



## Gain Equalisation of Optical Fiber Amplifier for Wavelength-Division Multiplexing System

Broad-bandwidth amplification is essential for the construction of high-capacity wavelength-division multiplexing (WDM) system. We propose a novel silica-based erbium-doped fiber amplifier (EDFA) with a flat gain at each channel by using a series of short-period fiber gratings. In the proposed configuration, the gratings with different centre frequencies are spliced at the end of EDFA to reflect signals and resonant pump source back to the EDFA with different reflectivity for amplification the second time. With careful control of their reflectivities, we can get an equalized output in the end. It is believed that the scheme will be very useful in point-to-point systems for its simplicity and good utilization of device. The gain dynamics prevalent when one or more channels are dropped from a WDM system has also been considered for further implementation of a robust network operation.

