundation (5.3 million euros), the state of Baden-Württemberg (3.8 million) and the University of Ulm (1.5 million for the instrument and 2.1 million for the building). And as a completely new building was necessary because of tramway construction, the municipalities of Ulm (SWU) also contributed with 1.8 million Euros to the new building. SALVE project partners of Ulm University were the Heidelberg company CEOS and the US-Dutch company FEI.

SÜDWEST PRESSE

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http://www.swp.de/ulm/lokales/ulm_neu_ulm/super-mikroskop-_salve_-zieht-auf-den-oberen-eselsberg-15810921.html