

SMI 1: Science meets industry

Scientific work relies on sophisticated instrumentation and measurements techniques provided by specialized industries. Such techniques are often developed in close interaction between companies and research groups. This session will provide some insights to state of the art products presented by representatives from several companies.

Time: Wednesday 13:30–15:30

Location: H1

SMI 1.1 Wed 13:30 H1
Collaboration of Science and Industry: Developments towards Novel and Revolutionary Analytical Approaches — ●ANDREAS THISSEN — SPECS Surface Nano Analysis GmbH, Voltastraße 5, 13355 Berlin, Germany

Nowadays modern materials and device developments in industry require a deep analytical insight into relevant materials' properties and their correlation to technical device parameters. The determination of this property-to-device parameter correlation is one of the biggest tasks of modern science. This leads to novel analytical approaches allowing to access the relevant data under relevant conditions. This presentation summarizes new approaches to surface chemical analysis from the perspective of a leading instrument manufacturing company.

5 min. break

SMI 1.2 Wed 13:50 H1
Hamamatsu Photonics – ein „Hidden Champion“ der Optoelektronik — ●CHRISTOPH SEIBEL — Group Leader Academic Solutions, Hamamatsu Photonics Deutschland GmbH, Arzbergerstr. 10, 82211 Herrsching

Hamamatsu Photonics ist einer der weltweit führenden Hersteller von optoelektronischen Detektoren, Lichtquellen und Systemen. Unsere innovativen Lösungen decken ein breites Spektrum ab – von Röntgenstrahlen, über UV- und sichtbares Licht bis hin zu Infrarot- und Terahertz-Wellenlängen.

Unsere Mission ist es, das Leben durch photonische Technologien zu verbessern. Basierend auf dieser Unternehmensphilosophie entwickeln wir kontinuierlich neue Produkte für wissenschaftliche, industrielle und kommerzielle Anwendungen.

Entdecken Sie im Vortrag unseres Experten für High Energy Physics, Dr. Christoph Seibel, die Welt von Hamamatsu Photonics und welche Möglichkeiten sie für junge Talente bereithält.

5 min. break

SMI 1.3 Wed 14:10 H1
Basics and concepts of optical parametric chirped-pulse amplification (OPCPA) — ●ROBERT RIEDEL — Class 5 Photonics GmbH, Notkestr. 85, 22607 Hamburg

Class 5 Photonics delivers ultrafast, high-power laser technology at outstanding performance to advance demanding applications from bio-imaging to ultrafast material science and attosecond science. The basis of Class 5 Photonics' high-power femtosecond laser technology is the nonlinear amplifier concept called optical parametric chirped pulse amplification (OPCPA). The concept of OPCPA combines the laser chirped-pulse amplification (CPA) scheme with optical parametric amplification (OPA). With this powerful combination, the advantages of both methods are merged. Ultrashort femtosecond pulses can be am-

plified at different wavelengths to high pulse energies at high repetition rates.

5 min. break

SMI 1.4 Wed 14:30 H1
Boost your signal detection – while keeping the setup simple — ●CLAUDIUS RIEK and HEIDI POTTS — Zurich Instruments AG, Technoparkstrasse 1, 8005 Zürich

Controlling measurements with high precision and capturing the signals with a good signal-to-noise ratio is vital for outstanding research. At Zurich Instruments, we are passionate about providing cutting-edge instrumentation for advanced laboratories, e.g. lock-in amplifiers, impedance analyzers, and arbitrary waveform generators, and quantum computing control systems.

In this talk, we will provide an overview of the working principles of lock-in amplifiers. We will elaborate on how this can help measure tiny signals buried in noise while reducing the setup complexity for fields from impedance analysis to quantum computing.

5 min. break

SMI 1.5 Wed 14:50 H1
Next steps in Cryogenics — ●DAVID GUNNARSSON — Bluefors Oy, Arinatie 10, 003700 Helsinki, Finland

Cryogenics is an integral part of today's quantum technology and as such it needs to keep the same high pace of development. In this presentation David Gunnarsson will look ahead and present how Bluefors prepares for the next steps in Cryogenics.

5 min. break

SMI 1.6 Wed 15:10 H1
Novel approaches for future challenges in nanofabrication — ●JÖRG STODOLKA — Raith GmbH, Konrad-Adenauer-Allee 8, 44263 Dortmund

Requirements in Electron Beam Lithography (EBL) are becoming increasingly demanding, often exceeding what is possible when using standard patterning technologies. Improving and combining well known technologies enables new approaches for future developments.

We present two examples where cooperation with research groups gave room to a full new range of applications: Stitch-free writing of gratings with sub-nanometer periodicity control for high precision DFB lasers, and EBL at positions preselected by local generation of light detected by Cathodoluminescence spectroscopy for high yield fabrication of quantum devices.

5 min. break