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Diode pumped microchip lasers offer many advantages : simplicity, compactness, the possibility to have a single frequency oscillation with a suitable reduction of the microcavity length, and finally if necessary to be tunable in the gain bandwidth [1, 2, 3].

We report the results obtained with different LNA microchip lasers which have been built and tested for helium magnetometry application.

A special crystal of LMA:Nd was pulled by the Czochralski method, in our laboratory, with a suitable composition in order to center a fluorescence peak near 1083 nm. From this crystal boule, different disks (ϕ = 5 mm) were cut and polished in four thickness (170, 350, 600 and 1000 μm). These LNA samples have received especially designed dichroïc mirrors in order to discriminate the 1083 nm emission against the strongest 1054 nm laser band.

Pumped with an 1 watt laser diode around 800 nm, laser emission at 1083 nm was observed with a power between 1 and 30 mw respectively for the LNA microchips having 170 and 1000 μm thicknesses. The 170 μm microchip laser oscillates with only two longitudinal modes.

Furthermore, the tunability of the laser wavelength at helium resonances (D0 and D1 D2) was easily obtained with a helium cell, by thermal regulation of the microchip lasers between 20 and 100°C.

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