

Universal manuscript template for Optica Publishing Group journals

AUTHOR ONE,^{1,*} AUTHOR TWO,¹ AND AUTHOR THREE¹

¹Reserch Institute for Interdisciplinary Science, Okayama University, Okayama, Japan

*imai1117@okayama-u.ac.jp

Abstract: not yet

© 2022 Optica Publishing Group under the terms of the [Optica Publishing Group Publishing Agreement](#)

1. Introduction

not yet

2. Experimental setup

2.1. 976 nm amplifier system

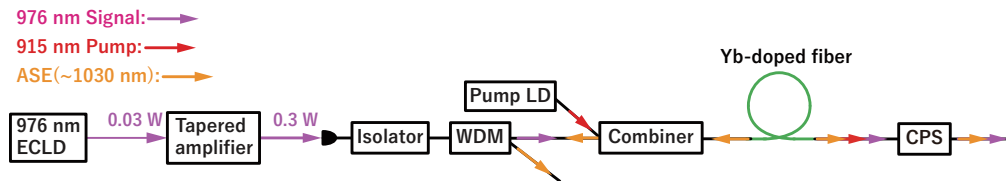


Fig. 1. 976 nm YDFA system.

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 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. The seed laser is composed of ECLD at 987 nm. The maximum seed and pump powers after a combiner are 30 mW and 30 W, respectively.

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

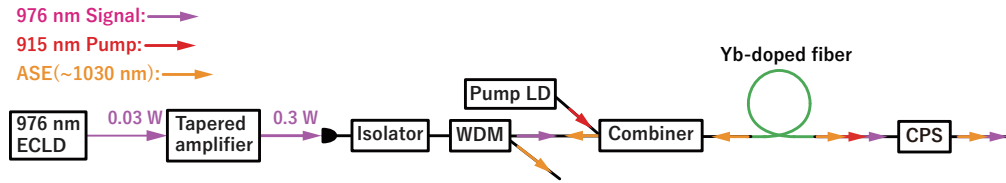


Fig. 2. 987 nm YDFA system.

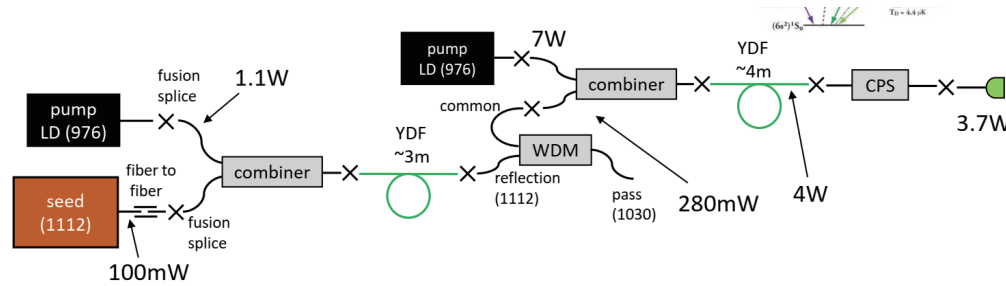


Fig. 3. 1112 nm YDFA system.

used as the seed laser. In the first stage, the seed laser and the pump laser, which is generated by fiber-coupled laser diode at 976 nm with a maximum output of 7 W, are mixed with the first combiner. The first combiner has a signal port, two pump ports, and a common port, which are a single-mode fiber of 5.8/125 μm , multi-mode fibers of 105/125 μm , and a double-cladding fiber 101/25 μm . The seed power at the common port of the first combiner is 80 mW. The Yb-doped fiber (nLIGHT Yb1200-10/125DC) is used as a gain fiber. The length of the Yb-doped fiber 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 the second amplifier stage. The se 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.

3. Results and discussion

3.1. 976 nm YDFA

The abstract should be limited to approximately 100 words If the work of another author is cited in the abstract, that citation should be written out without a number, (e.g., journal, volume, first page, and year in square brackets [Opt. Express **22**, 1234 (2014)]), and a separate citation should be included in the body of the text The first reference cited in the main text must be [1] Do not include numbers, bullets, or lists inside the abstract.

3.2. 987 nm YDFA

3.3. 1112 nm YDFA

4. Assessing final manuscript length

The Universal Manuscript Template is based on the Express journal layout and will provide an accurate length estimate for *Optics Express*, *Biomedical Optics Express*, *Optical Materials Express*, and our newest title *OSA Continuum Applied Optics*, *JOSAA*, *JOSAB*, *Optics Letters*, *Optica*, and *Photonics Research* publish articles in a two-column layout To estimate the final page count in a two-column layout, multiply the manuscript page count (in increments of 1/4 page) by

59 60% For example, 11.5 pages in the Universal Manuscript Template are roughly equivalent to 7
60 composed two-column pages Note that the estimate is only an approximation, as treatment of
61 figure sizing, equation display, and other aspects can vary greatly across manuscripts Authors of
62 Letters may use the legacy template for a more accurate length estimate.

63 **5. Figures, tables, and supplementary materials**

64 *5.1. Figures and tables*

65 Figures and tables should be placed in the body of the manuscript. Standard L^AT_EX environments
66 should be used to place tables and figures:

```
67 \begin{figure} [htbp]
68 \centering\includegraphics[width=7cm]{osafig1}
69 \caption{Sample caption (Fig. 2, \cite{Yelin:03}).}
70 \end{figure}
```

71 *5.2. Supplementary materials in Optica Publishing Group journals*

72 Our journals allow authors to include supplementary materials as integral parts of a manuscript
73 Such materials are subject to peer-review procedures along with the rest of the paper and should be
74 uploaded and described using our Prism manuscript system Please refer to the [Author Guidelines](#)
75 [for Supplementary Materials in Optica Publishing Group Journals](#) for more detailed instructions
76 on labeling supplementary materials and your manuscript.

77 **Authors may also include Supplemental Documents** (PDF documents with expanded
78 descriptions or methods) with the primary manuscript At this time, supplemental PDF files are
79 not accepted for partner titles, JOCN and *Photonics Research* To reference the supplementary
80 document, the statement “See Supplement 1 for supporting content.” should appear at the bottom
81 of the manuscript (above the References heading).

82 *5.3. Sample Dataset Citation*

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

84 *5.4. Sample Code Citation*

85 2. C. Rivers, "EpiPy: Python tools for epidemiology," figshare (2014) [retrieved 13 May 2015],
86 <http://dx.doi.org/10.6084/m9.figshare.1005064>.

87 **6. Mathematical and scientific notation**

88 *6.1. Displayed equations*

89 Displayed equations should be centered. Equation numbers should appear at the right-hand
90 margin, in parentheses:

$$J(\rho) = \frac{\gamma^2}{2} \sum_{k(\text{even})=-\infty}^{\infty} \frac{(1 + k\tau)}{[(1 + k\tau)^2 + (\gamma\rho)^2]^{3/2}}. \quad (1)$$

91 All equations should be numbered in the order in which they appear and should be referenced
92 from within the main text as Eq. (1), Eq. (2), and so on [or as inequality (1), etc., as appropriate].

93 **7. Backmatter**

94 Backmatter sections should be listed in the order Funding/Acknowledgment/Disclosures/Data
95 Availability Statement/Supplemental Document section An example of backmatter with each of
96 these sections included is shown below.

97 **Funding.** Content in the funding section will be generated entirely from details submitted to Prism
98 Authors may add placeholder text in the manuscript to assess length, but any text added to this section
99 in the manuscript will be replaced during production and will display official funder names along with
100 any grant numbers provided. If additional details about a funder are required, they may be added to the
101 Acknowledgments, even if this duplicates information in the funding section. See the example below in
102 Acknowledgements.

103 **Acknowledgments.** Acknowledgments should be included at the end of the document. The section
104 title should not follow the numbering scheme of the body of the paper. Additional information crediting
105 individuals who contributed to the work being reported, clarifying who received funding from a particular
106 source, or other information that does not fit the criteria for the funding block may also be included; for
107 example, “K. Flockhart thanks the National Science Foundation for help identifying collaborators for this
108 work.”

109 **Disclosures.** Disclosures should be listed in a separate nonnumbered section at the end of the manuscript.
110 List the Disclosures codes identified on the [Conflict of Interest policy page](#), as shown in the examples below:

111 ABC: 123 Corporation (I,E,P), DEF: 456 Corporation (R,S), GHI: 789 Corporation (C).

112 If there are no disclosures, then list “The authors declare no conflicts of interest.”

113 **Data Availability Statement.** A Data Availability Statement (DAS) will be required for all submissions
114 beginning 1 March 2021. The DAS should be an unnumbered separate section titled “Data Availability”
115 that immediately follows the Disclosures section. See the [Data Availability Statement policy page](#) for more
116 information.

117 OSA has identified four common (sometimes overlapping) situations that authors should use as guidance.
118 These are provided as minimal models, and authors should feel free to include any additional details that
119 may be relevant.

120 1. When datasets are included as integral supplementary material in the paper, they must be declared
121 (e.g., as “Dataset 1” following our current supplementary materials policy) and cited in the DAS, and
122 should appear in the references.

123 **Data availability.** Data underlying the results presented in this paper are available in Dataset 1,
124 Ref. [3].

125 2. When datasets are cited but not submitted as integral supplementary material, they must be cited in
126 the DAS and should appear in the references.

127 **Data availability.** Data underlying the results presented in this paper are available in Ref. [3].

128 3. If the data generated or analyzed as part of the research are not publicly available, that should be
129 stated. Authors are encouraged to explain why (e.g. the data may be restricted for privacy reasons),
130 and how the data might be obtained or accessed in the future.

131 **Data availability.** Data underlying the results presented in this paper are not publicly available at
132 this time but may be obtained from the authors upon reasonable request.

133 4. If no data were generated or analyzed in the presented research, that should be stated.

134 **Data availability.** No data were generated or analyzed in the presented research.

135 **Supplemental document.** See Supplement 1 for supporting content.

136 8. References

137 Proper formatting of references is extremely important, not only for consistent appearance but
138 also for accurate electronic tagging. Please follow the guidelines provided below on formatting,
139 callouts, and use of BibTeX.

140 8.1. Formatting reference items

141 Each source must have its own reference number Footnotes (notes at the bottom of text pages) are
142 not used in our journals References require all author names, full titles, and inclusive pagination
143 Examples of common reference types can be found in the [style guide](#).

144 The commands `\begin{thebibliography}{} and \end{thebibliography}` for-
145 mat the section according to standard style, showing the title **References** Use the `\bibitem{label}`
146 command to start each reference.

147 8.2. Formatting reference citations

148 References should be numbered consecutively in the order in which they are referenced in the
149 body of the paper Set reference callouts with standard `\cite{}` command or set manually
150 inside square brackets [1].

151 To reference multiple articles at once, simply use a comma to separate the reference labels, e.g.
152 `\cite{Yelin:03,Masajada:13,Zhang:14}`, produces [1–3].

153 8.3. BibTeX

154 BibTeX may be used to create a file containing the references, whose contents (i.e., contents of
155 .bbl file) can then be pasted into the bibliography section of the .tex file. A BibTeX style file,
156 osajnl.bst, is provided.

157 If your manuscript already contains a manually formatted `\begin{thebibliography}...`
158 `\end{thebibliography}` list, then delete the latexmkrc file (if present) from your
159 submission files However you should ensure that your manually-formatted reference list adheres
160 to style accurately.

161 9. Conclusion

162 After proofreading the manuscript, compress your .tex manuscript file and all figures (which
163 should be in EPS or PDF format) in a ZIP, TAR or TAR-GZIP package All files must be referenced
164 at the root level (e.g., file figure-1.eps, not /myfigs/figure-1.eps). If there are
165 supplementary materials, the associated files should not be included in your manuscript archive
166 but be uploaded separately through the Prism interface.

167 Add references with BibTeX or manually. [1–8]

168 References

- 169 1. D. Yelin, D. Oron, S. Thiberge, E. Moses, and Y. Silberberg, “Multiphoton plasmon-resonance microscopy,” Opt.
170 Express **11**, 1385–1391 (2003).
- 171 2. J. Masajada, M. Bacia, and S. Drobczyński, “Cluster formation in ferrofluids induced by holographic optical tweezers,”
172 Opt. Lett. **38**, 3910–3913 (2013).
- 173 3. Y. Zhang, S. Qiao, L. Sun, Q. W. Shi, W. Huang, L. Li, and Z. Yang, “Photoinduced active terahertz metamaterials
174 with nanostructured vanadium dioxide film deposited by sol-gel method,” Opt. Express **22**, 11070–11078 (2014).
- 175 4. Optica, “Optica Publishing Group,” <https://www.opg.optica.org>.
- 176 5. P. Forster, V. Ramaswamy, P. Artaxo, T. Bernsten, R. Betts, D. Fahey, J. Haywood, J. Lean, D. Lowe, G. Myhre,
177 J. Nganga, R. Prinn, G. Raga, M. Schulz, and R. V. Dorland, “Changes in atmospheric constituents and in radiative
178 forcing,” in *Climate Change 2007: The Physical Science Basis. Contribution of Working Group 1 to the Fourth
179 assesment report of Intergovernmental Panel on Climate Change*, S. Solomon, D. Qin, M. Manning, Z. Chen,
180 M. Marquis, K. B. Averyt, M. Tignor, and H. L. Miler, eds. (Cambridge University Press, 2007).
- 181 6. B. H. Dean, D. L. Aronstein, S. J. Smith, R. Shiri, and S. D. Acton, “Phase retrieval algorithm for JWST flight and
182 testbed telescope,” in *Space Telescopes and Instrumentation I: Optical, Infrared, and Millimeter*, vol. 6265 (2006),
183 p. 17.
- 184 7. R. McKay, “X-ray crystallography,” Ph.D. thesis, Princeton University (1982).
- 185 8. C. Rivers, “EpiPy: Python tools for epidemiology,” figshare (2014) [retrieved 13 May 2015], [http://dx.doi.](http://dx.doi.org/10.6084/m9.figshare.1005064)
186 [org/10.6084/m9.figshare.1005064](http://dx.doi.org/10.6084/m9.figshare.1005064).