Bi-doped Fiber Amplifiers: Optical properties, Challenges and Applications

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Bismuth (Bi)-doped optical fibers are of great interest because of the broad luminescence offered by them. These fibers have huge potential to develop lasers and amplifiers in wavelength bands uncovered by the rare earth (RE)-doped materials such as Ytterbium, Erbium, and Thulium. Bi-doped aluminosilicate, phosphosilicate and germanosilicate fibers have shown luminescence around 1150nm, 1300nm and 1450nm bands, respectively. The lasers and amplifiers in these bands have widespread applications in medicine, astronomy and material processing as well as optical fiber communication. Here, we introduce the optical properties of Bi-doped fibers and current challenges for their optimum performance. We also review our recent developments in Bi-doped aluminosilicate and phosphosilicate fiber amplifiers operating in different wavelength bands of the near-IR region and their applications.

References:

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