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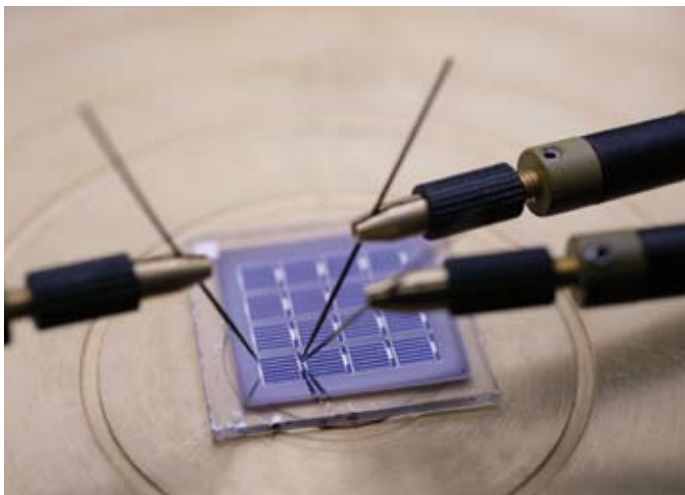


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Program

*14 and 15 April 2011
in Adlershof, Berlin*

Thin-Film Industry Forum 2011

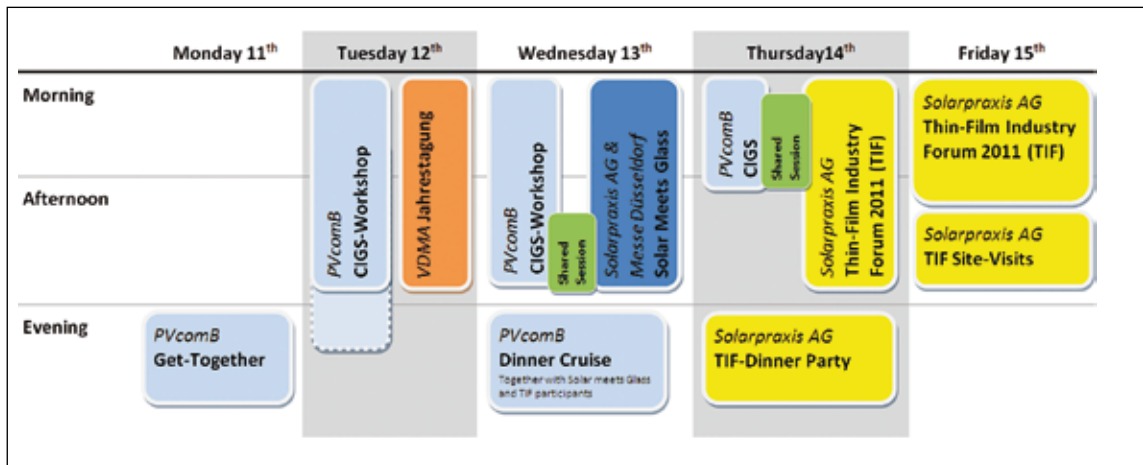
*Technology, Policies, Market & Financing,
Production & Development*

Including Program for Solar meets Glass 2011

HZB Helmholtz
Zentrum Berlin



as a part of 3rd Photovoltaics Thin-Film Week



3rd Photovoltaics Thin-Film Week 2011

World's largest thin-film event –
11–15 April 2011

The PV Thin-Film Week is the world's unique week devoted to thin-film photovoltaics. During the week, specialized scientific workshops meet with a practical industry forum on topics such as market development, production and financing. Both experts from R&D as well as executives and managers from the solar industry will meet at this international event in Adlershof. Additionally, investors and representatives from the press and politics will be present.

Once more, the Photovoltaics Thin-Film Week will create a unique bridge between science and industry. The Thin-Film Week is a cooperation of Solarpraxis AG and PVcomB. The Photovoltaics Thin-Film Week combines a variety of events:

Monday 11 April – Thursday 14 April

PVcomB 2nd International Workshop on CIGS Solar Cell Technology (www.pvcomb.de)

The workshop consists of invited talks and discussions on present status and future prospects of compound semiconductor technologies. The number of participants will be limited to about 100. Activities in the CIGS sector are booming worldwide and accordingly we are looking forward meeting CIGS-experts from Asia, Europe as well as the USA.

Wednesday 13 April

Solar meets Glass (www.solarpraxis.de)

The 2nd Industry Summit for Quality, Logistics and Materials“ brings together the solar and glass industry in order to discuss the current issues of both sectors. After a market and technology overview of photovoltaics and glass, the focus will be on the topics of quality, logistics and material matters. The conference is a cooperation between Solarpraxis AG and Messe Düsseldorf GmbH.

Thursday 14 April – Friday 15 April

Thin-Film Industry Forum 2011 (www.solarpraxis.de)

Technology, Policies, Markets & Finance, Production and Development

The Thin-Film Industry Forum 2011 will look at all the current issues around thin-film technology – from the political environment, through market growth expectations, finance and bankability, to production matters, quality assurance, recycling and laser technology. The Thin-Film Industry Forum will form a key event that will bring the players of the solar industry together with representatives from politics, the financial world, the press and the industry's suppliers. About 300 participants from all over the world are expected. Leading scientists and leading companies from the thin-film industry are supporting this unique event and will be presenting the current development status of thin-film technologies. As a part of the conference program, a number of visits to the premises of leading thin-film producers in the Berlin region are planned.

The Thin-Film Industry Forum

Site visits to thin-film manufacturers

Friday, 15 April

A number of visits to the premises of thin-film manufacturers in the Berlin region will take place on Friday, 15 April, as extras to the conference program.

The events are free for participants of the Thin-Film Industry Forum.

Thin-film producers will be offering a guided tour of their premises for invited guests. The number of places will be limited and the companies retain the right to consent to the selected visitors. Solarpraxis AG cannot make any guarantees concerning these site visits.

Registration for the site events

The companies who offer the guided tours will be published on the website www.solarpraxis.de

To apply for one of the visits, please declare the company and send an email to

anja.kleppek@solarpraxis.de.

The visits will be by invitation only.

We will confirm your invitation as soon as we have received consent from the company concerned.

Do not hesitate to contact us if you have any questions or need any further information.

Wednesday, 13 April

19.00 o'clock: Meeting for opening boat trip together with scientists attending thin film week and participants of Solar meets Glass

All participants of the PV Thin-Film Week as well as interested persons are invited to take part in a dinner cruise in central Berlin. The boat trip offers excellent opportunities for networking in a relaxed atmosphere.

Participation fee: 70 EURO,

The trip is not included in the participation fee of the Thin-Film Industry Forum 2011.

The trip is the evening event of the Solar meets Glass and therefore included in the participation fee of that event.

Registration and more information on:

http://www.helmholtz-berlin.de/projects/pvcomb/tfw11/index_en.html

Contact: Erik Zürn, pvcomb@helmholtz-berlin.de

Thin-Film Industry Forum 2011

Thursday, 14 April 2011

8:00 Registration and get together with snacks and drinks

Opening session

9:00 Opening speech

• *Karl-Heinz Remmers, Solarpraxis AG*

9:15 Political environment and its perspectives for thin-film photovoltaic

• *N.N., BMU, tbc*

9:45 Thin-film technology – an overview

• *Dr. Wolfgang Herbst, centrotherm photovoltaics AG*

10:15 Financing and market outlook

• *Götz Fischbeck, BHF-Bank Aktiengesellschaft*

10:45 Questions and discussion

11:00 Coffee break

CEO Panel: Market situation, political frameworks and business competition in the thin-film PV sector

Key issues: How do leading thin-film companies judge the current political situation? What do they expect in 2011 and 2012? And what will be the consequences for the thin-film PV industry? How do companies expect the world-wide market to develop in the short/medium term? Which markets do they expect to be the most promising ones? Will production stay in Germany? Are companies planning to build production facilities outside Europe or in Germany/the EU? Are they seeking to centralize or decentralize their production chain? What about the market situation around quality issues? Is the industry's quality assurance state-of-the-art or not?

11:30 • **Chair:** *Karl-Heinz Remmers, Solarpraxis AG*

• *Stephan Hansen, First Solar*

• *Volko Löwenstein, Inventux Technologies AG*

• *Dr. Nikolaus Meyer, Sulfurcell Solartechnik GmbH*

• *Dr. Karsten Otte, Solarion AG*

• *Hartmut Fischer, AVANCIS GmbH & Co. KG*

• *Dr. Lars Stolt, Solibro GmbH*

13:00 Lunch

Forum 1 | Thursday, 14 April 2011

Leading thin-film manufacturers and their current status quo: Challenges in the technology, and its production and application

Key issues: Where do thin-film companies stand? Where do they see themselves in the evolution of the global marketplace? What's their outlook for 2011? What investments are planned? What is the status of the production technology? Which fields of application are being focused upon? Have efficiencies improved in 2010? What is the prognosis for 2011 and 2012? What can be financed from the development side? Which technology will prevail and why? What are the production plans for 2011– 2013?

14:30 Introduction and chair: Dr. Henning Wicht, isuppli
• *Dr. Florian Holzapfel, Calyxo GmbH* • *S. C. Gau, Best Solar Hi-Tech Co., LTD.* • *Michael Povlin, Abound Solar* • *Flora Kuo, NexPower Technology CORP, tbc* • *Dr. Helmut Stiebig, Malibu GmbH & Co. KG, tbc* • *N.N., SUNGEN International Limited*

16:10 Questions and discussion

16:30 Coffee break

Production matters:

Future production strategies for high efficiency

Key issues: High production capacities are needed to drive down the manufacturing costs of thin-film based modules. There are two ways to scale-up: copy your existing plant or buy turn-key extensions. Which strategy leads to success? What are the pros and cons? Which are the biggest players at the moment?

• **Chair:** *Dr. Olga Papathanasiou*

17:00 Turn-key production lines for high efficiency CIGS manufacture

• *Claus Kuhn, Manz Automation*

17:15 Proprietary manufacture of CIGS modules

• *Dr. Lars Stolt, Solibro GmbH*

17:30 Thin-film silicon production strategies – Turnkey vs single equipment

• *N.N., Oerlikon Solar AG*

17:45 Best of class for a-Si/ μ c-Si production

• *Flora Kuo, NexPower Technology CORP, tbc*

18:00 tba

• *Dr. Frank Stubhan, centrotherm photovoltaics AG*

18:15 Questions and discussion

18:30 End of the conference

19:30 Dinner

Forum 2 | Thursday, 14 April 2011

Financing and Bankability

Key issues: What is the current situation for thin-film suppliers when facing investors and bankers? What criteria do investors use? What issues must companies work on? Is it possible to get any money for building up thin-film factories at present? What about projects: Will they be financed in the future? What are the different financing strategies, and what about risk transfer?

• **Chair:** *Thomas Maslin, IHS Emerging Energy Research*

14:30 Sarasin Solar Report 2010 – Thin-film PV market outlook; Bankability of thin-film modules

• *Matthias Fawer, Bank Sarasin & Cie AG; Matthias v. Armanberg, ACCELIOS Solar GmbH*

14:45 Thin-film PV from an investors point of view

• *Dr. Frank Siebke, Good Energies*

15:00 Financing Start-Ups in the CIGS sector

• *Jochen Moesslein, Polysecure GmbH*

15:15 Risk Transfer for Photovoltaic Systems

• *Dr. Michael Härig, Marsh GmbH*

15:30 Discussion panel

• *Matthias Fawer* • *Matthias v. Armanberg* • *Dr. Frank Siebke* • *Michael Härig* • *Leonardo Cartei, UniCredit Leasing S.p.A.* • *Felix Goedhart, Capital Stage AG*

16:30 Coffee break

Quality assurance

Key issues: What is the status quo of quality assurance in thin-film PV? Where should particular attention be paid in the total PV-system life cycle? What areas are especially sensitive in thin-film PV projects?

• **Chair:** *Manfred Bächler*

17:00 Project planning and management – key requirements

• *Thomas Pellkofer, Gehrlicher Solar AG*

17:15 QA in the design and construction stages

• *Thorsten Nogge, Evergy Engineering GmbH, tbc*

17:30 Energy yield prediction for thin-film modules

• *Christian Dürschner, Solarpraxis AG*

17:45 Quality control from the user's point of view

• *Dr. Ilka Luck, PICON Solar GmbH/PI Berlin AG*

18:00 Certification of thin-film modules – quality issues from an auditors point of view

• *Andreas Cox, TÜV Rheinland Energie u. Umwelt GmbH*

18:15 Questions and discussion

18:30 End of the conference

19:30 Dinner

Forum 1 | Friday, 15 April 2011

Production matters:

Manufacturing flexible CIGS solar cells

Key issues: Roll-to-roll processes allow you to drive down both production and installation costs by increasing throughput, being lightweight and offering a higher capacity for BIPV applications. What is the state of the art? What's new?

• **Chair:** *Dr. Olga Papathanasiou*

9:00 In-depth Analysis of several Cost Drivers for CIGS Modules Production

• *Lise Bilhaut, SCREEN SOLAR*

9:20 Lamination of flexible CIGS solar cells

• *Dr. Klaus Schlemper, PVflex Solar GmbH*

9:40 Manufacturing flexible CIGS solar cells and modules

• *Dr. Jeffrey Britt, Global Solar Energy, tbc*

10:00 Aspects of roll-to-roll manufacturing of flexible CIGS

• *Dr. Karsten Otte, Solarion AG*

10:20 Printing CIGS and nanoparticle inks in the Nanosolar utility panel

• *Christian Pho Duc, Nanosolar*

10:40 Questions and discussion

11:00 Coffee break

Recycling and end-of-life

Key issues: What is the current status of thin-film module recycling? Do companies have a feasible concept for ending the life of their modules? Are there working material cycles in the thin-film industry? Which role does sustainability play today? What developments are expected in the coming future? Which companies are the technological leaders in this field and why? What about economic matters? Is recycling cost efficient? What could be improved?

11:30 Take-back and recycling of end-of-life PV modules

• *Dr. Virginia Gómez, PV CYCLE aisbl*

11:45 Sustainability through product life-cycle management

• *Lisa Krüger, First Solar*

12:00 Recycling technologies to close the loop in CIGS manufacturing

• *Kris Van den Broeck, Umicore Precious Metals Refining*

12:15 PV module recycling – an alternative approach to recover materials

• *Sebastian Kernbaum, Saperatec GmbH*

12:30 Questions and discussion

13:00 Short lunch break with snacks

13:30 Site-visits to the premises of leading thin-film producers in the Berlin area (by invitation only)

Forum 2 | Friday, 15 April 2011

Upstream

Key issues: One of the main goals for producers of solar cells is the increase of efficiency while keeping the prices low. This can be achieved by the use of modern optical methods using advanced laser technology, provided by the suppliers from the Photonics sector. Which of these new methods can contribute the most to this goal?

How suppliers contribute to a more effective and cost efficient solar cell production



• **Chair:** *Dr. Paul Harten, LIMO Lissotschenko Mikrooptik GmbH*

9:00 New approaches and lasers for scribing of PV panels

• *Jürgen Niederhofer, Newport Spectra-Physics GmbH*

9:20 Laser structuring of thin-films for organic solar cells to provide a fast roll-to-roll processing

• *Dr. Uwe Stute, Laser Zentrum Hannover e.V.*

9:40 High-effective structuring

• *Gabriele Eberhardt, JENOPTIK Automatisierungstechnik GmbH*

10:00 New large area laser processing tools reduce costs

• *Dirk Hauschild, LIMO Lissotschenko Mikrooptik GmbH*

10:20 Radiative heat solutions for improved efficiency

• *Dr. Sven Linow, Heraeus Noblelight GmbH*

10:40 Questions and discussion

11:00 Coffee break

Advanced optical methods in thin-film module production

11:30 Laser scribing of TCO and organic solar cells

• *Maurice Clair, 3D-Micromac AG*

11:45 Greater efficiency with laser manufacturing

• *Michael Haase, ROFIN-BAASEL Lasertech GmbH & Co. KG*

12:00 Thin-film PV: On-Line, 100% scribe inspection

• *Timothy A. Potts, Dark Field Technologies, Inc.*

12:15 Photocurrent and efficiency distribution imaging of PV cells by computed tomography techniques

• *Dr. Kohei Hashimoto, Lasertec Corporation*

12:30 tba

• *Reinhard Ferstl, InnoLas GmbH*

12:45 Questions and discussion

Conference venue

WISTA-MANAGEMENT GMBH
Adlershof con.vent.
Rudower Chaussee 17 | 12489 Berlin
www.adlershof.de

Participation fees

Until 8 April

Standard:	895 Euro
Members of partner associations:	745 Euro
Day pass:	495 Euro

After 8 April

Standard:	995 Euro
Members of partner associations:	845 Euro
Day pass:	595 Euro

All prices excluding VAT.

When booking "Solar meets Glass – SmG 2011" together with the Thin-Film Industry Forum you get a **reduced fee for SmG of 300 Euro** instead of 445 Euro.

The price includes: Conference documentation, coffee breaks, one buffet lunch and one imbiß, buffet dinner on thursday evening.

Online registration and Conditions of Application:
www.solarpraxis.de/conferences

Overnight accommodation

We have reserved allotments in four hotels in Berlin. Please note, that most contingencies are only available until a certain time before the conference. Please book your room directly with the hotel using the keyword: „Thin-Film Week“
Hotels are not covered by your conference fee and need to be paid individually. The list of the hotels can be found on www.solarpraxis.de/en/conferences/thin-film-industry-forum-2011/accomodation/

For finding other hotels in Berlin, please have a look at www.hrs.de.

Conference management, Sponsoring and Registration

If you are interested in sponsoring the Thin-Film Industry Forum or if you need further information please send us an e-mail or a fax or call us!

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SOLAR MEETS GLASS

2ND INDUSTRY SUMMIT
FOR QUALITY, LOGISTICS
AND MATERIALS

13 APRIL 2011
ADLERSHOF
BERLIN

Wednesday, 13 April 2011 | Solar meets Glass 2011

8:00 Registration and get together with snacks and drinks

Opening session

- **Chair:** Miriam Hegner, Solarpraxis AG
- 9:00 **Opening speech**
 - Hans Werner Reinhard, Messe Düsseldorf GmbH
 - Karl-Heinz Remmers, Solarpraxis AG
- 9:15 **Global market and technology overview PV**
 - tba, EPIA
- 9:45 **Global glass markets and production sites**
 - Dr. Ulf Blieske, tbc
- 10:15 **Development of costs and new concepts – perspectives for the PV industry**
 - Willi Ernst, CENTROSOLAR Group AG
- 10:45 **Questions and discussion**
- 11:00 **Coffee break**

Logistics and site selection

Key issues: Are PV manufacturers' choices of site currently driven by logistics issues alone? Do glass manufacturers think about the solar sector when planning new production sites? What part of the final cost of a PV module arises from transportation? And how will increasing energy and the resulting higher transport costs affect module prices? Is just-in-time production practicable for PV modules and what conditions are needed to realize it? Where does the PV industry stand in terms of "time-to-market", and what role do logistics play here? What needs to be optimized?

- **Chair:** Dr. Harald Binder
- 11:30 **Vertical integration: Fact or fiction – Pros and cons**
 - Klaus Eberhardt, M+W Group Holding AG
- 11:45 **Site selection for the solar sector and its criteria**
 - Dagmar Vogt, ib vogt SE
- 12:00 **Global transport logistics for the PV industry**
 - Joachim Marxer, Schenker AG
- 12:15 **Discussion panel**
 - Klaus Eberhardt • Dagmar Vogt • Joachim Marxer • Dr. Thomas Hofmann, CENTROSOLAR Group AG
- 13:00 **Lunch**

Quality matters – High-tech versus cost efficiency

Key issues: What quality of glass is produced for the solar industry at present? What quality standard is required for the best yields of PV modules? How can processes be improved to raise quality without elevating costs? What is the role of module manufacturers, equipment manufacturers, and the glass industry? How can they improve their transfer of know-how?

- **Chair:** Dr. Diane Nicklas, Saint-Gobain Solar

Discussion panel:

Quality from the user's point of view: The requirements of solar manufacturers on glass quality for solar production.

Quality from the perspective of the glass manufacturers and glass finishers: What is the status quo, what is feasible? Expensive high-tech glass with sophisticated functionality versus cost efficiency - what is affordable, what is wanted, what will prevail?

- 14:00 • Roland Sillmann, Inventux Technologies AG • Dr. Tom Clarius, AVANCIS GmbH & Co. KG, tbc • Olivier Mal, AGC Glass Europe S.A. • Steffen Kittler, Interpane Glasbeschichtungs-GmbH • Kevin Bosse, EUROGLAS GmbH

Quality from the equipment manufacturer's point of view:

What is technically attainable and what improvements can be realized quickly? What can the equipment manufacturers account for meeting the needs of the solar and the glass industry?

- 15:20 • Johann Weixlberger, LiSEC Glastech GmbH
- Ivan Sinicco, Oerlikon Solar AG

16:00 **Coffee Break**

Materials: Thin-film and glass

Shared session between "Solar meets Glass" and CIGS-Workshop

Key issues: Even though new and flexible substrates are on the rise, glass is still the main material for thin-film PV. What happens when CIGS is deposited on glass? How do high deposition temperatures and better semiconductor quality correlate? What are ways to control Na-diffusion? How to meet challenges in structuring and hardening glass substrates for CIGS thin-film modules?

- **Chair:** Chair: Dr. Dieter Schmid, Consultant
- 16:30 **Float Glass – A perfect substrate for CIGS solar cells!?**
 - Dr. Niklas Papathanasiou, PVcomB
- 16:50 **The CIGS Challenge for the Glass Industry: Solutions to the requirements of CIGS solar panel manufacturers**
 - Dr. Frank Best, Saint-Gobain Solar
- 17:10 **CIGS & Glas**
 - tba
- 17:30 **Increasing conversion efficiency with thin specialty glass**
 - Dr. Mark Krol, Corning – Photovoltaic Glass Technologies
- 17:50 **Questions and discussion**
- 18:10 **End of the conference**
- 19:00 **Dinner Cruise**