

TMS

15th International Conference on Metal Organic Vapor Phase Epitaxy

May 23-28, 2010 ♦ Hyatt Regency Lake Tahoe



Exhibitor & Sponsor Directory

Exhibitors

AIXTRON

AIXTRON is a leading provider of deposition equipment to the semiconductor industry. The company's technology solutions are used by a diverse range of customers worldwide to build advanced components for electronic and opto-electronic applications based on compound, silicon, or organic semiconductor materials, as well as Carbon Nanotubes (CNT) and other nanomaterials. Such components are used in fiber optic communication systems, wireless and mobile telephony applications, optical and electronic storage devices, computing, signalling and lighting, as well as a range of other leading-edge technologies.

AIXTRON's product portfolio includes:

- MOCVD Equipment based on the Planetary Reactor® or Close Coupled Showerhead® concept, Hot Wall systems for high-temperature applications and research systems
- Atomic Layer Deposition (ALD), Atomic Vapor Deposition (AVD®) and Chemical Vapor Deposition (CVD) for the silicon industry
- Organic Vapor Phase Deposition (OVDP®) Equipment for OLED display and organic semiconductor solutions
- Black Magic CVD and PECVD systems for the deposition of Carbon Nanotubes and Nanofibers.

Akzo Nobel



AkzoNobel High Purity Metalorganics (HPMO), part of AkzoNobel Functional Chemicals, services the semiconductor industry. We specialize in the production of high purity metalorganics sources based on indium, gallium, aluminum, zinc and magnesium. As the only fully integrated high purity metalorganics supplier, we have the longest history in industrial scale metalorganics production. Our products are used in a wide range of industrial and consumer applications, including lasers, solar cells, LED's and mobile phones.

As part of the global AkzoNobel organization, we leverage on its network for distribution, service, manufacturing expertise, global R&D, and expertise in safe handling of metalorganics. AkzoNobel HPMO strives continually to address our customers future needs, looking ahead to find answers to questions they will face tomorrow.

Our dedicated global technical marketing and sales team, comprised of scientists and engineers with experience in both the chemical and semiconductor industry, is available to meet your needs!

Cambridge
Chemical
Company, Ltd.

Cambridge Chemicals

Cambridge Chemical Company manufactures super high purity (DEOX grade) metalorganics for electronic applications. The DEOX grade chemicals have proved significantly better device performance. The company is also involved in OLED and Graphene reagents and is working on a novel TCO based on proprietary ZnO technology.

Dockweiler
Chemicals GmbH

**DOCKWEILER
CHEMICALS**

Dockweiler Chemicals GmbH – "DC" manufactures and supplies ultra pure MO-V precursors (TBA, TBP, UDMHy) worldwide. "DC" develops and manufactures custom-designed cylinders/bubblers for liquid, solid and highly viscous low-vapor-pressure compounds. High-end transfilling processes for toxic, pyrophoric as well as corrosive chemicals have been established.

We offer state-of-the-art comprehensive technical services for bubbler and related technologies, such as cylinder pickup, precleaning, maintenance, refurbishing and waste management.

Supply chain services, consulting and innovations for users and consumers of process chemicals complete our portfolio to serve the semiconductor industry worldwide.

Dow
Electronic
Materials



Electronic Materials

Dow Electronic Materials, a global supplier of materials and technologies to the electronics industry, brings innovative leadership to the semiconductor, interconnect, finishing, display, photovoltaic, LED and optics markets. From advanced technology centers worldwide, teams of talented Dow research scientists and application experts work closely with customers, providing solutions, products and technical service necessary for next-generation electronics. These partnerships energize Dow's power to invent.

The portfolio includes the market-leading OPTOGRADE™ precursors, which are ideal for solar, LED and other compound semiconductor applications. These high-purity materials are a critical enabler for green photonics and green energy generation. State-of-the-art delivery technology from Dow Electronic Materials is also available, including the VAPORSTATION™ Delivery System for bulk vapor delivery to multiple MOCVD reactors, the UNIFLO™ II Cylinder for delivery of solid precursors with exceptionally high depletion rates, and the Liquid Level Switch for monitoring precursor consumption. Dow Electronic Materials delivers *Sources for Superior Devices*™.

Johnson Matthey



Johnson Matthey Gas Purification Technology

Johnson Matthey Gas Purification Technology (GPT) is a supplier of palladium membrane, getter and catalytic gas purifiers necessary to provide parts-per-billion high-purity gases used in compound semiconductor manufacturing processes.

Our customers include the leading worldwide gas companies, LED, fiberoptic and photovoltaic manufacturers, and MOCVD suppliers. Our core competencies in precious metals such as palladium give us advanced expertise in hydrogen purification for all flow rates and inlet gas quality as low as 99.9%.

JM's PureGuard™ regenerable and Wall Mount getter purifiers are available for any flow rate, and our HP Series V-Purge hydrogen purifiers are the standard purifier for MOCVD processes.

Jordan Valley
Semiconductors



Jordan Valley Semiconductors Ltd. Provides materials characterization equipment for thin films based on novel, rapid, non-contacting and non-destructive X-ray technology. For the compound semiconductor industry, JVS offers fast and economic multi-wafer HRXRD tools for high-brightness LED (HB-LED) manufacturing and other III-V compound applications. Our new innovative QC3 diffractometer is an easy-to-use, multi-wafer, High-Resolution Triple-Axis X-ray diffraction system, specifically designed for automated operation. The QC3 is ideal for companies looking for turn-key, automated HRXRD equipment with R&D capabilities. For the Si semiconductor industry, we offer a comprehensive array of tools, based on advanced HRXRD, XRR, XRF, XRD and SAXS technologies, ideal for both product or blanket wafers. Seventy five percent of the world's top 25 semiconductor manufacturers rely on Jordan Valley metrology tools for front-end and back-end applications, including development of next-generations thin films.

K-Space
Associates, Inc.



k-Space Associates, Inc., specializes in *true* real-time acquisition, processing, and analysis for MOVPE and related epitaxial growth applications. Our **kSA BandiT** directly measures sample temperature via band-gap absorption and blackbody emission thermometry with better than 1 degrees C repeatability. **kSA MOS** provides 2D laser-based curvature, bow, tilt, and stress measurement with >50km radius-of-curvature detection capability. **kSA RateRat Pro** uses laser reflectivity to provide real-time deposition rate, film thickness, and optical constants (n,k) of today's most advanced thin film structures. Combined, modular kSA product solutions are now available for most any MOVPE system including, Aixtron, Veeco, TNS, SMI, and customized systems.

Kyocera

THE NEW VALUE FRONTIER



Kyocera is one of the largest ceramic manufacturers in the world and we offer a wide range of oxide and non-oxide ceramic solutions. Sapphire is the most widely used material for base substrates that support the crystal growth of blue, green, ultra-violet and white LEDs. Sapphire is considered the optimal choice for GaN compound semiconductor processing due to its crystal growth capability and the fact that it can be mass-produced.

LayTec GmbH

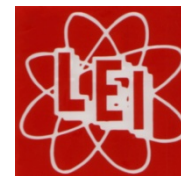


LayTec is a major provider of in-situ optical metrology systems for thin-film processes. Its equipment is used in industry and R&D institutes world-wide for optimising material quality and obtaining run-to-run reproducibility in epitaxy-based opto-electronic and electronic applications. During MOVCD, MBE and other thin-film growth processes the systems measure all key growth properties with extreme precision already during the deposition process!

The ability to control your deposition process in real-time offers high benefits: anomalies are quickly identified and corrected, development cycles are accelerated, transfer and ramp up of established processes to new lines are facilitated and conditions are easily re-established after maintenance. This all adds up to greater yields and reduced costs.

For more information please visit www.laytec.de.

Leighton
Electronics



LEI provides measurement of the following: contactless sheet resistance/resistivity, thickness measurement & mapping, bulk and conductive thin films (on wafers to 300 mm and flat panels), PHEMT 2DEG mobility measurements on production wafers. We also provide high spatial resolution N vs. X profiling of EPI and sharp structures. Systems range from benchtop to Robotic sorting systems.

Lorex Industries



Lorex Industries manufactures the award winning Piezocon Vapor Delivery System and the Piezocon Dopant Mixing System, both used for precise precursor and dopant delivery in CVD processes. In MOCVD processes, the Piezocon allows the use of virtually all metal organic material from the bottle while maintaining improved process control, eliminating the waste and tool down-time associated with changing out bottles with 10%-15% remaining due to concentration shift. Come to our booth to see an active demonstration of the Piezocon technology.

Matheson
Tri-Gas, Inc.



Matheson Tri-Gas, Inc. is a single source for industrial, medical, specialty and electronic gases, gas handling equipment, high performance purification systems, engineering and gas management services, and on-site gas generation with a mission to deliver innovative solutions for global customer requirements. Matheson Tri-Gas, Inc. is the largest subsidiary of the Taiyo Nippon Sanso Corporation Group, one of the five largest suppliers of industrial, specialty, and electronics gases in the world.

Nanometrics **nano**metrics

Supplier of process metrology equipment to semiconductor, HB-LED, solar manufacturers and researchers worldwide. Products include photoluminescence (PL) mapping, hall mobility measurement and electrochemical CV systems used to measure electrically-active profiles in most semiconductor material systems. For photovoltaic applications, Nanometrics offers FTIR and film thickness systems that measure solar materials with textured surfaces, and a PL imager for solar production lines.

Noah
Precision



For over 25 years Noah Precision has been in design, manufacturing, distribution, service & support of thermoelectric chillers. We have an installed base over 10,000 units worldwide. Our chillers have no refrigerants and use up to 80% less electricity than comparable compressor based chillers. Noah is the GREEN CHILLER LEADER.

Nuance Systems
Corporation



Nuance Systems is a leading Contract Manufacturer in Portland, Oregon, specializing in Semiconductor, Solar, and LED markets. NSI is DOT 4B certified and delivers on time ultra high purity cylinders, built in class 10 cleanrooms, tested and packaged to your critical standards. NSI can stock your cylinders, reducing your lead times. We help chemical manufacturers grow their high purity chemical business. We assist OEM process engineers by offering them custom cylinders with different configurations and size. Our customers turn to us to build new cylinders and to rebuild their old cylinders.

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Optical Reference
Systems (ORS) Ltd.



Provide *in situ* metrology solutions for many types of thin film deposition systems.

Compatible with all major reactor designs and with many successful installations on reactors and chambers, the ORS EpiEYE and ARC series of *in situ* devices are accurate and adaptable for the successful deposition of thin films.

Solutions include:

- Emissivity corrected pyrometry
- Growth rate
- Wafer bow/curvature, symmetrical and non symmetrical

Whether you are growing Nitrides, III-V and II-VI and oxides for LED's VCSEL's, HFET HEMT, QCL's, Solar cells etc, in production or R&D; ORS has the *in situ* metrology solution you require.

Custom solutions are the speciality of ORS and with many successful installations; you buy in the knowledge that you are getting the best solution for your requirements.

Power+Energy, Inc.



Power + Energy, Inc. manufactures Pd micro-channel Hydrogen Purifiers which deliver ultrapure 9-9's (99.9999999%) hydrogen from any hydrogen source including industrial grade hydrogen and hydrogen generators. Ideal for MOCVD and related processes for applications such as LEDs, Lasers, power and high frequency devices and materials including SiC, GaN, InGaN and photovoltaics.

P+E offers purifiers with capacities for bench-top applications, dedicated tool purifiers and centralized fab hydrogen supply and P+E's purifier capacities range from 1 slpm up to 320 NM³/hr (5,833 slpm). P+E's purifiers offer consistent purity, high reliability, maximum hydrogen recovery, small footprint, low power consumption, minimum maintenance and low cost of ownership.

PVA TePla AG



PVA TePla is a world leader for the production of high-temperature and low pressure vacuum treatment equipment. Our core competencies are in the fields of sintering and graphite purification as well as crystal growth, metrology and a broad spectrum of material treatment.

The company specializes in development of leading technologies for treatment of graphite materials, such as wafer carriers, used in epitaxial processes. Our products are focused on short cycle times, low media consumption and highest flexibility in terms of process control. Our design features incorporate the highest quality components available and combined together with our comprehensive process controls our equipment provides end users with excellent reliability, reproducibility, and product quality.

Our equipment is tailored according to the unique technical requirements of the customer.

SAFC HiTech



SAFC Hitech- Dedicated to the compound semiconductor industry

SAFC Hitech™ provides a unique chemistry service translating application understanding into performance materials worldwide. Through our established long-term collaborative partnerships we continue our leadership position as THE reliable and responsive supplier to the compound semiconductor industry.

Unmatched expertise in high-volume manufacturing and proprietary purification technologies ensure we deliver batch-to-batch consistency in every chemical order. Our products are backed up by experienced chemistry development personnel, manufacturing and project management expertise, analytical techniques that can measure the lowest detection limits in the industry, computerized order tracking, state-of-the-art cylinder preparation and transfill processes, a strong supply chain network and strategically placed, commercial-scale global manufacturing facilities. Technical support relating to precursor choice and use is provided through an industry respected team of experts.

Customers recognize SAFC Hitech as the industry leader in supplying metalorganics. Committed to an integrated approach - from chemical manufacturing to point-of-use, and reinforced by a strong service network for local support, SAFC Hitech continually invests in innovation and manufacturing to enable existing and future technologies. Our pioneering approach helps our customers resolve chemical challenges and ensures a constant supply of materials - how and where they are required.

Signet Products



For 25 years, Signet Products has been making innovative, quality and cost effective replacement parts for semiconductor manufacturing systems. Signet replacement parts are used in VG (Riber), Riber, EMCORE (VEECO), Veeco, and Aixtron systems as well as for ion implantation, PVD and sputtering tools.

Signet is proud of our customer service, product quality and attention to detail. In addition, all of our products are carefully cleaned and packaged and are ready for use in the clean room.

Where possible, by customer request or by our suggestion, we will improve the design of a part to enhance tool performance, lower part costs or increase part lifetime.

Signet's best references are our customers. Feel free to ask other tool users in the MBE, MOCVD or ion implanter business and it won't be long before you find a satisfied user of Signet Products.

STR Group



STR provides specialized software and consulting services for computer modeling and optimization of bulk crystal growth (PVT, HVPE, and growth from melt), epitaxy (SiC, III-V, and III-nitrides), and semiconductor device operation (analysis of LED/LD structure operation, heat transfer, current spreading, and light emission).

Structured Materials, Inc



Structured Materials Industries, Inc. (SMI) sells *custom* MOCVD, PECVD, CVD, ALD, and HOVPE systems and components for manufacturing and researching thin films of Nitrides, Graphene, TCO's, Chalcogenides, Oxides, Superconductors, Carbides, Nanowires, and other materials. Our engineering staff caters to customization requirements. Equipment sales are supported by an in-house applications laboratory featuring several MOCVD tools and analytic equipment among other resources. SMI's applications laboratory is also used to research new materials, processes and device structures under contract or in collaborative efforts. SMI also provides government contract teaming and development services. Please contact SMI for all you process development and deposition system needs at (732)-302-9274 or sales@structuredmaterials.com and review our web site at www.structuredmaterials.com.

Taiyo Nippon Sanso Corp



TAIYO NIPPON SANSCO Corporation (TNSC) is a MOCVD system supplier as well as an industry gas manufacturer.

As your total solution, TNSC is committed to installing "The Turn Key MOCVD system".

We are happy to make you our only MOCVD system.

Valence Process Equipment, Inc.



Valence Process Equipment (V.P.E.) is a NEW Metal Organic Chemical Vapor Deposition (MOCVD) Equipment Company. We address the evolving demands of the Compound Semiconductor Market with innovative & cost effective CVD equipment solutions. In particular, Valence Process Equipment has engineered "state of the art" technology including an adjustable proportional flow injector, chemical feed stream separation, and flow guides to optimize crystal quality. The end result is a fast-ROI enabled through reduced gas and chemistry usage, while ensuring abrupt layer switching and compositional uniformity.



Veeco is an MBE equipment technology leader and trusted industry partner. Through years of proven performance, Veeco again raises the bar with a world-class MBE system for efficient advancement of R&D. Find out why the MBE community is choosing the GEN10, no matter what the application. Visit www.veeco.com/mbe_emc or stop by our booth at the conference.

Wafer Technology



Wafer Technology, a member of the IQE plc group of companies, manufactures the world's broadest range of III-V substrates (GaAs, InP, GaSb, InSb and InAs) using both VGF and LEC growth techniques. Material is supplied as epi-ready substrates in 2", 3" and 4" diameter. All products are manufactured at the company's Milton Keynes (U.K.) headquarters according to ISO 9001/14001 certified processes.

WEP



WEP (www.wepcontrol.com) is presenting the Wafer Profiler CVP21 to measure doping profiles in semiconductor layers (Si, Ge, SiC, III-V as GaAs, InP, Ternary/Quaternary/Nitrides, II-VI as ZnO) by Electrochemical Capacitance Voltage Profiling (ECV Profiling) in a completely automated system, ready to handle the full range of sample sizes from 2*4mm up to 8" wafers. In comparison to SIMS, ECV has the advantage that it measures directly the electrical activation of the doping. In comparison to Hall, ECV has the advantage that it shows how the doping depends on depth, and that it works for any substrate type – the substrate can be conductive, any number of interlayers can exist, and layer interfaces may be analyzed. Furthermore ECV can be used to analyze samples with textured surface.

Corporate Sponsors

ICMOVPE is grateful for the support of our corporate sponsors to help make this year's event a success:

Events

- Conference Banquet sponsored by AIXTRON
- Conference Banquet Reception sponsored by SAFC HiTech
- Conference Welcome Reception sponsored by Akzo Nobel
- Panel Discussion sponsored by SAFC HiTech

Session Breaks

- Monday morning break sponsored by Veeco
- Tuesday morning break sponsored by Dow

Attendee Amenities

- Attendee bags sponsored by Matheson Tri-Gas and Taiyo Nippon Sanso Corp
- Attendee lanyards sponsored by LayTec GmbH
- Attendee hotel access key cards sponsored by Veeco

Speaker Support

- GHO Ventures
- Laytech GmbH

Additional Support

Additional support from the following agencies is also gratefully acknowledged:

- Air Force Office of Scientific Research
- Army Research Office
- Office of Naval Research
- Sandia National Laboratory

Upcoming Learning Opportunities

TMS Electronic Materials Conference: June 23-25, 2010 at the University of Notre Dame

The TMS Electronic Materials Conference is the premier annual forum on the preparation and characterization of electronic materials. Attendees include individuals actively engaged or interested in electronic materials R&D. This conference presents both invited and contributed oral presentations, an exhibition, and related activities. <http://www.tms.org/Meetings/Specialty/EMC10/home.aspx>

Materials Science & Technology Conference – MS&T'10: October 17-21, 2010, in Houston, Texas

MS&T offers an unrepeated technical program addressing structure, properties, processing and performance across the materials community. Since corrosion has become a very relevant topic to materials, NACE International will co-sponsor MS&T'10. www.matscitech.org

TMS 2011 Annual Meeting & Exhibition: February 27-March 3, 2011, in San Diego, California

The TMS Annual Meeting & Exhibition brings together more than 3,800 business leaders, engineers, scientists and other professionals in the materials field for an outstanding exchange of technical knowledge leading to solutions in the workplace and in society. www.tms.org/TMS2011

Try TMS Membership

ICMOVPE attendees are invited to enjoy a free trial membership to TMS, the professional society for materials scientists and engineers. Contact a TMS representative at the ICMOVPE registration desk or contact TMS at membership@tms.org.

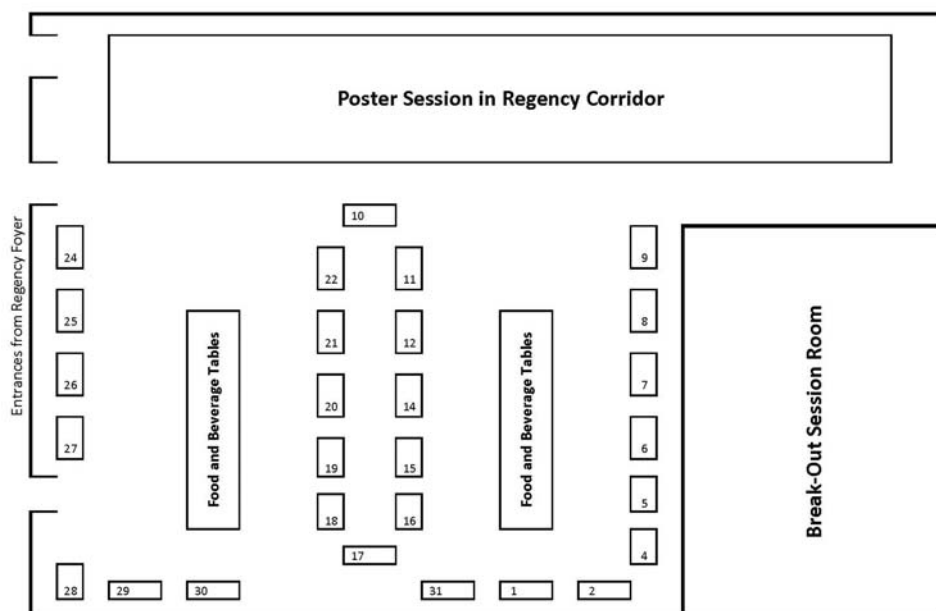


Exhibit Area Information

Exhibit Hours

	Monday, May 24	Tuesday, May 25	Wednesday, May 26	Thursday, May 27
Exhibit Hours	3 to 6:30 pm	8 am to 6 pm	8 am to 1 pm	8 am to 6 pm
Special Events:				
Morning Break	Exhibit Closed	9:30 to 10 am	9:30 to 10 am	9:30 to 10 am
Afternoon Break	3:30 to 4 pm	3:30 to 4 pm	Exhibit Closed	3:30 to 4 pm
Other Events	Exhibit Reception 5 to 6:30 pm	Poster Session 4 to 6 pm		Poster Session 4 to 6 pm

Exhibit Floor Plan: Regency Ballroom



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