Heraeus

60 Seconds...

A Minute of Technology Updates

Heraeus Inc. Thick Film Materials Division

February 2009 Volume 11, Issue 1

In This Issue

Symposium Schedule

Heraeus TFD will be represented at the following locations this year. Please make a note on your calendars for these upcoming events:

March 30 - April 2, 2009
CARTS USA 2009
Jacksonville, Florida USA

April 27, 2009
IMAPS Indiana Chapter Mini Symposium and Vendor's Day
Indianapolis, Indiana USA

Heraeus Acquires Electronic and Decorative Materials Business from BASF Catalysts

Heraeus has entered into an agreement to acquire BASF Catalysts' thick films and ceramic colors business, used in electronics and decorative applications, located at BASF's East Newark, New Jersey site.

With the acquisition, the W. C. Heraeus Thick Film Materials Division further expands its market position and offers its customers an even broader product portfolio. Dr. Ralf Droste, Head of the Thick Film Materials Division, commented, "In addition to strengthening our activities in North America, we have gained access to comprehensive know-how that will decidedly advance our development of new products."

Dr. Roland Gerner, Managing Director of W. C. Heraeus, added, "Particularly in today's difficult market environment, this acquisition demonstrates our company's capacity for growth. We at Heraeus intend to continue expanding our business in promising markets worldwide."

With its Thick Film Materials Division, W. C. Heraeus is a global supplier of glass and ceramic coatings and has flourished for decades in the areas of thick films and ceramic colors. Customers of the Thick Film and Ceramic Colors business units include manufacturers of printed circuit boards as well as the fine glass and ceramics industry. W. C. Heraeus products are now

May 5, 2009
New England Chapter's 36th Annual Symposium and Expo
Boxborough, Massachusetts USA

May 7 - 9, 2009
SNEC 3rd (2009) International Photovoltaic Power Generation
Shanghai, China

June 8 - 10, 2009
PV America
Philadelphia, Pennsylvania

July 14 - 16, 2009
Inter Solar North America
(in conjunction with Semicon West)
San Francisco, California USA

September 21 - 25,
2009 24th European Photovoltaic Solar Energy Conference
Hamburg, Germany

November 1 - 5, 2009
IMAPS 2009
San Jose, California USA

November16 -19, 2009
Fuel Cell Seminar and Exposition
Palm Springs, California USA

Randy Kline Returns to the US

marketed in more than 75 countries.

BASF made the decision to sell these operations after an in-depth analysis determined that they were not core strategic businesses. Today, BASF's Catalysts is the world's largest catalyst manufacturer and leading supplier of environmental and process catalysts for a variety of industrial applications.

In 2006, BASF acquired these businesses as part of its acquisition of the Engelhard Corporation, a leading catalysts manufacturer. Engelhard had pioneered the production of ceramic colors in the early 1900s and entered the thick films sector in the 1970s.

Organizational Changes to the Thick Film Materials Division

In order to respond more efficiently to the expanding photovoltaic business, Heraeus Thick Film Materials has created the Business Unit Photovoltaic (BU PV). As of January 1st, 2009, this Business Unit took its place alongside the other two firmly established Business Units, Thick Film (TH) and Ceramic Colors (CC).

To support these organizational changes, the following personnel have been tapped for new roles.

The Head of the Business Unit PV is Mr. Andy London, who had been responsible for the worldwide thick film business. Andy London has a wealth of experience totaling over 30 years in the area of thick film pastes for the electronics industry.

Andy London's successor in the role of worldwide Head of the Business Unit TH is Dr. Rolf Drewes. Dr. Drewes joined Heraeus TFD on December 1st, 2008. Under Dr. Drewes, there will be three regional Business Unit Managers.

The function of regional BU Head for America will be filled by Mr. David Malanga who is currently responsible for Sales and Technical Services at the

Randy Klein has moved back to the Heraeus TFD West Conshohocken facility after more than 4 years setting up and running our facility in Shanghai. Based on his extensive experience in China, Randy has taken over the position of New Business Development for the Thick Film Unit. In this capacity Randy will be involved with strategy development and acquisitions as well as other special projects. Currently he is our liaison for the BASF acquisition which will take most of his time during the next months. Welcome home Randy.

Mark Challingsworth on Board at Heraeus TFD as Technology Manager

At the start of the New Year, Mark Challingsworth joined HCD-TH division as Technology Manager. Mark comes to us with

HCD plant in West Conshohocken, Pennsylvania. Mr. Malanga will also retain his role as Sales Manager.

For the Asia region Mr. Matthias Gaul will take over the position as regional BU Head. Up to now he has been in charge of the Production Department of the Business Unit TH in Hanau.

The European Business Unit will be maintained by Ms. Christina Modes.

HeraSol Application Centers Practically-based Global Support

Understanding the specific application is a key to successful introduction of metallization materials for silicon based solar cells. This is why the Business Unit Photovoltaic of W. C. Heraeus has established PV Application Centers in Germany, the United States and China to share experience and state of the art technology with our customers and to customize metallization materials for our customers. Over 40 years of experience with Thick Film materials and solid technical theory flow together in our Application Centers to offer the optimum conditions and capabilities to solve even the most difficult of problems.

Competent, technically experienced staff carry out and monitor the tests either in the Application Center or on the customer's site. Customers are welcome to bring their own materials or choose from a range of existing samples.

The Technical Possibilities

With our Application Centers we not only provide state-of-the-art technology and product development but also prototyping, customer trials and product integration on an industrial scale. We have the technical capability to meet the widest range of requirements to carry out tests on customer materials. In addition manufacturing locations are close to the Application Centers to

working knowledge of the precious metal powders used in our pastes and experience in the ceramic capacitor industry. Mark was born and raised in Western Pennsylvania and graduated from Penn State with degrees in Ceramic Science and Engineering (BS) and Material Science and Engineering (MS). Currently, Mark's family is located in the Syracuse, NY area and plans on relocating to the Philadelphia area as soon as the snow stops up there. In his spare time, Mark enjoys spending time with his four kids, aged 12 years to 10 months, especially with their sports programs. All in the family are happy to be moving back close to Philly so they can enjoy watching the Phillies, Eagles and PSU Football.

Quick Links

www.heraeus-thickfilm.com
www.imaps.org

ensure a direct and rapid product transfer to meet the needs of solar cell manufacturers.

Our HeraSol Application Centers are fully equipped with Semi-automatic screen printers to handle wafers sizes of 125, 156 and 210 mm and thickness from 800 µm down to 150 µm, Industrial IR fast firing furnaces, 4-point Tester and I-V Measurement system. In addition, variety of other types of testing can be completed with an extensive array of equipment.

For more information, please contact (US) Mr. Dean Buzby at dean.buzby@heraeus.com, (Europe) Mr. AntonioTrizzino Antonio.Trizzino@heraeus.com, (Asia) Mr. Dan London at dan.london@heraeus.com.

Heraeus Launches New Website for Thick Film Materials Division

The Thick Film Materials Division of Heraeus has a new website address (**www.heraeus-thickfilm.com**) as part of the company's overall revamping of their internet presence. The new Heraeus corporate website boasts expanded product and technology content and improved navigation capabilities, making it a valuable resource for existing and potential customers around the world.

According to David Malanga, business unit manager for Heraeus' Thick Film Materials Division, the new website is strongly customer and product focused, making it easier for visitors to quickly find information about the capabilities and expertise offered by Heraeus.

"In addition to providing a wealth of technical content about the electronic materials products we provide for passive components and hybrid circuits, the website will enable visitors to easily navigate to other areas where they can locate complimentary products from our company's diverse portfolio," said Malanga.

Malanga says the revised website is also more visually interesting, with new photography,

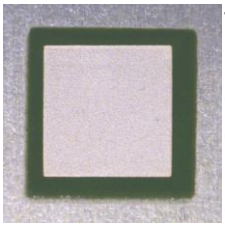
animations and flash presentations that can help visitors better understand and appreciate the innovative products, processes and technologies offered by Heraeus.

"We believe that visitors to our new website will have a better view of the entire Heraeus company as a result of these improvements," said Malanga.

Low Temperature Dielectric for Aluminum Substrates

In applications that requires significant heat dissipation (to avoid damage to the circuit), alumina becomes an insufficient substrate material due to its low thermal conductivity (~8 W/mK). Aluminum is an attractive alternative due to its high thermal conductivity (~210 W/mK) and low cost. However, the main disadvantage of aluminum is its high coefficient of thermal expansion, or CTE (~25 x 10-6/°C). The large CTE mismatch between the aluminum and the printed materials can cause significant bowing of the substrate.

Heraeus TFD recently introduced a solution to this



TCE mismatch problem. CL90-9217 is a Pb-free, green dielectric for use on aluminum substrates. Its unique glass system is designed to reduce bowing by closely matching the CTE of aluminum, while providing excellent breakdown strength (~1000 V/mil). CL90-9217 fires on aluminum at about 550°C and is compatible with Pb-free silver conductor C8829. To request a technical data sheet or to request a sample, please contact your local Heraeus TFD Sales Representative.

Chinese New Year Celebration at HMTS

Heraeus Shanghai (HMTS) has a New Year's party every year where each Business Unit is asked to perform a short entertainment skit for fellow employees. The Thick Film (TH) and Photovoltaic (PV) business units did an original dance routine choreographed by Cathy Chen (bottom center). Management, Operations, Sales, Technical Service and Engineering all participated and fun was had by all. The applause of the audience was heart felt and appreciated.

This newsletter was provided by the Heraeus TFD Technical Service Department. Contributions were received from:
Editor –

Meg Tredinnick -meg.tredinnick@heraeus.com

Contributing Authors:
Mike Creamer - Mike.Creamer@heraeus.com
Randy Klein - Randy.Klein@heraeus.com
Andy London - Andy.London@heraeus.com
AntonioTrizzino -Antonio.Trizzino@heraeus.com
Mark Challingsworth - Mark.Challingsworth@heraeus.com
DavidMalanga - David.Malanga@heraeus.com

Any comments about this issue or suggestions for future issues are always welcome. - Editor