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New High Power Rare-Earth-Doped Fiber Laser Materials and Architectures

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Biography: Mr. Myers received his BS in Physics & Math from Purdue University in 1959. Graduate studies at Purdue, Pennsylvania State University and Cornell University followed. Mr. Myers developed one of the first laser optical radars systems at Cornell Aeronautical Laboratories in 1961. In 1963, he developed (at that time) the worlds most powerful Ruby laser at Lear Siegler Corp. Mr. Myers was Laser Product Manager at Owens-Illinois from 1967 to 1972. Mr. Myers founded Kigre, Inc. in 1973. Mr. Myers has authored or co-authored over 20 patents and 50 technical publications. He was the original Chairman for Lasers, ASTM and a Director of the Laser Institute of America.

Abstract

Kigre is developing new rare-earth-doped glass fiber laser materials specifically for use in multiple clad and multiple core LMA (Large Mode Area) and super mode (guided wave) fiber laser constructs. In this work we describe new end-pump double clad fiber laser designs fabricated from high performance phosphate laser glass compositions. One DC (Double Clad) LMA fiber is doped with erbium/ytterbium for 1.54um laser emission. Another DC LMA fiber is doped with ytterbium for 1.03um laser emission. A third DC multiple core "supermode" fiber is doped with neodymium for 1.053um laser emission. Initial fiber laser performance data is presented. The erbium/ytterbium & ytterbium only doped fibers are end-pumped at 940/975nm with 40-Watt fiber coupled laser diodes. The neodymium-doped fiber is end-pumped with an 808nm 40-Watt fiber coupled laser diodes. Design and performance data for new side-pumped, highly doped phosphate DC LMA fiber laser architectures are presented.

Key Words: Fiber Laser, Double Clad, Cladding Pump, Rare Earth Doped Fiber

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