

Electronic Supplementary Information (ESI)

Setup experiments

Crystal growth

A resistive heated furnace monitored by a 3504 Eurotherm regulator is used to achieve a low longitudinal thermal gradient around 2°C cm⁻¹ in the liquid phase. The 4 cm high and 3 cm inner diameter platinum crucible is top-covered by a 1 mm-thick and Φ=4 X 2.5 mm platinum reflector washer in order to lower transversal thermal gradient in the vicinity of the melt surface, preventing to some extent multinucleation of the solute on the platinum wire holding the seed.

Spectroscopy

Absorption spectra were recorded using a double beam spectrophotometer (CARY 5000 UVVIS-NIR) between 800 and 1200 nm.

Emission spectrum was recorded on a Jobin-Yvon Fluorolog 3 connected to an InGaAs DSS detector on front exit of an iHR320 monochromator

DRX results

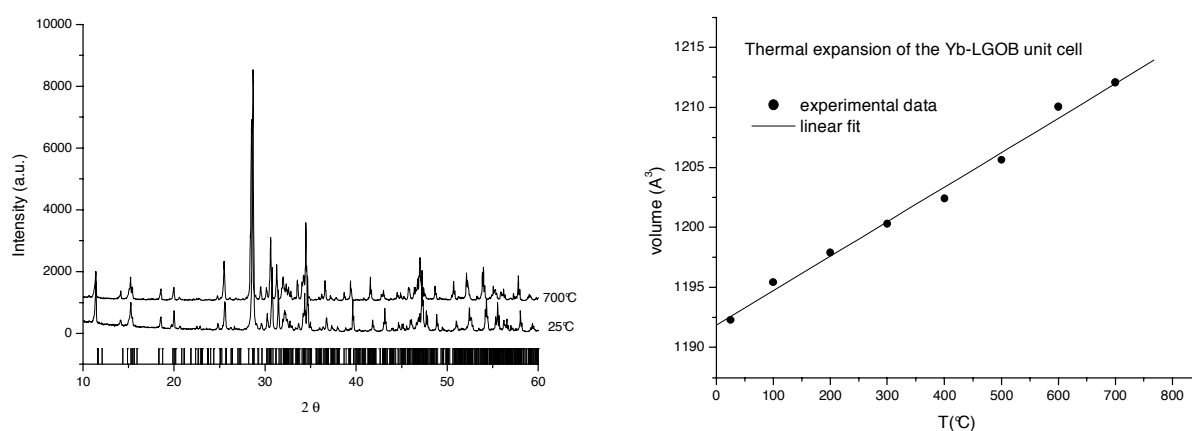


Figure SD1- Crushed crystal Yb-LGOB DRX at 25°C and 700°C - Thermal expansion of the Yb-LGOB unit cell

Calculation of the gain cross-section

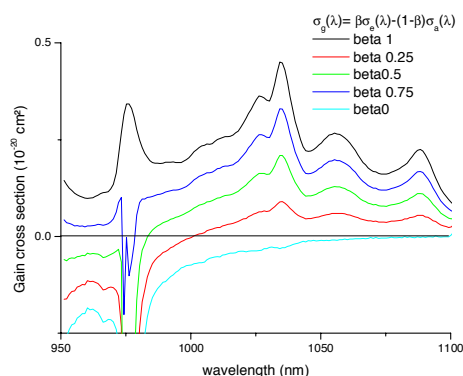


Figure SD2- Gain cross section of the Yb-LGOB crystal.