

# The Inauguration of a New Industry-University Research Alliance

**DOES YOUR ORGANIZATION** have a specific shot peening need or concern? The Center for Surface Engineering and Enhancement (CSEE) at Purdue University can provide the research and support you need to advance your shot peening program.

The vision of Purdue University is to be the leading industry-university research alliance for the metal surface finishing industry. The goals of CSEE are to serve consortium members' needs, establish a knowledge base, and educate the future leaders of the industry.

The research capabilities of CSEE are available to companies and government agencies. Pre-competitive research is available to member groups as well as specific and proprietary research for individual organizations. The program offers access to the test equipment, research staff, and disciplines most companies do not have.

Research will be defined by the participating groups or organizations. The research will be conducted by undergraduate and graduate students seeking industry positions and the research programs will be under the leadership of Purdue faculty members.

Purdue is very successful at establishing these kinds of collaborations. For example, the Cooling Technologies Research Center at Purdue addresses the research and development needs of members from diverse industries and product lines in the area of high-performance heat removal from compact spaces. The research and development is member-directed with a product-oriented focus.

Over 30 individuals representing 18 companies recently attended a one-day workshop to learn how their participation in CSEE will benefit their companies and help the shape the research focus for the next year. Participants included shot peening equipment OEMs and end-users in aerospace, off-highway vehicles, and automotive.

The event featured technical research presentations, a poster session, and roundtable discussions. The research topics presented at the workshop included "Fatigue of Shot Peened Thin Wall Aluminum," "Laser Shock Peening," "Simulation and Validation of Stress Development During Peening of Aerospace Aluminum," and "Particle Making Technology." Workshop attendees then broke into working groups to tackle key topics—identifying key industry challenges and the requirements of the CSEE facility. The groups' findings will advance the development of the CSEE program.

CSEE is supported by annual membership fees from organizations with tiers based on size and participation levels. Robyn Jakes, Director of Development/School of Materials Engineering can answer your questions regarding membership levels and the next steps for joining CSEE. Call Robyn at (765) 494-4094 or send email to [rnjakes@prf.org](mailto:rnjakes@prf.org). ●

*"CSEE, kicked of in 2015 with seed funding from Electronics Inc., brings together faculty and graduate students in Materials, Aeronautical, and Industrial Engineering to attack fundamental problems in surface engineering.*

*Our focus is on understanding processing/structure/property relationships in metals during shot peening and other mechanical surface treatments. Our material focus is broad, from steel to aluminum to high-temperature alloys. We aim to create predictive models that allow members to control the performance of their surface-enhanced components."*

**Dr. David F. Bahr**  
Professor and Head of Materials Engineering

*"As a Purdue alumnus, I am pleased and honored to be a part of the CSEE program. As a manufacturer, I'm eager to have access to research on topics that have interested me for years. Finally, theory will become practice and we will be able to commercialize these ideas. I encourage OEMs and shot peening facilities to take advantage of the immense research capabilities of the CSEE."*

**Jack Champaigne**  
President, Electronics Inc.