PRESS RELEASE
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September 18, 2009

Ceralink Presenting 3 Talks at MS&T 2009

Pittsburgh, PA – October 25-29, 2009

Monday, October 26, 2009

Time	Session Info / Title
Room 335 (Convention Center), Session II, Structural Materials for Aerospace and Defense: Challenges and Prospects	
3:40-4:20 PM	New Lamination Method for Armor Panels, Shawn Allan; Morgana Fall; Holly Shulman

Tuesday, October 27, 2009

Time	Session Info / Title
Room 323 (Convention Center), Dielectric, Photovoltaic and Other Energy Materials II, Energy Materials	
2:00-2:20 PM	Radio Frequency Lamination for Photovoltaic Panels, Shawn. Allan, Morgana Fall; Holly Shulman

Wednesday, October 28, 2009

Time	Session Info / Title
Room 317 (Convention Center), Session 1, Microwave Processing of Ceramics	
9:20-9:40 AM	Microwave Technologies: Key Points for Manufacturability Analysis of Ceramics, Morgana Fall; Holly Shulman; Shawn Allan

Presentation Abstracts

New Lamination Method for Armor Panels

ABSTRACT BODY: A new patented technique was developed for fast, energy efficient lamination. The technology can be used for many laminated armor systems including transparent armor. The method uses a radio frequency press to apply energy directly to the interlayer bonding materials, where the heat is needed. A 90% decrease in the energy required for lamination was demonstrated. The structural layers, such as the ceramic strike face and polycarbonate spall shield, are not directly heated by RF energy. Energy is not wasted in the unnecessary heating of the structural materials. RF lamination replaces the slow energy intensive autoclaving batch process, and allows a fast semi-continuous process which takes less than five minutes. Results from several armor material systems will be presented.

Radio Frequency Lamination for Photovoltaic Panels

ABSTRACT BODY: Radio frequency (RF) lamination is a new patented technology designed to accelerate production of laminated glass products. The RF process resulted in dramatic time reduction and energy savings, compared to autoclaving and vacuum techniques. The process uses RF energy to directly heat vinyl or polyurethane interlayers between structural glass, ceramic, or plastic. Solar technology is an especially interesting application for this technology. The RF lamination process occurs in an RF press, where uniaxial pressure is applied simultaneously with RF energy. With the RF process, lamination was completed in less than 1 minute. The process allowed for solder-free electrical connection of solar cells. Lamination of solar cells with full and partial coverage (ie., window with embedded PV cells) in glass was investigated. Strategies for overcoming residual stress in interlayers surrounding embedded PV cells will be discussed. Working prototypes of RF laminated solar panels will be presented.

Microwave Technologies: Key Points for Manufacturability Analysis of Ceramics

ABSTRACT BODY: Microwave heating has been used effectively in drying applications for many years. Now microwaves have been proven beneficial for higher temperature processes such as binder removal, calcination, and sintering. An overview of the different microwave heating techniques and the impact on ceramic processes will be given. Various types of microwave heating equipment and the commercial sources will be discussed. An analysis to assess the product compatibility with microwaves and the manufacturability will be presented. This will include a discussion of the dielectric properties, part sizes, composition, and through put, as well as bottle necks in the process.

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