

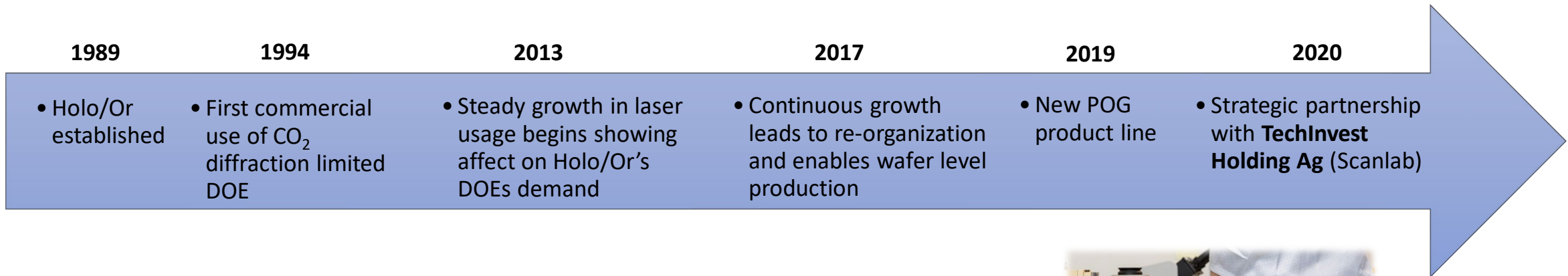


HOLO/OR

A VISION OF EXCELLENCE

HOLO/OR

Holo/Or is the world leader for Diffractive Optics

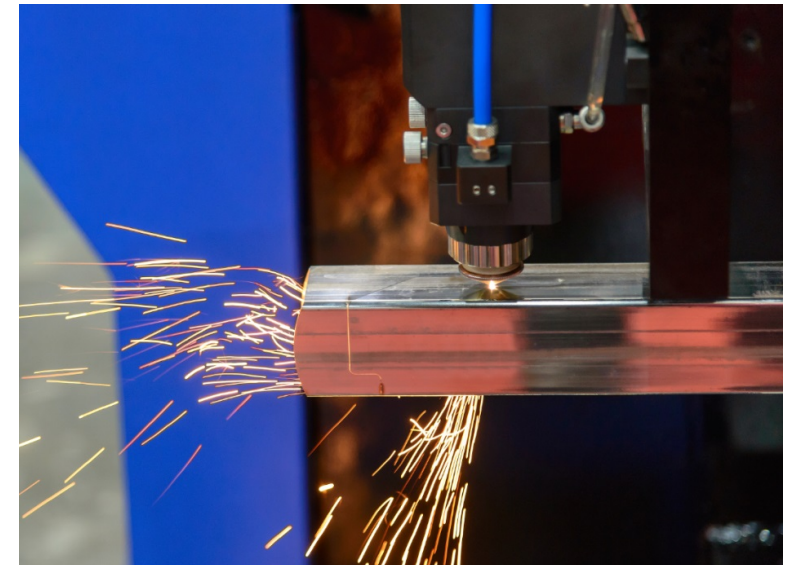
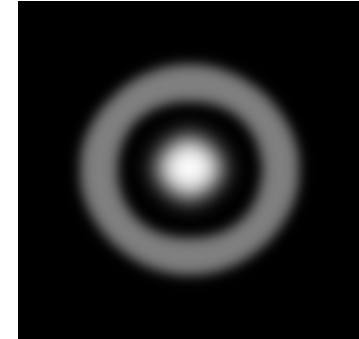


- First to deliver DOEs for commercial use
- Break through technology
- Vast experience & expertise
- Diverse and extensive collection of beam shaping solutions



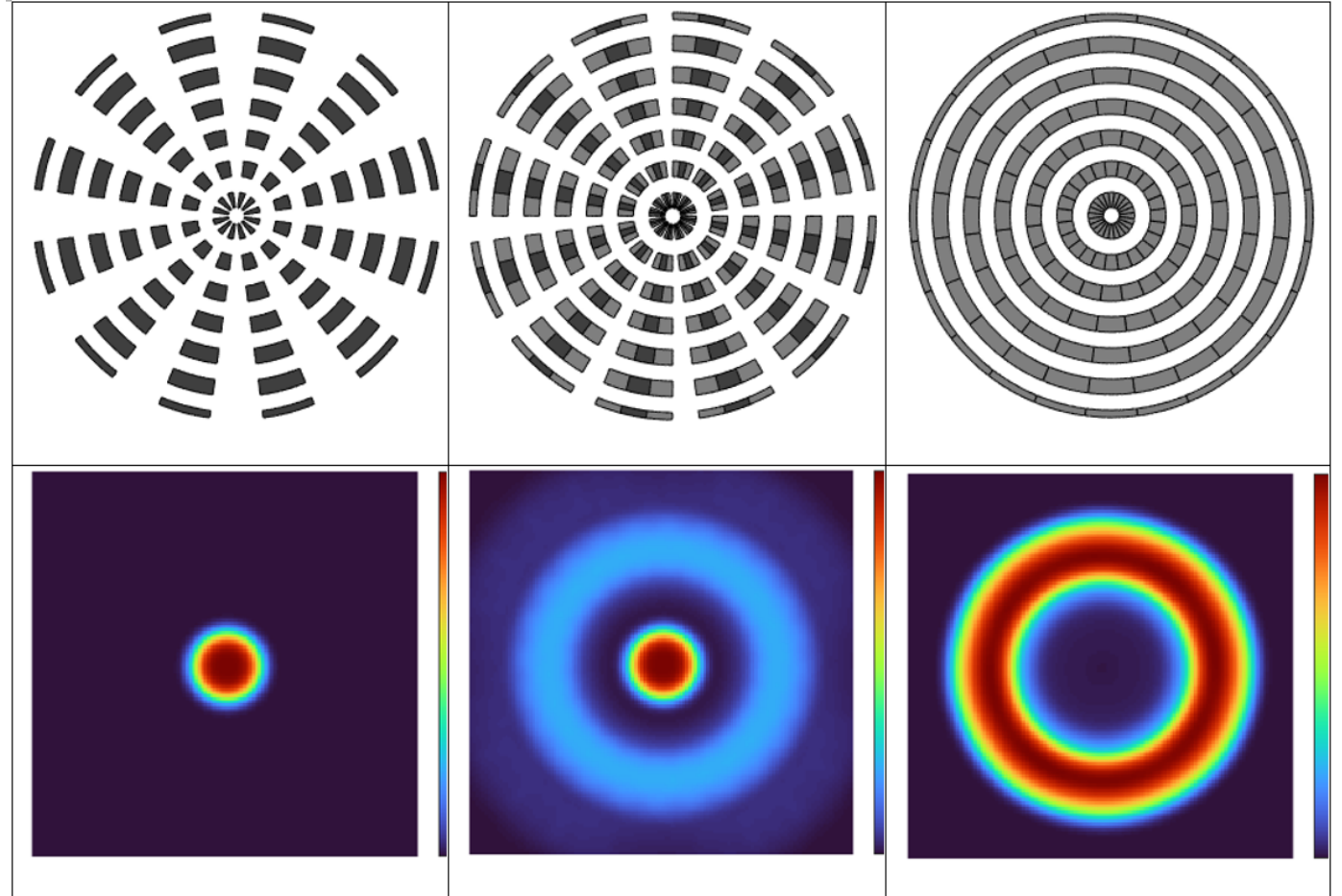
Flexible shaping for Macro Processing

- Power is not the limiting factor in welding speed- effects arise when welding a high speed : Humping, undercut
- Ring shape with central spot, adjustable ratio:
 - improved speed due to less humping
 - better weld quality- less inclusions, bubbles, undercut
 - Ratio adjusted to optimize process for thickness, material etc.
- Similar effects in cutting & Selective laser melting

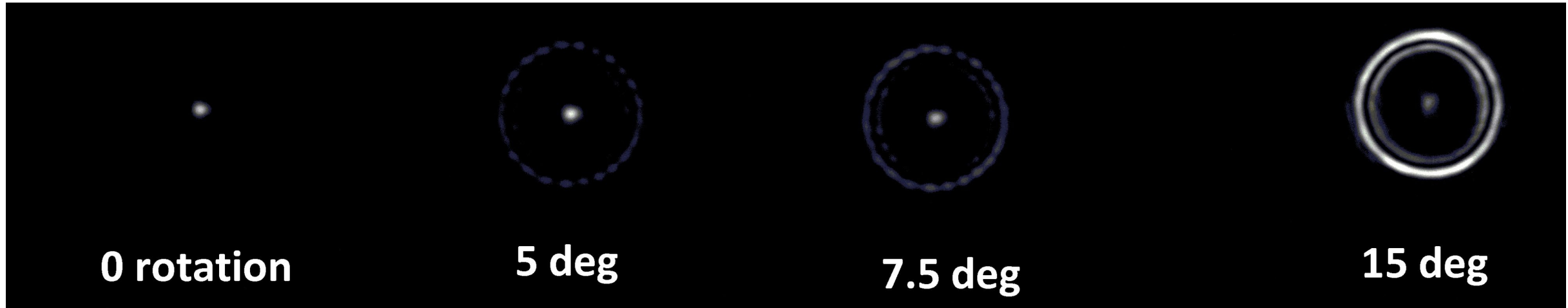


Flexishaper- adjustable ring to spot ratio

- Simple- 2 identical Binary DOE and rotation mount
- Adjustment by rotation
- When fully overlapping phase delay is $2\pi = 0$, all energy in spot
- When fully separate, creates binary Diffractive Axicon phase , all energy in ring



Flexishaper- Lab measurements



Real results from the lab, for 1064nm single mode laser , EFL=250mm, spot size 300 μ m

Flexishaper- advantages

- Works both for single mode (micro welding at high speeds) and multimode lasers
- Can be designed to generate any ring size, not dependent on fiber core geometry
- Weak defocus sensitivity
- High efficiency- for work around 75% energy at central spot , efficiency >90% .
- Can be integrated just before focus optics in a welding system, no need to accommodate a large beam from the collimator onwards
- Full range tunability enables use of most of the laser power in central spot, unlike fibers where a large part must go to the ring

