

8th World Congress on

Biopolymers & Bioplastics

June 28-29, 2018 | Berlin, Germany

Net of self-written waveguides in a dry photopolymer

Ra'ed Malallah^{1,2}, Derek Cassidy¹, Inbarasan Muniraj¹, Min Wan¹ and John T. Sheridan¹¹University College Dublin, Ireland.²University of Basrah, Iraq.

Non-linear optics and photo-polymerization process are distinct fields that have been studied for decades. Recently, polymeric optical waveguides have attracted much attention for use in optical interconnects and in integrated devices for optical communications in the access network and the home network areas. Which are intersect with the observation of wave propagation through photopolymer media during self-written waveguide (SWW) process. For the first time it is demonstrated that permanent optical net-waveguides can be written in a solid acrylamide/polyvinyl alcohol (AA/PVA) photopolymer material. In this article presents a studying of non-linear optics in photopolymer systems to form a net-waveguides. This has led to studies on the nonlinear dynamics of transmitted light in photopolymer media, particularly for optical self-propagating during refractive index changed. A standard theoretical model is used to predict both the evolution of the light intensity distribution and the trajectories formation inside the material during the exposure. The experimental results and the numerical simulations are compared, and good agreement is obtained.

raed.malallah@ucdconnect.ie