



# Sapphire and Silica Specular Reflectors for Diode Pumped Laser Heads

In presence of the thermo-optical effects in high power diode pumped lasers it is a challenge to combine high power with excellent beam quality. In all different Nd:YAG laser concepts like rod, slab or disk lasers thermal gradients within the laser material cause thermally induced refractive index changes which lead to thermal lensing, aberrations and birefringence. For power scaling of diode pumped solid state lasers the uniform pumping configuration and effective thermal management are required. For better pumping and cooling management of solid state lasers pumped by laser diodes LT-PYRKAL developed a range of state of the art sapphire and silica reflector flowtubes for axial uniform pumping. The barrel surface of flowtubes is coated by silver

high reflective layer completed by protective metallic layers. For uniform precise distribution of laser diodes pumping radiation on laser rod, 2-3-4-6-9 windows versions of flowtubes has been developed. For better adhesion of specular layer with cylinder substrate around pumping windows edges, we apply laser scribing technology. Due to high manufacturing precision together with applied know-how innovative technologies, our sapphire and silica reflector flowtubes demonstrated reduced thermally induced effect of thermal lensing and aberration, and improved output power and optical-to-optical efficiency of the laser. LT-PYRKAL team welcomes your specific design to manufacture reflectors for diode pumped lasers.