

Review of Erbium-doped fiber amplifier.

ABSTRACT

Data communication systems are increasingly employing optical fiber communication systems (OFCS) as the transmission paths for information. Various types of optical amplifiers have been developed in OFCS to amplify optical signals. In particular, the Erbium-doped fiber amplifier (EDFA) is one example of an optical fiber amplifier that is widely known for use in amplifying optical signals. The most significant points in any optical amplifier design are gain and noise figure (NF). They are closely related to each other. Low NF and high gain are the main features for optimum amplifier (Desurvire, 1987). On the other hand, the gain and NF have very strong impact with EDFA's configurations. Therefore, changes in EDFA's configuration play very important role during the designing of optical amplifier. The literature shows that there is no study that has been done to review the EDF configuration. Therefore, in this paper we are presenting an overview of most of the EDFA's configurations that have been proposed in order to provide the researchers with a clear view of what has been done in this field.

Keyword: Communication system; Optical amplifier; EDFA configurations; Noise figure; Gain amplifier; Rare-earth doped fibers; Atomic systems; EDFA's position.