

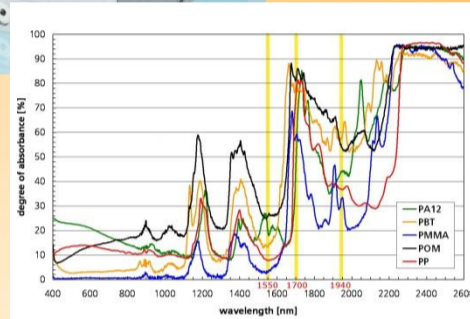
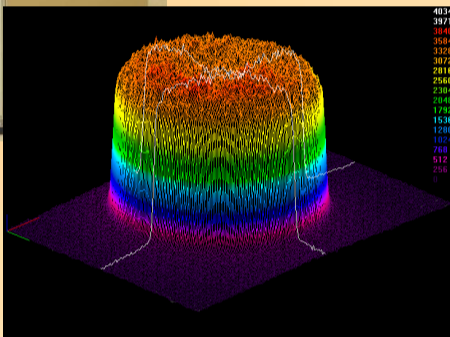


WP2 – DEVELOPMENT OF HIGH BRILLIANCE LASER SOURCES



ABSTRACT

- 500W Multimode IPG fiber laser, tophat beam profile and 1,5 μ m wavelength.
- IPG's active fiber doped with Erbium (Er) instead of Ytterbium (Yt).
- Used for welding polymeric materials .
- LIMO's High Power Diode Laser Systems (HPDLS) up to 80W.
- LIMO's modules with 1.55 μ m, 1.65 μ m and 1.94 μ m wavelength, fitting the absorption bands of polymers are now available for application tests.



ELS-500 Fiber Laser and intensity distribution

LIMO Diode Laser and intensity distribution

METHOD

- IPG's Optical setup of ELS-500 consists of pump diodes (980nm), active quartz fibers doped with Erbium, direct spliced-on passive fiber (core \varnothing 200 μ m), Quartz Block (QBH-) connector, tophat beam profile (for spot sizes in sub-mm range).
- Several of LIMO's diode laser sources are used for power scaling.
- Customized to application needs, LIMO's laser beam geometry (round/oval spots, etc) and intensity distribution (M-Shape, etc) can be adapted.

HIGHLIGHTS

IPG fiber laser source:

- First time 500 W output power at 1.5 μ m wavelength
- Compact housing with dimension of 790 x 815 x 558 mm³ (WxDxH)
- No alignment needed / user friendly for robust industrial environment

LIMO diode laser sources:

- Wavelength adapted to polymer absorption bands
- High electro-optical efficiency
- Small laser module size (244 x 129 x 70 mm³)
- Application adapted beam shaping

OUTLOOK

- IPG's tophat 500W / 1.5 μ m laser will be combined with Arges' 2D scanner to set up a polymer welding workstation. PP application is expected
- LIMO's 1.55 μ m, 1.65 μ m and 1.94 μ m diode modules are already in use for polymer welding tests

CONTACT

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