



# Control of the Refractive Index in Photopolymerizable Materials for (2+1)D Solitary Wave Guide Formation

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We report an experimental and theoretical study on the optimization of (2+1)D self-written waveguide formation inside a photopolymerizable material. The accurate control of the refractive index value inside the bulk of the material during the polymerization process gives us the opportunity to define a virtual core and a virtual cladding for the system. The V value which characterizes the guidance properties of a fiber can be applied to this propagation. The control of the V value allows us to propagate single mode or multimode waveguides on a few centimeters. Numerical simulations of these waveguides based on a paraxial model including both photopolymerization and Kerr effect give very good agreement with our experimental results.

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