There has been a rapid development of fiber lasers and their applications within the last decade. One major task is to further increase the laser power output. Our material is the material of choice if it comes to bridge the gap between lower beam quality direct diode lasers and highest performance single mode fiber laser systems. The key features of our material are the large batch size in combination with excellent material homogeneity as well as reproducible and well adjustable doping levels. Those enable novel fiber designs like extra-large mode multi kW laser system or multi core fiber structures. Several important factors influence the performance of the final laser fiber, e.g. cross section design, refractive index tailoring, interface quality and material. Heraeus is your reliable partner on each step, from the bulk material over the custom tailored laser fiber preform to the final fiber.
Excellent Homogeneity and Reproducibility
Based on our doping process we achieve an excellent homogeneous doping and refractive index profile with extremely low radial and axial gradients even in large batch sizes to overcome the typical limitation of rare earth doped MCVD materials. This enables a reliable laser fiber quality either for XLMA designs or for large fiber batches.

Attenuation Properties
To achieve lowest attenuation levels highest purity starting materials are a must have. Heraeus has a long tradition on highest purity fused silica materials which are used e.g. for high power laser transmission in industrial lasers. Fibers made of our Yb-doped bulk material show a base attenuation at 1200 nm of 0.02 dB/m and a background attenuation at the laser wavelength between 1030 nm and 1080 nm of 0.02 ... 0.07 dB/m.

Attenuation and Photostability
Regarding the photostability of Yb-doped laser fiber materials one main influence is the concentration of Yb-ions. With increasing the active core cross section like in XLMA fibers the concentration can be reduced which has a positive effect on the photo stability of the final fiber. A comparison of our material with a similar doped MCVD preform in a rapid damage testing setup is shown in the graph below.

Doping Elements and Level
Our proprietary process enables us to adjust the doping levels and doping elements custom tailored on the requirements of the final laser fiber and can be defined very precisely. Our current standard dopants are Ytterbium and Aluminum, others are available on request.

About us
Heraeus is the key global supplier of high purity synthetic fused silica products for optical fiber manufacturing. We have been a reliable partner in the world telecommunications industry since 1976.