POLYBRIGHT NEWSLETTER N°5

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Hello,

Please find here the latest results of European Project PolyBright (Extending the process limits of laser polymer welding with high-brilliance beam sources) concerning the **correlation between crystallinity degree and spatial seam homogeneity for laser overlap welding of polymers applying the TWIST® method** (Figure1) which is based on a superposition of slow regular feed and fast circular or elliptical beam oscillation. Except for strong-scattering PA66, the spatial heat affected zone (haz) shape is shown to be equivalent to the varying heating path, i.e. the area illuminated by the laser spot, as it is moved under TWIST® contour control. Details see figures below.

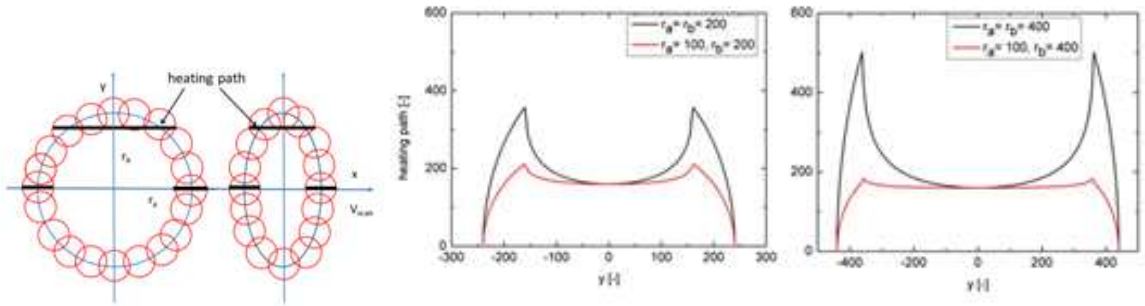
For more information please visit the project website with

- **4 new public Polybright results & highlights**

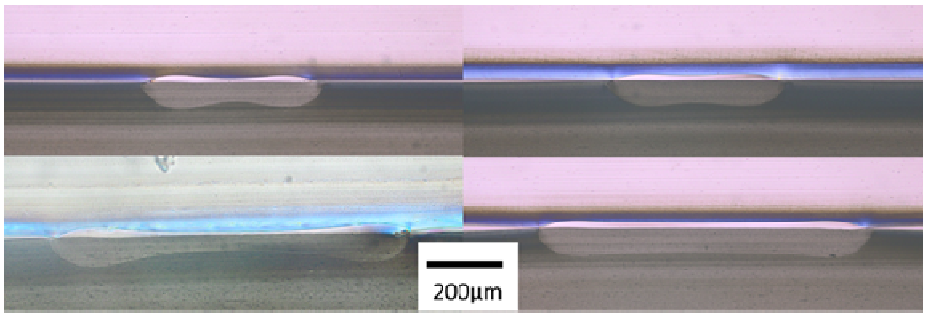
We would also like to attract your attention to the Photonics West conference for biophotonics and biomedical optics, high-power laser manufacturing, optoelectronics, microfabrication and green photonics:

- **SPIE Photonics West,** February 2-7, 203 at San Francisco

Feel free to forward this information to any of your colleagues who might be interested. Thanks!
If you have any questions you can contact us on: polybright-info@eurtd.com



Left: Sketch of the illuminated area corresponding to the periodic paths, left ra= rb (circular motion), right ra= rb/2 (elliptic motion), red circles indicate the sequence of laser spots with diameter ds, direction of weld seam is given by the scan velocity Vscan.
Right: Calculation of the heating path as a function of the y-coordinate for small and large circular and elliptic motions, spot diameter: 80 µm, all units are in µm.



Micrographs of Pebax showing the heat affected zone for different laser power and radii (P, ra, rb), from top left to bottom right: (2 W, 200 µm, 200 µm), (2W, 100 µm, 200 µm), (4W, 400 µm, 400 µm) and (4 W, 100 µm, 400µm).

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