

# Erbium-doped TeO<sub>2</sub>-coated Si<sub>3</sub>N<sub>4</sub> waveguide amplifiers with 5 dB net gain: erratum

HENRY C. FRANKIS,<sup>1,\*</sup> HAMIDU M. MBONDE,<sup>1</sup> DAWSON B. BONNEVILLE,<sup>1</sup> CHENGLIN ZHANG,<sup>1</sup> RICHARD MATEMAN,<sup>2</sup> ARNE LEINSE,<sup>2</sup> AND JONATHAN D. B. BRADLEY<sup>1</sup>

<sup>1</sup>Department of Engineering Physics, McMaster University, Hamilton, Ontario L8S 4L7, Canada

<sup>2</sup>LioniX International BV, Enschede AL 7500, The Netherlands

\*Corresponding author: frankihc@mcmstr.ca

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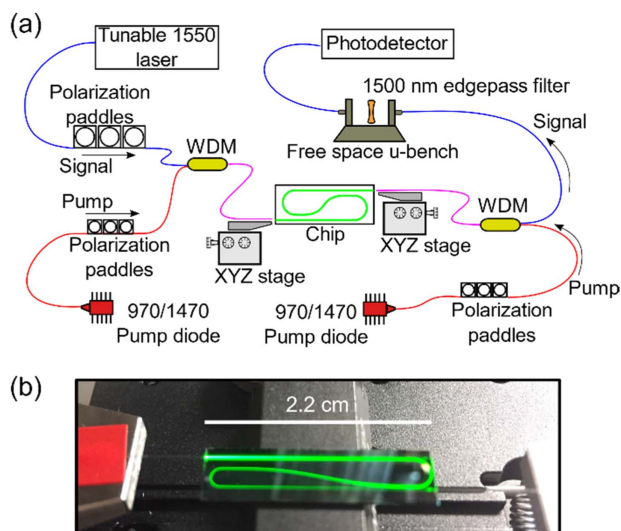
This erratum corrects typos that appeared in *Photon. Res.* 8, 127 (2020) in the text, a figure showing the experimental setup, and a table listing the absorption and emission cross section values used in simulations. © 2020 Chinese Laser Press

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The authors wish to correct some typos in Ref. [1]. The corrections are as follows.

1. On page 128, paragraph 3 the word “non-negligible,” should instead just be “negligible.”

2. In Fig. 2(a) of the optical measurement setup a pump diode was incorrectly labeled to be a 1480 nm wavelength, instead of the correct 1470 nm wavelength. Mentions in the text used the correct 1470 nm wavelength value.



**Fig. 2.** Diagram of the double-side pumping setup used to measure gain on the TeO<sub>2</sub>:Er<sup>3+</sup>-coated Si<sub>3</sub>N<sub>4</sub> chips. (b) Image of the chip showing the characteristic green light emission of erbium when pumping the paperclip waveguide.

**Table 1. Parameters Used for TeO<sub>2</sub>:Er<sup>3+</sup> Rate Equation Model**

Parameter	Value
Er <sup>3+</sup> ion concentration	$2.2 \times 10^{20}$ ions/cm <sup>3</sup>
970 nm background propagation loss	2.5 dB/cm
1470 nm background propagation loss	0.25 dB/cm
1558 nm background propagation loss	0.25 dB/cm
Launched signal power	-20 dBm
Upconversion parameter	$2.7 \times 10^{-18}$ cm <sup>3</sup> /s
<sup>4</sup> I <sub>13/2</sub> lifetime	0.48 ms
<sup>4</sup> I <sub>11/2</sub> lifetime	0.04 ms
970 nm absorption/emission cross section	$2.8/2.8 \times 10^{-21}$ cm <sup>2</sup>
1470 nm absorption/emission cross section	$3.0/0.4 \times 10^{-21}$ cm <sup>2</sup>
1558 nm absorption/emission cross section	$3.5/4.4 \times 10^{-21}$ cm <sup>2</sup>

3. On page 131 the reference to Fig. 2(a) for the erbium absorption cross section should instead be a reference to Fig. 3(a).

4. The emission and absorption cross section values given in Table 1 and in the text on page 131 were given on the order of 10<sup>-20</sup> cm<sup>2</sup>, as opposed to 10<sup>-21</sup> cm<sup>2</sup>. The correct 10<sup>-21</sup> cm<sup>2</sup> values were used in the simulations.

## REFERENCES

1. H. C. Frankis, H. M. Mbonde, D. B. Bonneville, C. Zhang, R. Mateman, A. Leinse, and J. D. B. Bradley, “Erbium-doped TeO<sub>2</sub>-coated Si<sub>3</sub>N<sub>4</sub> waveguide amplifiers with 5 dB net gain,” *Photon. Res.* 8, 127–134 (2020).