MDPI

Communication

Theoretical Investigation of the Influence of Wavelength on the Bandwidth in Multimode W-Type Plastic Optical Fibers with Graded-Index Core Distribution

Ana Simović [1], Svetislav Savović [1,2], Branko Drljača [3], Alexandar Djordjevich [2] and Rui Min [4,*]

1 Faculty of Science, University of Kragujevac, R. Domanovića 12, 34000 Kragujevac, Serbia; asimovic@kg.ac.rs (A.S.); savovic@kg.ac.rs (S.S.)
2 Department of Mechanical Engineering, City University of Hong Kong, 83 Tat Chee Avenue, Hong Kong 7903, China; mealex@cityu.edu.hk
3 Faculty of Sciences, University of Priština in Kosovska Mitrovica, Lole Ribara 29, 38220 Kosovska Mitrovica, Serbia; branko.drljaca@pr.ac.rs
4 Center for Cognition and Neuroergonomics, State Key Laboratory of Cognitive Neuroscience and Learning, Beijing Normal University at Zhuhai, Zhuhai 519087, China
* Correspondence: rumi@alumni.upv.es

Abstract: The bandwidth of multimode W-type plastic optical fibers (POFs) with graded-index (GI) core distribution is investigated by solving the time-dependent power flow equation. The multimode W-type GI POF is designed from a multimode single-clad (SC) GI POF fiber upon modification of the cladding layer of the latter. Results show how the bandwidth in W-type GI POFs can be enhanced by increasing the wavelength for different widths of the intermediate layer and refractive indices of the outer cladding. These fibers are characterized according to their apparent efficiency to reduce modal dispersion and increase bandwidth.

check for updates