

Universal manuscript template for Optica Publishing Group journals

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Abstract: not yet

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1. Introduction

not yet

2. Experimental setup

2.1. 976 nm amplifier system

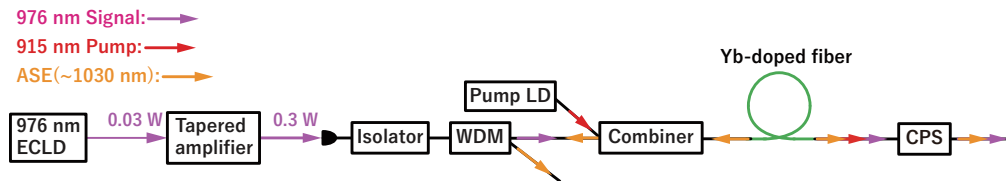


Fig. 1. 976 nm YDFA system.

A schematic of the 976 nm YDFA system is shown in Fig. 1. An external-cavity laser diode (ECLD) at 976 nm is used for the seed laser. The seed laser is pre-amplified by tapered amplifier from 30 mW to 900 mW, and coupled to the YDFA input fiber which is a polarization maintaining (PM) fiber with a FPC/AC connector. The seed input of the YDFA is connected to an isolator and a wavelength division multiplexing (WDM) filter, which are used to block return light such as backward ASE to the seed laser. The seed and pump are combined into a double cladding PM fiber, which has a core diameter of 20 μm and a cladding diameter of 125 μm by a pump and signal combiner. The 915 nm radiation for pumping the Yb-doped fiber is generated from fiber-coupled laser diode with an output power of up to 70 W. The output is directly fusion-spliced to a input port of the pump and signal combiner. The combiner output is spliced to the Yb-doped fiber. The Yb-doped fiber nLIGHT Yb1200-25/125DC-PM is used as the gain fiber. The fiber is fixed on top of the water-cooled heatsink with a thermal conductive sheet. The cladding power stripper (CPS) is connected after Yb-doped fiber to remove a residual pump power in the output of Yb-doped fiber. The output of YDFA system collimated by pigtailed collimator is separated into the ASE around 1030 nm and other wavelengths by a filter.

2.2. 987 nm amplifier system

The design of the 987 nm YDFA system is shown in Fig. 2. The 987 nm YDFA has almost the same configuration as the 976 nm YDFA system.

2.3. 1112 nm amplifier system

The configuration of the 1112 nm YDFA system is shown in Fig. 3. The 1112 nm YDFA system consists of a two-stage amplifier. The fiber laser at 1112 nm (Menlo systems Orange one-2) is

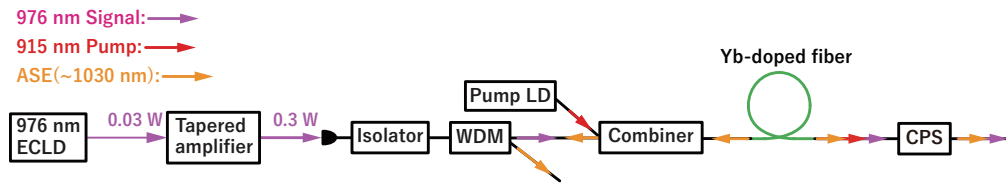


Fig. 2. 987 nm YDFA system.

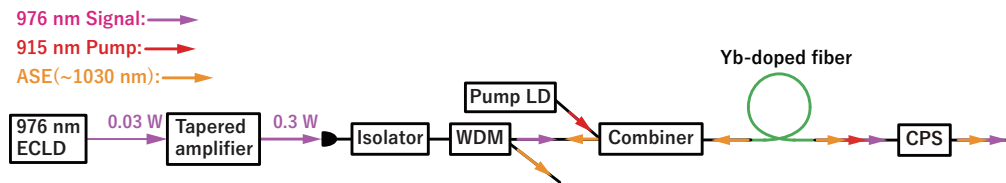


Fig. 3. 1112 nm YDFA system.

used as the seed laser. As in the 976 nm YDFA system, the seed laser and the pump laser, which is generated by fiber-coupled laser diode at 976 nm, are coupled to a double-cladding fiber with the combiner, which has a core diameter of 10 μm and a cladding diameter of 125 μm . The Yb doped fiber (nLIGHT Yb1200-10/125DC) is fixed inside an aluminum enclosure with thermal conductive sheet. Temperature of the aluminum enclosure is controlled by peltier devices. The output from Yb-doped fiber is separated into 1112 nm signal component and ASE component around 1030 nm by WDM, and only the signal component is coupled to the input of the second amplifier stage.

3. Results and discussion

3.1. 976 nm YDFA

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3.2. 987 nm YDFA

3.3. 1112 nm YDFA

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64 \begin{figure}[htbp]  
65 \centering\includegraphics[width=7cm]{osafig1}  
66 \caption{Sample caption (Fig. 2, \cite{Yelin:03}).}  
67 \end{figure}
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79 5.3. Sample Dataset Citation

80 1. M. Partridge, "Spectra evolution during coating," figshare (2014), <http://dx.doi.org/10.6084/m9.figshare.1004612>.

81 5.4. Sample Code Citation

82 2. C. Rivers, "EpiPy: Python tools for epidemiology," figshare (2014) [retrieved 13 May 2015],
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$$J(\rho) = \frac{\gamma^2}{2} \sum_{k(\text{even})=-\infty}^{\infty} \frac{(1+k\tau)}{[(1+k\tau)^2 + (\gamma\rho)^2]^{3/2}}. \quad (1)$$

88 All equations should be numbered in the order in which they appear and should be referenced
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142 mat the section according to standard style, showing the title **References** Use the `\bibitem{label}`
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147 inside square brackets [1].

148 To reference multiple articles at once, simply use a comma to separate the reference labels, e.g.
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164 Add references with BibTeX or manually. [1–8]

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183 [org/10.6084/m9.figshare.1005064](http://dx.doi.org/10.6084/m9.figshare.1005064).