

## PHOSPHATE GLASS BASED BIORESORBABLE OPTICAL FIBERS

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Optical fibers and optical fiber bundles are often used for endoscopy and related (minimally invasive) medical methods because they offer good transparency together with flexibility. The ability to perform the operation, monitoring and chemical analysis of tissues with minimal disruption of the skin or internal organs of the patient is very promising in the medical field. Traditionally, silica optical fibers are used. Although silicon oxide is a biocompatible material, its use involves a serious health risk due to its fragility and the fact that potential fiber fragments can move freely inside a body and they are not detectable by conventional methods such as X-ray imaging. A possible solution to this issue can be the development of optical fibers based on biodegradable materials.

We report on the fabrication and *in-vitro* testing of bioresorbable optical fibers based on phosphate glasses. A sodium phosphate glass fiber was manufactured and its optical properties and solubility in phosphate buffer saline (PBS) solution were evaluated and compared with those of a fiber made of  $P_2O_5$ -CaO-Na<sub>2</sub>O-B<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>-MgO glasses [1].

[1] Ceci-Ginistrelli, E., Pugliese, D., Boetti, N. G., Novajra, G., Ambrosone, A., Lousteau, J., Vitale-Brovarone, C., Abrate, S., Milanese, D., "Novel biocompatible and resorbable UV-transparent phosphate glass based optical fiber," *Opt. Mater. Express* **6**, 2040-2051 (2016).