

INFLUENCE OF THE WAVELENGTH ON THE BANDWIDTH IN W-TYPE PLASTIC OPTICAL FIBERS

Branko Drljača,¹ Ana Simović,² Alexandar Djordjevich,³ and Svetislav Savović^{2,3*}

¹*Faculty of Sciences and Mathematics
University of Priština in Kosovska Mitrovica
Lole Ribara 29, Kosovska Mitrovica, Serbia*

²*Faculty of Science, University of Kragujevac
R. Domanovica 12, Kragujevac 34000, Serbia*

³*City University of Hong Kong
Tat Chee Avenue 83, Hong Kong, China*

*Corresponding author e-mail: savovic@kg.ac.rs

Abstract

We investigate the bandwidth and steady-state losses of multimode W-type plastic optical fibers solving the time-dependent power flow equation and show how the bandwidth in W-type plastic optical fibers can be enhanced by increasing the wavelength for different widths of the intermediate layer and refractive indices of the outer cladding. Such characterization of the fibers is consistent with their manifested efficiency in reducing modal dispersion and increasing bandwidth; this fact facilitates tailoring W-fibers to a specific application at hand at different wavelengths.

Keywords: W-type plastic optical fiber, laser launch beam, power flow equation, bandwidth, steady-state losses.