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Review

Supercontinuum (SC) generation has attracted a significant scientific interest in the past decades due to its promising applications covering the fields of metrology, spectroscopy, defense, as well as medical treatments. The common method for SC generation is achieved by a piece of highly nonlinear medium pumped by ultra-short pulses. When the ultra-short laser pulse is transmitted in the nonlinear medium, the spectrum of the pulse will produce spectral broadening under the combination of nonlinear effects and group velocity dispersion, thus forming a SC spectrum. Since the light transmitted in the fiber does not produce a diffraction effect, it can provide a long distance high intensity output and reduce the requirement for the seed source, thus the fiber is widely used as a nonlinear medium for SC generation, especially specialty optical fibers, such as photonic crystal fiber (PCF), soft glass fibers and germania doped fiber. This paper mainly summarizes the theory of SC, the state of the art of flat SC generation in above three primary fibers. The emergence of specialty optical fibers has set off a boom in broadband flat SC research, the study of broadband flat SC generation is not only of great academic significance, but also of great value in practical applications, especially the flatness of the spectrum, which can improve the accuracy of measurement in practical applications and become a research hotspot of various research institutions at home and abroad.

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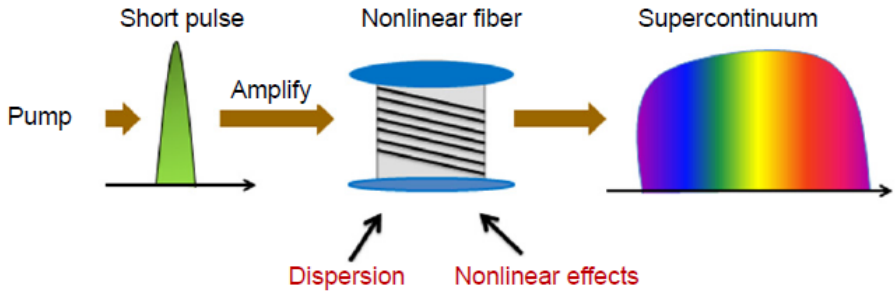

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Original Article

Optical axial scanning is essential process to obtain 3D information of biological specimens. There are several methods to realize optical axial scanning. Among these methods, the tunable lens is a good solution due to adaptive scanning without any movement parts. Prof. Wang's group report a movable electrowetting optofluidic lens. Compared with the conventional tunable lens, their lens has two liquid-liquid (L-L) interfaces, and the two L-L interfaces can move in the cell by an external voltage. The object distance and image distance are adjusted by shifting the L-L interface position. Therefore, the proposed lens can realize optical axial scanning with uniform magnification and resolution in microscopy. The scanning distance is more than 1 mm with uniform magnification and good imaging quality. Widespread application of such a new adaptive zoom lens is foreseeable.

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