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# **Yb-doped core-clad borosilicate glass fibers and effect of the cross-section profile on their biodegradation behavior**

**Mikko HONGISTO <sup>a),b)</sup>, Sonya GHANAVATI <sup>b),c)</sup>, Arnaud LEMIERE <sup>b)</sup>, Gregory HAUSS <sup>d)</sup>, Shashank BORAIHA <sup>a)</sup>, Louis CORNET <sup>a)</sup>, Angeline POULON-QUINTIN <sup>a)</sup>, Dominique PAGNOUX <sup>e)</sup>, Dominique BERNARD <sup>a)</sup>, Jonathan MASSERA <sup>c)</sup>, Laeticia PETIT <sup>b)</sup>, Veronique JUBERA <sup>a)</sup>, Sylvain DANTO <sup>a)</sup>**

*a) Univ. Bordeaux, CNRS, Bordeaux INP, ICMCB, UMR 5026, Pessac, F-33600, France*

*b) Tampere University, Photonics Laboratory, Korkeakoulunkatu 3, Tampere, FI-33720, Finland*

*c) Tampere University, Faculty of Medicine and Health Technology, Tampere, FI-33720, Finland*

*d) Univ. Bordeaux, CNRS, PLACAMAT, UMS 3626, Pessac, F-33600, France*

*e) Univ. de Limoges, XLIM, UMR CNRS 7252, 123 Avenue A. Thomas, Limoges, F-87060, France*

[sylvain.danto@u-bordeaux.fr](mailto:sylvain.danto@u-bordeaux.fr)

Here we report on Yb-doped core-clad bioactive borosilicate fibers, that we have prepared both with round and rectangular cross-section profile. The exposed approach, which relies on the stacking and drawing of glass slabs, demonstrates our ability to develop bioactive-based glass fibers with tailored cross-section profiles. Tens-of-meters-long fibers were successfully drawn, although suffering from elevated losses in the case of the rectangular ones.

The response of the fibers in simulated body fluid was studied for both geometries. We found that a round cladding can act as protective layer, tempering effects of the corrosion. We also noticed that rectangular fibers are more prone to degradation, the enhanced corrosion beginning from their sharp corners as they accumulated residual tensile stress during drawing. To the best of our knowledge, this is the first report on the effect of residual tensile stresses from surface tension deformations applied to the corrosion of rectangular fibers. As geometry plays a critical role on the biodegradation behavior of the fiber glass, we believe the enclosed results could lead to the design of fiber devices with tailored cross-section profile in order to tune their rate of degradation on solely-based geometrical effects.