Above: 80 participants attended the Solar Workshop in Pittsburgh

Overview

The goal of the workshop was to identify and discuss scientific and engineering challenges for future glass research which will expand, when resolved, the functionality and usefulness of glass in various solar and related energy applications. It will focus on the glasses, glass properties and coatings for glass that are critical to technologies including photovoltaics, solar-thermal, hydrogen generation, energy storage, low-E and smart glazing, and insulation.

The Workshop brought together four groups of people:
(a) the technology leaders of glass manufacturing companies,
(b) the representatives of companies that use glass and other materials in solar technologies to tell us their materials challenges, in general,
(c) glass researchers from academia (and industry) who are engaged in solar materials research, and finally
(d) the representatives of government agencies that deal with materials for solar energy applications.

16 leading glass researchers and users who are well aware of the scientific challenges and/or technological demands of particular applications, presented their assessment of specific topics in terms of issues and needs, followed by discussions led by the top level R&D executives of leading glass companies. The technical discussions were held at the pre-competitive stage with the intent of benefiting broad technology platforms rather than specific companies. This type of industry-university, hand-in-hand planning was effective in addressing the energy needs of today. Considering the leadership positions of the participants, we anticipate this Workshop will influence future initiatives and priorities for research funding.

Presentations
November 16 - 17, 2008

Copies of the presentations are available by clicking on the link for each speaker.

Welcome and Opening Remarks
Bruce Koel, VP Research, Lehigh University
Research at Lehigh University
Maureen Guttman, AIA, Executive Director, Governor's Green Government Council (State of PA)
Pennsylvania's Energy Independence Strategy

Technical Session I
Solar Market Impact on the Glass Industry
Jim West, Energy Products Marketing Manager, Guardian Industries
Challenges for the Glass Industry to Enable Solar PV
 Romain Beau de Lomenie, Director of Module Materials Management, Thin Film Products, Solar Business Group, Applied Materials
Needs and Opportunities for Glass in The US DOE Solar Technology Program
John Lushetsky, Program Manager, Solar Energy Technologies, U.S. Department of Energy
Requirements on Glass for PV and the Potential of Specialty Glasses
Jochen Alkemper, Senior Manager, Material Development, Schott Glass, Germany

Special Lecture
Materials Research and Education at DMR: Looking Back, Racing Forward
Carmen Huber, National Science Foundation, Executive Officer, Division of Materials Research

Technical Session II
Thin Film PV Transparent Conductive Oxide History, Functions, and Developments
Chris Cording, Corporate Development Manager, Asahi Glass Company
Transparent TiO2 Nano Tube Coatings for Energy Conversion
Craig Grimes, Professor of Electrical Engineering and Director, Center for Solar Nanomaterials, Penn State University.
Graphene Oxide Transparent Conductors
Manish Chhowalla, Professor, Department of Materials Science and Engineering, Rutgers University
 Challenges of Designing Glass Composition for New Applications
Ashtosh Ganjoo, Research Associate, CVD Solar Technologies, PPG Industries

International Workshop on Glass for Harvesting, Storage
and Efficient usage of Solar Energy
November 16 -18, 2008
Sheraton Station Square Hotel - Pittsburgh, PA

Panel discussion and ranking of technical issues of the day

Panelists: Dennis O'Shaughnessy, PPG

Mark Taylor, Corning

Sam Conzone, Momentive Performance Materials (formerly GE Quartz)

Tim Gessert, NREL

Left: Sam Conzone leads a small group discussion during one of the break-out sessions.

Findings from the break-out sessions were then presented and summarized by all the break-out session leaders at the end of the

Dinner Speaker:

Jeffrey Brownson, Professor of Energy and Mineral Eng, Penn State University

Building Integrated PV vs. Systems Integrated PV: How the Solar Decathlons are Reshaping the Way We Develop Solar Technology

Technical Session III

Concentrating Solar Power - Trough Technology

Alex Marker, Research Fellow, Schott Glass N.A.

Material Needs for Low Cost Solar Thermal System

John S. Fangman, Consulting Engineer, Global Automated Solutions Inc.

Sun-Light Harvesting with Surface Patterned Glass for Photovoltaics

Andreas Nositschka, R & D Group Manager Photovoltaics, Saint-Gobain Sekurit Deutschland, Herzogenrath R&D Centre, Germany

Fused Quartz in the Solar Market

Martin Panchula, Technology Leader, Momentive Performance Materials (formerly GE Quartz)

Technical Session IV

Windows of the Future: Materials Solutions to Global Energy Challenges

Steve Selkowitz, Department Head and Andre Anders, Senior Scientist, Lawrence Berkeley Lab.

The Future of High Performance Glazing in the Commercial Market

James Finley, Fellow, Glass R&D, PPG Industries

Glass Strength Considerations in Solar Energy Applications

Christopher Barry, Director of Technical Services, Building Products, Pilkington, North America Inc.

Panel Discussion of Sessions III and IV, Conclusions / Recommendations

Panelists: Jeffrey Mazer, DoE

James McCamy, PPG

David Strickler, Pilkington

George Sakoske, Ferro