



HAL
open science

Advances in hollow core photonic crystal fibers: improving core surface quality for enhanced light guidance

Ali Al Dhaybi, Jonas Osorio, Frédéric Delahaye, Kostia Vasko, Foued Amrani,
Benoit Beaudou, Benoit Debord, Frédéric Gérôme, Fetah Benabid

► To cite this version:

Ali Al Dhaybi, Jonas Osorio, Frédéric Delahaye, Kostia Vasko, Foued Amrani, et al.. Advances in hollow core photonic crystal fibers: improving core surface quality for enhanced light guidance. Journée thématique sur les fibres optiques pour les lasers intenses, Dec 2024, Palaiseau (Ecole Polytechnique), France. hal-04828361

HAL Id: hal-04828361

<https://hal.science/hal-04828361v1>

Submitted on 10 Dec 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Advances in hollow core photonic crystal fibers: improving core surface quality for enhanced light guidance

*Ali Al Dhaybi*¹, *Jonas Osorio*¹, *Frédéric Delahaye*², *Kostia Vasko*^{1,2}, *Foued Amrani*², *Benoit Beaudou*², *Benoit Debord*^{1,2}, *Frédéric Gérôme*^{1,2} and *Fetah Benabid*^{1,2}

¹ GPPMM Group, XLIM Institute, CNRS UMR 7252, University of Limoges, Limoges, France

² GLOphotonics, 123 Avenue Albert Thomas, Limoges, France

Abstract. The presentation will introduce a new fabrication process which can significantly improve the silica surface roughness of a new generation of hollow core photonic crystal fibers. In particular, by using this technique, record optical performances have been achieved in the short wavelength range with losses measured below the silica Rayleigh scattering limit. Examples of laser beam delivery at specific industrial UV wavelengths including 257/266 nm and 343/355 nm are finally demonstrated.