

SHUTE Sensing Solutions A/S was founded in 2015 at the Department of Photonics Engineering at the Technical University of Denmark (DTU). SHUTE has developed a novel and unique microstructured polymer optical fiber (mPOF) sensor system, which enables real-time monitoring of **strain/stress**, **humidity**, **temperature**, and vibrations in points along a hair-thin optical fiber. Hence the name SHUTE.



SHUTE Polymer Optical Fibers

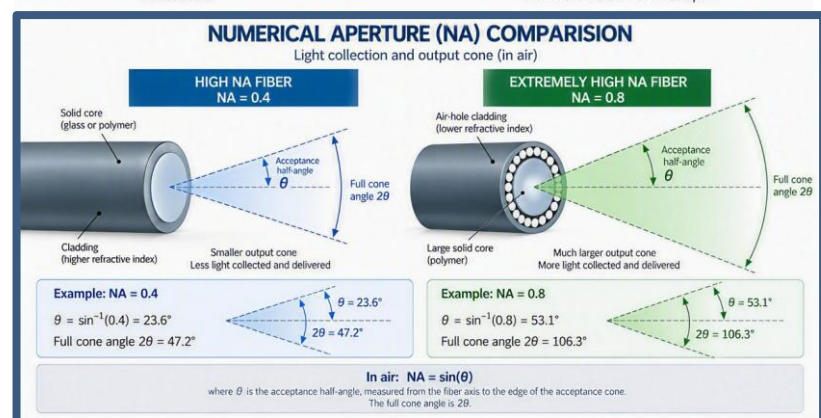
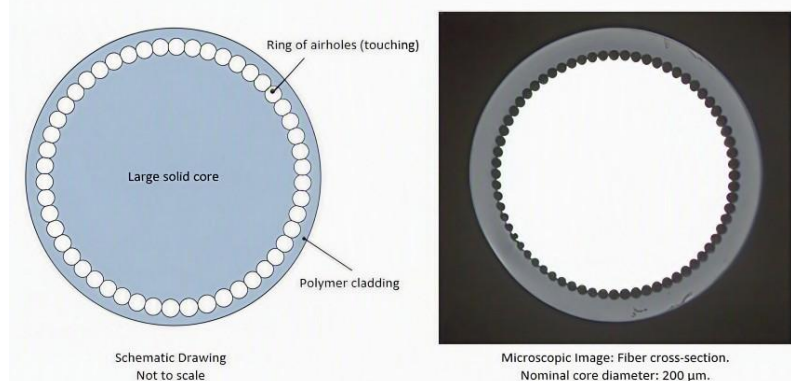
At SHUTE we manufacture hair-thin polymer optical fibers (POF), ideal for sensing and transmitting light. We have a full in-house production facility, which means that we can customize fibers according to specific needs.

Polymer optical fibers have an advantage to silica fibers when it comes to flexibility; they can be elongated up to 6% vs. silica's 2%, and POFs have a much lower bending radius. In general, they also have a much better Numerical Aperture (NA), the typical high NA POF has an NA of 0.5, where silica fibers generally deliver much less, typically 0.22-0.37.

By combining our know-how of microstructured POFs with traditional multi-layer POFs, we are now introducing the **BLACKHOLE High NA 1.0**, with an NA close to one (~1).

Extremely High NA PMMA Optical Fibers

A fiber with NA of 0.8 will theoretically deliver 156% more light than a similar size fiber with NA of 0.5. Using the SHUTE signature holes as a cladding it allows us to produce a High NA POF from PMMA only, hence avoiding Fluoropolymer materials for cladding.



BLACKHOLE High NA 1.0 PMMA Optical Fibers:

- Produced in the EU.
- Fluoropolymer-Free PMMA Optical Fiber. REACH and RoHS compliant.
- Maximum light capture: The very high NA provides a much larger acceptance cone, allowing more light to be coupled into the fiber.
- High alignment tolerance: Less precise alignment is required between the light source, fiber and detector - potentially reducing assembly complexity and cost.
- Simpler optical design: The fiber can reduce the need for precision optics and sophisticated coupling arrangements, particularly in compact sensor and instrumentation systems.

For more information visit www.shute.dk or feel free to call us on +45 2338 6728 to discuss how SHUTE technology can assist you in optimizing your fiberoptic needs.