

APPOLO Workshop gathers international laser-expertise in Photovoltaics

Leipzig, 28.11.2014. The potential application of laser technologies in photovoltaics for greater efficient and economic production and usage of solar modules was discussed by 35 experts from six countries at a two-day workshop at the Leibniz Institute of Surface Modification (IOM) in Leipzig. The workshop "Laser Processing in Photovoltaics" was organized by the APPOLO network, which connects research institutes, laboratories and companies in the field of laser micromachining from all over Europe and which is financed as part of the 7th Framework Program of the EU.

A review by Claus Zimmermann from Airbus Industries on photovoltaic modules as power sources for space applications opened the workshop with attendees from photovoltaic companies, system integrators, research institutes, universities, APPOLO partners and others. The two-day program included 16 keynote addresses and presentations on two competing technologies: crystalline silicon and thin film solar cells. State-of-the-art approaches for crystalline solar cells and possible applications of lasers in their production were discussed with Rico Boehme from InnoLas Solutions GmbH.

Alexander Braun, CTO of Solarion AG, presented the company's view on pros and cons with monolithic interconnects in thin film solar cells on flexible substrates for production based on the roll-to-roll approach. He addressed and encouraged the scientific community and machine suppliers to "continue your valuable developments – your efforts will pay out."

"Lasers can help to produce photovoltaic modules faster and cleaner as well as improve their effectiveness and thereby will help European manufacturers to improve their competitiveness", as Klaus Zimmer, group leader of laser structuring at the IOM, stated prior to the workshop. The use of precise laser tools could for example, allow photovoltaics to increase the gross collection area thus improve efficiencies of the module, explains Dr. Zimmer.

Another goal of the workshop was to recognize future challenges beyond the state-of-art technology and to discuss questions of efficiency, sustainability and applicability. "It was an excellent opportunity to justify our potential with industry needs, future trends with barriers for realization. The photovoltaics market continues growing and new demand on equipment is increasing again which is a positive mark for European industry," summarized Gediminas Račiukaitis, coordinator of the APPOLO project from the Center for Physical Sciences and Technology in Vilnius, Lithuania. "Thin-film CIGS technologies show significant progress in efficiency this year encouraging us to work more actively and collaborative in this field."

About APPOLO

The APPOLO-"Hub of Application Laboratories for Equipment Assessment in Laser Based Manufacturing" is a project with 22 partners from nine countries that seeks to establish and coordinate connections between:

- the end users, which have a demand for laser technologies in (micro)fabrication,

- laboratories of research institutes and universities which have accumulated knowledge and innovations in laser applications
- and laser equipment manufacturers (preferable SMEs: for integration, lasers, beam control and guiding, software, etc.).

APPOLO aims to facilitate quicker validation of the process feasibility and adaptation or customization of the technology (equipment) for manufacturing conditions, including reliability of components and their interaction as well as assessment of the dedicated production processes in terms of process speed, quality and repeatability.

The core of the consortium consists of laser application laboratories around Europe which are connected to a virtual hub to share accumulated knowledge and infrastructure and to promote the easy-to-access environment for development and validation of laser-based technologies. Formed clusters seek to validate novel laser technologies in

- photovoltaics (ultra-short pulse laser scribing for monolithic interconnects in CIGS solar cells)
- micro-structuring of surfaces (smart surface texturing for automotive)
- the printing/decoration industries (high-quality printed products, safety features and flexible electronics)

Innovative SMEs are related to large system integrators and end users through the application laboratories.

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