Tuesday, September 8, 2020

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Ultrafast Laser Micro-Machining – Fundamentals and Process Optimization

Tuesday, September 15, 2020 1:00 PM - 2:30 PM EDT

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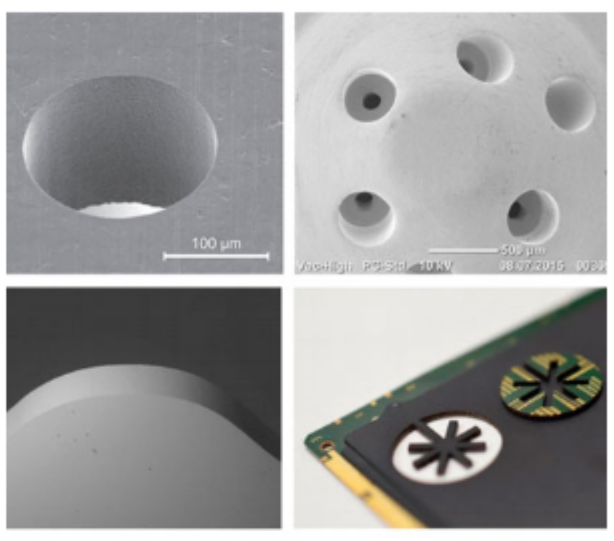
.: About This Webinar



Over the last decade, material processing using ultrafast laser pulses with pulse durations in the range between 300 fs and about 15 ps has gained in popularity due to the small heat-affected zone (HAZ) and the relatively high energy penetration depth per pulse. To date, the vast majority (>85%) of industrial ultrafast laser processing applications are based on laser ablation. Examples are cutting of flat panel display foils, cutting of stents, drilling of fuel injector nozzles, wafer scribing, and surface microstructuring. The remainder of industrial ultrafast laser applications use nonablative processes, such as filament cutting, waveguide writing, glass welding, or polymerization.

This presentation will provide an overview of the interaction of ultrafast pulses with materials in the infrared, green, and ultraviolet wavelength range as a function of the pulse fluence and the pulse duration, and present guidelines for the process optimization for 25 different materials commonly used in industrial manufacturing. These guidelines will include the optimum choice of pulse fluence, pulse duration, laser wavelength, and temporal pulse sequence (e.g., burst mode operation) to maximize process speeds and minimize the heat-affected zone. The presentation will conclude with an overview of industrial ultrafast laser applications.

Who should attend:

Scientists, engineers, technicians, marketing specialists, and others involved in the planning, purchase, implementation, and/or use of ultrafast lasers for micromachining. Anyone using ultrafast lasers for industrial and materials processing applications. As well, anyone who wants to know more or has questions about ultrafast laser technology and how to improve its processes.

About the presenter:

Norman Hodgson, Ph.D., is vice president for technology and advanced research at Coherent Inc. in Santa Clara, Calif. He has more than 30 years of experience in solid-state laser and fiber laser design, optimization, and product development. Previously held positions include vice president of engineering at Coherent (2003-2009), director of engineering at Spectra-Physics Inc. (1998-2003), senior laser engineer and program manager at Carl Zeiss Inc. (1992-1996), and various university positions. He received his Ph.D. in physics from Technical University Berlin in 1990. He is co-author of the books *Optical Resonators* (Springer-Verlag, 1996) and *Laser Resonators and Beam Propagation* (Springer-Verlag, 2005). Hodgson has authored over 90 publications and conference presentations and is co-inventor on more than 30 issued and pending patents.

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