

# Ultrafast Laser Micromachining

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Presented by Melvyn Collins Micromachining Sales Director



- Founded in 1977, spin off from Oxford University.
- 40+ years in the laser industry.
- Founders Professor Colin Webb and Dr. Andrew Kearsley still actively involved.
- Started laser micromachining in 1993.

# We provide

*Leading edge...*

- Contract Manufacturing Services
- Laser Micromachining Tools
- High-Speed Imaging Systems
- High-Speed Imaging Contract Services
- Technical Support

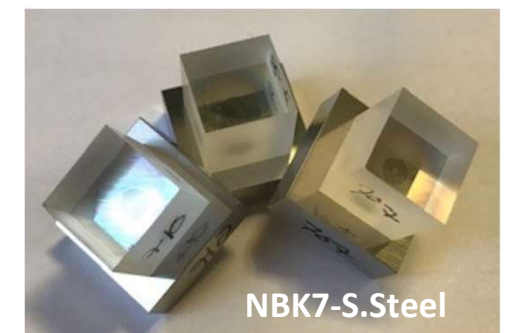
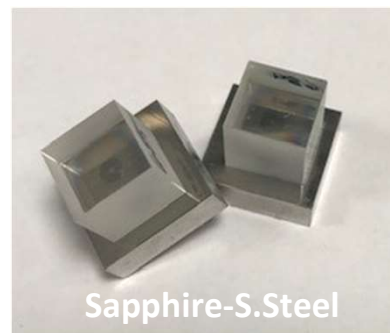
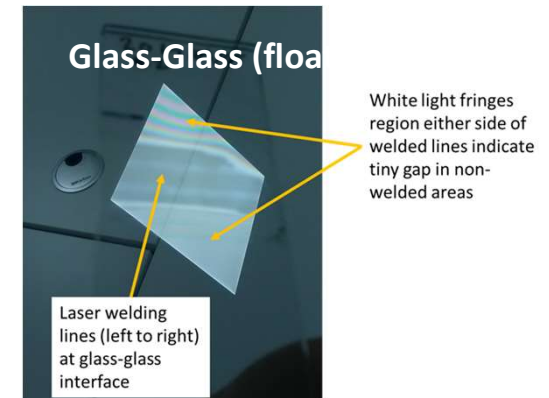
# Developed Ultrafast Laser processing from R&D to contract services and production

- Flexible circuits and glass welding development projects
- Integrated these new lasers into fully controlled systems
  - Multiple wavelengths
  - High and low pulse energy
- Providing follow on contract services beyond the R&D projects and to new customers
  - Glass machining
  - Cutting foils
  - New processing methods for metals
  - Faster cutting speeds

# Ultrafast Laser Microwelding

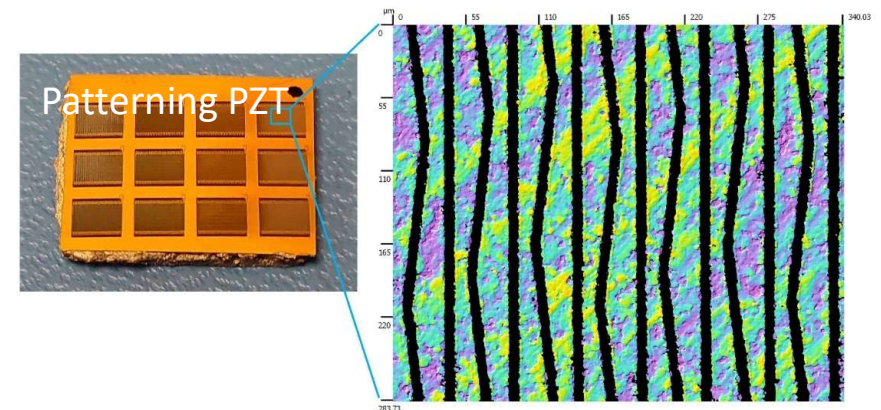
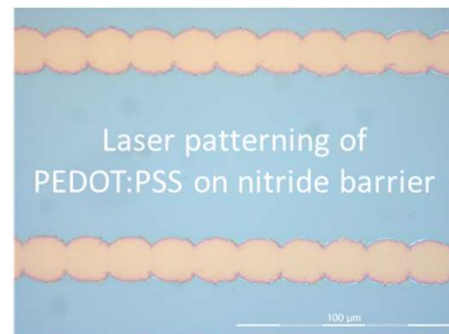
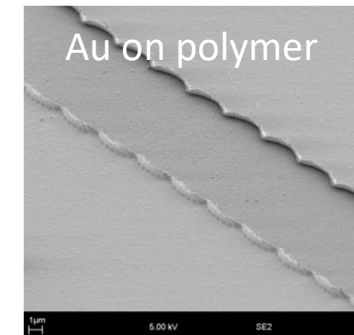
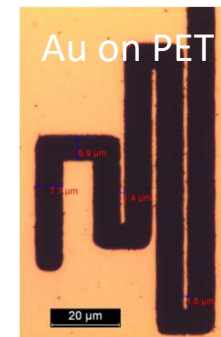
*different material combinations & part shapes*

- Replacement for adhesives
  - No out-gassing or movement
- Enables new design rules
  - No compensation for the artifacts of adhesive bonding
- Suitable for hermetic sealing applications
- Strong bonds
- Thermal, vibration cycling range tested
- Deterministic process (no need for "black art skills")
- Bonding demonstrated to >20mm glass thickness



# Laser patterning

- Ultrafast lasers allow selective patterning across range of material combinations
- Track and gaps down to single digit microns
- Reduced thermal load into both thin film and substrate
- Different laser wavelengths apply depending on material properties
- Clean removal, minimal film delamination
- Fast processing with optical scanning



# Developing with our customers

## Contract Services

- Stable ultrafast laser manufacturing tools
- Applying knowledge from R&D projects into production programmes

## Systems

- Mature micromachining platform
- Class 1 laser (contains class 4 laser)
- Software control of access to functionality
  - CIMITA tools
- Applications know how
  - Accessible and applicable to your needs





Thank you

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