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► To cite this version:

Jonas Osorio, Foued Amrani, Frédéric, Lucien Delahaye, Matthieu Chafer, Martin Maurel, et al.. Inhibited-coupling hollow-core optical fibers: the road for lower transmission loss and selective modal engineering. International Multidiscipline Conference on Optofluidics 2019, Jun 2019, Hong Kong, China. hal-02331467

HAL Id: hal-02331467

<https://hal.science/hal-02331467>

Submitted on 1 Dec 2020

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Keynote Talk – Invited – IMCO

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Inhibited-Coupling hollow-core optical fibers: the road for lower transmission loss and selective modal engineering

Hollow-core photonic-crystal fibers have been demonstrated to be an excellent platform for the study of topics in fundamental physics and for addressing several applications needs. In this talk, we develop on the recent progresses of inhibited-coupling guiding hollow-core optical fibers ranging from the description of the light guidance mechanism to recently accomplished outstanding results. In this context, we show that a profound understanding of the cladding properties of IC fibers allows to obtain fibers with optimized characteristics. Particularly, we show that, by adequately designing and controlling the fiber physical parameters, it is possible to attain ultralow loss fibers for the ultraviolet, visible and infrared spectral ranges. Moreover, we show that suitable modifications in the fiber cladding microstructure can alter the fiber mode loss hierarchy. It allows the fiber to assume the role of a mode shaper and polarization discriminator.