

# Plasma-based optical fiber tapers and sensing applications

L F GRANADOS ZAMBRANO<sup>1,2</sup>, J KORTERIK<sup>1</sup>, D JAUREGUI VAZQUEZ<sup>3</sup>, R ROJAS LAGUNA<sup>4</sup>, J M ESTUDILLO AYALA<sup>5</sup>, H L OFFERHAUS<sup>1</sup>, AND J A ALVAREZ CHAVEZ<sup>1</sup>

<sup>1</sup>*Optical Sciences group, University of Twente, Drienerlolaan 5, 7522NB, Enschede, The Netherlands.*

*Contact Phone: ++31534897528*

<sup>2</sup>*R&D, Super Light Photonics BV, Brandweerstraat 20, 7514AE, Enschede, The Netherlands.*

*Contact Phone: ++31 53 203 0213*

<sup>3</sup>*Applied Physics, Center for Scientific Research and Higher Education at Ensenada, Carretera Ensenada - Tijuana No. 3918, Zona Playitas, CP. 22860, Ensenada, Mexico. Contact Phone: +526461750500*

<sup>4</sup>*Division de Ingenierias campus Irapuato-Salamanca, Universidad de Guanajuato, Carretera Salamanca - Valle de Santiago km 3.5 + 1.8 Comunidad de Palo Blanco, Salamanca, Gto. C.P. 36885, Irapuato, Mexico.*

*Contact Phone: +524646479940*

<sup>5</sup>*División de Ingenierías Campus Irapuato-Salamanca, Universidad de Guanajuato, Carretera Salamanca - Valle de Santiago km 3.5 + 1.8 Comunidad de Palo Blanco, Salamanca, Gto. C.P. 36885, Salamanca, Mexico.*

*Contact Phone: +524646479940*

*Contact Email: j.a.alvarezchavez@utwente.nl*

Optical fiber taper techniques have evolved for more than 35 years, with intrinsic advantages and disadvantages. In house, we have recently developed a simple, yet effective plasma-based technique for optical fiber taper manufacturing with precision, high-repeatability, low-losses and mechanical stability. Our presentation will describe the experimental rig, the main results for adiabatic and non-adiabatic tapers, their optical characterization and real applications as torsion, vibration, temperature and refractive index sensors.