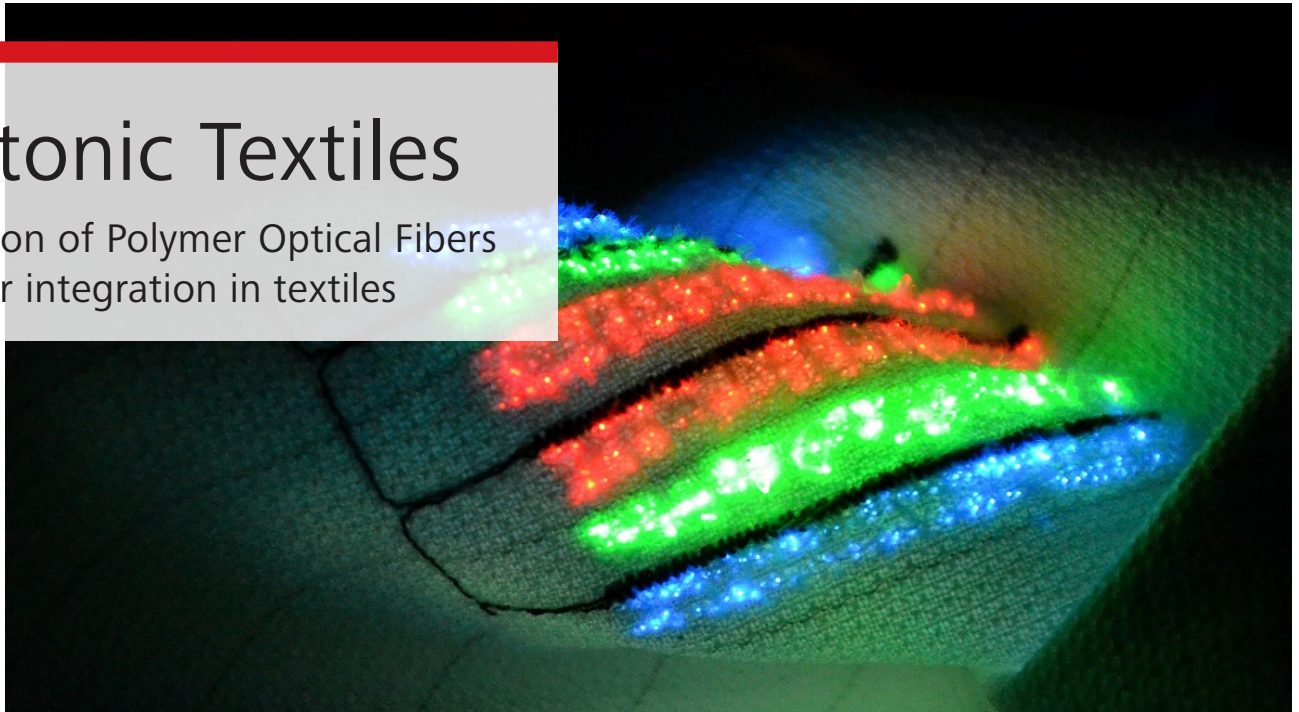


The integration of polymer optical fibers (POFs) in textiles requires POFs with adequate mechanical properties and haptic. Once integrated, POFs may interact with the environment via side-outcoupling created by producing bends or surface patterning. This allows their use in wearable monitoring devices. Luminescent POFs may also interact via side-incoupling and can be used in optical sensors or textile energy harvesting.

# Photonic Textiles

Production of Polymer Optical Fibers  
and their integration in textiles



Photonic textile prepared by stitching POFs in 6 parallel rows

# Photonic Textiles

## Contact persons

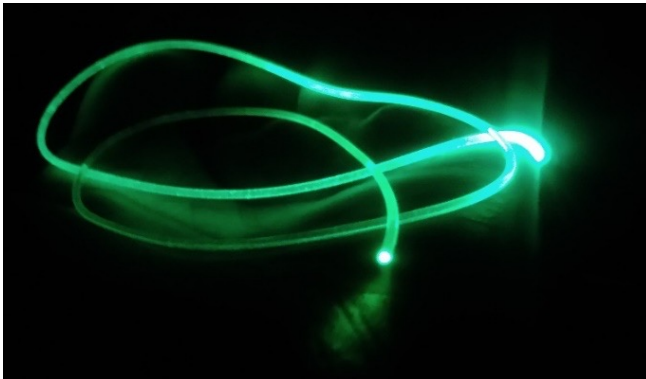
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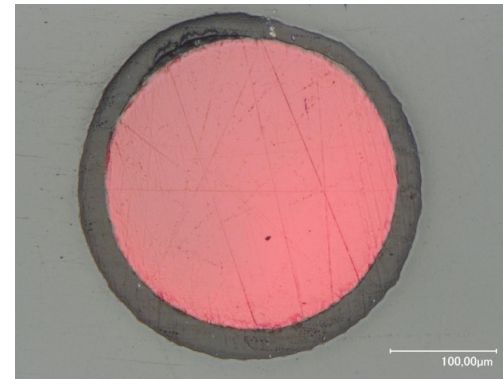


Empa Labs «Advanced Fibers» and «Biomimetic Membranes and Textiles» have know-how in two processes for the production and functionalization of soft and ductile POFs: melt spinning and microfluidic wet spinning. The combined processes allow a wide choice of:

- Materials: thermoplastics, thermosets (solvent-free resins), and hydrogels
- Diameters: from 0.1 mm to 1 mm
- Throughput: from 0.3 m/min to 1000 m/min
- Geometry: core-only, core-cladding
- Type: bare, luminescent, surface-functionalized



Core-only elastomeric POF coupled to a green LED



Luminescent dye in transparent fiber core with fluoropolymer sheath

Find all of our info sheets on fiber and textile research at Empa online: <https://www.empa.ch/web/s401/s402/flyer>