

Title (en)

AMPLIFIERS AND LIGHT SOURCES EMPLOYING S-BAND ERBIUM-DOPED FIBER AND L-BAND THULIUM-DOPED FIBER WITH DISTRIBUTED SUPPRESSION OF AMPLIFIED SPONTANEOUS EMISSION (ASE)

Title (de)

VERSTÄRKER UND LICHTQUELLEN MIT ERBIUM-DOTIERTER S-BAND-FASER UND THULIUM-DOTIERTER I-Band-FASER MIT VERTEILTER UNTERDRÜCKUNG UND VERSTÄRKTER SPONTANER EMISSION (ASE)

Title (fr)

AMPLIFICATEURS ET SOURCES LUMINEUSES A FIBRE DOPEE A L'ERBIUM EN BANDE S ET A FIBRE DOPEE AU THULIUM EN BANDE L A ELIMINATION REPARTIE D'EMISSION SPONTANEE AMPLIFIEE (ASE)

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Application

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Abstract (en)

[origin: WO03077381A2] The present invention provides an Erbium-Doped Fiber Amplifier (EDFA) and a source that employs the EDFA for generating light in an S-band of wavelengths. A fiber amplifier (10) in a depressed cladding or W-profile fiber has a core (12) doped with the active material (18) and defined by a core cross-section and a refractive index no. A depressed cladding (14) of index n1 surrounds the core (12) and a secondary cladding (16) of index n2 surrounding the depressed cladding (14). The fiber amplifier is pumped a level of high relative inversion D, such that the active material exhibits positive gains in a short wavelength band and high gains in a long wavelength band. In one embodiment, the core cross-section, the depressed cladding cross-section and the refractive indices no, n1, and n2 are selected to provide distributed ASE suppression at wavelengths longer than cutoff wavelength lambdc over the length of fiber amplifier (10). In another embodiment, such selection provides a roll-off loss curve about a cutoff wavelength lambdc. The roll-off loss curve yields losses at least comparable to the high gains in the long wavelength band and losses substantially smaller than the positive gains in the short wavelength band. To obtain the desired roll-off loss curve the refractive index no in the core is selected such that an effective index neff experienced by the confined mode maximizes a roll-off slope of the roll-off loss curve before the cutoff wavelength.

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