

**60th IUVSTA Workshop on
Low Energy Spectrometry & Simulation
11th - 13th November 2009, Vienna/Austria**
Sponsored by the Applied Surface Science Division of IUVSTA

I. Brief Scientific Report

Spectrometry of low energy excitations in solids and nanostructures is currently a field of active research in applied as well as fundamental science. This is evidenced by the increasing number of scientific publications in the fields of photonics, plasmonics and related phenomena. Many different experimental techniques exist to probe the dielectric response of solids to incoming radiation or charged particles such as optical absorption spectroscopy, resonant inelastic X-ray scattering, reflection EELS, valence (transmission) EELS and ellipsometry. Modern theoretical approaches include (time dependent) Density Functional Theory, methods based on the Bethe-Salpeter Equation and others. The field of electromagnetic response of electrons at surfaces and nanostructures comprises a broad spectrum of phenomena and is therefore inherently very complex. Therefore, bringing together scientists active in the field allows the required exchange for progress to take place and, moreover, it provides an excellent entry point for newcomers. This was the motivation for organising this workshop.

The scientific committee consisted of Prof. Peter Schattschneider, Prof. Wolfgang Werner, Dr. Michael Stöger-Pollach, all affiliated with the Vienna University of Technology. The organizing committee consisted of the same individuals complemented by Dr. Joachim Luitz and Kerstin Huemer (head and treasurer, respectively, of the "Physicae et Chimicae solidorum Amici"), who were responsible for financial issues and local organisation.

The conference website has been online since March 2009 (<http://www.physik.at/cms/index.php?section=45>) where the support of the IUVSTA for this workshop has been highlighted and the relevance of the workshop for the area of activity of the Applied Surface Science Divisions of IUVSTA was explicitly expressed.

The number of participants amounted to 45, originating from 14 countries (Austria, 15, Germany 11, UK 4, Switzerland 2, Czech Republic 2, Portugal 1, The Netherlands 1, France 1, USA 1, Italy 1, Sweden 1, Hungary 1, Canada 1, Spain 1). The names and affiliations of the participants can be found in the addenda. 10 experts in the field were invited to present surveys of different aspects of this field. The cost for their travel to and accommodation in Vienna was covered by the IUVSTA financial support to the workshop.

The schedule of the scientific programme can be found in the addenda, it was based on invited lectures and complemented by contributed talks and a poster session on Thursday afternoon. All presentations had a very colloquial character, with intensive discussions taking place during the presentations as well as afterwards. The allotted speaking time for invited speakers was approximately 30 minutes, while a time slot of one hour was scheduled, in this way ensuring ample time for discussions. The closing session of the workshop consisted of a panel discussion at Friday at noon time with a duration of a little over two hours, in which current problems were discussed and future trends and perspectives were identified.

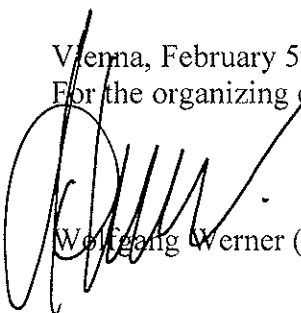
The meeting took place at the "Haus der Forschung" in the Sensengasse in Vienna's 9th city district, a bit out of the center of Vienna, but well within the city limits. During the coffee breaks and lunch (at various restaurants in the vicinity of the meeting premises) informal interaction of the participants took place, as well as at the conference dinner, which was held on thursday evening.

The meeting at many instances during the presentations and discussions gave rise to "culture clashes" between scientists working in different subfields, highlighting new directions of research in the future, while on the other hand it offered a good survey of the state of the art of the field to the participants. The atmosphere during the meeting was one of scientific enthusiasm and, in spite of the sometimes fierce discussions, was always friendly and inspiring.

II. Financial Statement

Here it is certified that the financial support of 10.000.- CHF provided by the IUVSTA for the *60th IUVSTA Workshop on Low Energy Spectrometry & Simulation* was fully used to cover fixed costs, namely the cost for travel and accomodation of 10 invited speakers. The budget of the workshop was balanced, i.e. no loss or profit was made. The organizing committee would at this instant like to express its gratitude to the IUVSTA for their support, which made this meeting possible.

Vienna, February 5th, 2010
For the organizing committee,



Wolfgang Werner (Co-Chair)

Enclosures:
Scientific program
List of Participants

PHYSICAE ET CHIMICAE SOLIDORUM AMICI

Verein der Freunde der Festkörperphysik und -chemie

LESS 2009 - programme

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(subject to change)

In order to ensure the workshop character each lecture is followed by an **extended discussion** of app. 30 min.

| | Wednesday, 11 | Thursday 12 | Friday 13 |
|-----------------------------------|--|--|--|
| 09:00 — 09:30 | <i>Registration & welcome coffee</i> | E. L. Shirley NIST, USA <i>"A Practical Bethe-Salpeter Approach"</i> | W. Sigle MPI Stuttgart, Germany <i>"Excitation of surface plasmons in perforated Ag films by fast electrons"</i> |
| 10:00 — 10:30 | J. García de Abajo San Sebastian, Spain | M. Stöger-Pollach TU Wien, Austria <i>"Dielectric functions obtained with high spatial resolution"</i> | P. Schattschneider TU Wien, Austria <i>"Interferometric EELS"</i> |
| 11:00 — 11:30 | O. Stephan Paris Sud, France <i>"Nano-optics experiments in a STEM"</i> | <i>Coffee</i> | <i>Coffee</i> |
| 12:00 — 12:30 — 13:00 | <i>Lunch</i> | J.Krenn University of Graz, Austria <i>"Optical spectroscopy and EELS on plasmonic nanostructures"</i> | Discussion |
| 13:30 — 14:00 | W. Werner TU Wien, Austria <i>"Transport of low and medium energy electrons for spectrum analysis and experiment design"</i> | <i>Lunch</i> | |
| 14:30 — 15:00 | P. Puschnig MU Leoben, Austria <i>"Reconstruction of molecular orbitals from angle-resolved photoemission"</i> | G. Kothleitner TU Graz, Austria <i>"Low-loss EELS Measurements: Instrumental Aspects and Applications"</i> | |
| 15:30 | <i>Coffee</i> | C. Hébert EPFL, Switzerland <i>"Angular resolved low loss EELS and Cathodoluminescence in the TEM"</i> | |
| 16:00 — 16:30 | E. Chulkov Bilbao, Spain <i>"Electronic structure and excitations in nanostructured surfaces"</i> | | |
| 17:00 | Oral presentations and discussion | <i>Coffee & poster session</i> | |

M. Couillard: "Identifying the nature of plasmonic and photonic

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| | excitations in electron energy-loss spectroscopy" | |
| 17:30 | A. Ruocco: "Plasmon emission in Al(100) surface studied by electron-electron coincidence spectroscopy" | |
| 18:00 | Z. Jánosfalvi: "Electronic structure of nano nano-titania: preliminary results based on ab calculations based on ab-initio" | |
| 18:30 | F. Tian: "Optic properties of single wall nanotubes studied by low loss EELS" | <i>Conference dinner</i> |

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