

Abstract

Moustafa Hussein Aly

EDFA gain flattening using cascaded fiber Bragg gratings

Gain flattening of erbium-doped fiber amplifiers (EDFAs) is necessary for wavelength-division multiplexed (WDM) optical communication networks to offer equal amplifications for all channels. Such kind of amplifiers can be fabricated following two approaches: intrinsic modification of an amplifier host material and extrinsic incorporation of an optical filter. In this paper, we theoretically apply the two approaches simultaneously to design EDFA of flat gain spectrum. We use three different modified host materials and cascaded fiber Bragg gratings (FBGs) to get excellent EDFA flat gain. The designed structure in this paper could also be used to equalize any arbitrary gain profile.