Title (en)

HIGH GAIN LASER AMPLIFIER

Title (de)

LASER MIT HOHER VERSTÄRKUNG

Title (fr)

AMPLIFICATEUR LASER A GAIN ELEVE

Publication

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Application

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Abstract (en)

[origin: WO03063306A1] A high gain optical amplifier and method. Generally, the inventive amplifier includes a first crystal (14) having an axis (14) and a first index of refraction and a second crystal (16) bonded to teh first crystal (12) about the axis (14) and having a second indey of refraction. The first index is higher that the second index such that light through the first crystal is totally internally reflected. In the illustrative embodiment, the first crystal (12) is Yb: YAG with an index of approximately 1.82m the second crystal (16) is Sapphire with an index of approximately 1.78, and the axis (14) is the propagation axis. The invention is, in its perferred embodiment, a light guide fabricated out of crystalline materials, diffusion bonded together. If the core of the light guide is doped with laser ions, high gain amplifiers made be designed and operable over a large etendue. With a judicious choice of the laser crystal and cladding materials, shape, and bonding technique, the guided amplifier is much less susceptible to parasitic oscillation than amplifiers constructed in accordance with conventional teachings. The clad core is also able to handle larger thermal load without breakage than can an unclad core.

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