



HAL
open science

Author Correction: Comprehensive Modeling of Multimode Fiber Sensors for Refractive Index Measurement and Experimental Validation

Haris Apriyanto, Gautier Ravet, Olivier D Bernal, Michel Cattoen, Han Cheng Seat, Valérie Chavagnac, Frederic Surre, James H. Sharp

► To cite this version:

Haris Apriyanto, Gautier Ravet, Olivier D Bernal, Michel Cattoen, Han Cheng Seat, et al.. Author Correction: Comprehensive Modeling of Multimode Fiber Sensors for Refractive Index Measurement and Experimental Validation. *Scientific Reports*, 2023, 11, pp.22212. 10.1038/s41598-021-99941-2 . insu-03661454

HAL Id: insu-03661454

<https://insu.hal.science/insu-03661454>

Submitted on 7 May 2022

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License



OPEN

Author Correction: Comprehensive Modeling of Multimode Fiber Sensors for Refractive Index Measurement and Experimental Validation

Haris Apriyanto, Gautier Ravet, Olivier D. Bernal, Michel Cattoen, Han Cheng Seat, Valérie Chavagnac, Frederic Surre & James H. Sharp

Correction to: *Scientific Reports* <https://doi.org/10.1038/s41598-018-24153-0>, published online 12 April 2018

The original version of this Article contained errors in Equation 7, which was incorrectly given as:

$$T = \frac{\alpha \lambda n_{co} \cos \theta}{\pi n_{sm}^2 \cos^2 \theta_{csm} \sqrt{\cos^2 \theta_{csm} - \cos^2 \theta}}$$

The correct Equation 7 appears below.

$$T = \frac{\alpha \lambda n_{sm} \cos \theta}{\pi n_{co}^2 \cos^2 \theta_{csm} \sqrt{\cos^2 \theta_{csm} - \cos^2 \theta}}$$

As a result of the changes to Equation 7, the Abstract,

“The sensors can be employed over a very wide dynamic RI range from 1.316 to over 1.608 at a wavelength of 1550 nm, with the best resolution of 2.2447×10^{-5} RI unit (RIU) obtained in Zone II for a 1-cm sensor length.”

now reads:

“The sensors can be employed over a very wide dynamic RI range from 1.316 to over 1.608 at a wavelength of 1550 nm, with the best resolution of 2.2406×10^{-5} RI unit (RIU) obtained in Zone II for a 1-cm sensor length.”

Additionally, in Figure 5a, the unit of fiber diameter “ μm ” was incorrectly given as “mm”.

The original Figure 5 and accompanying legend appear below.

In the final paragraph of the Discussion,

“It is also in this Zone that the 2.5-cm and 4-cm sensors have the best relative resolutions of 2.9919×10^{-5} RIU and 3.2634×10^{-5} RIU, respectively, compared to the other two Zones. For Zone I, the best resolution is achieved by the 4-cm long sensor with a minimum detection level of 1.5438×10^{-3} RIU while the 1-cm and 2.5-cm sensors are capable of resolutions of 5.1952×10^{-3} RIU and 1.7462×10^{-3} RIU, respectively.”

now reads:

Published online: 09 November 2021

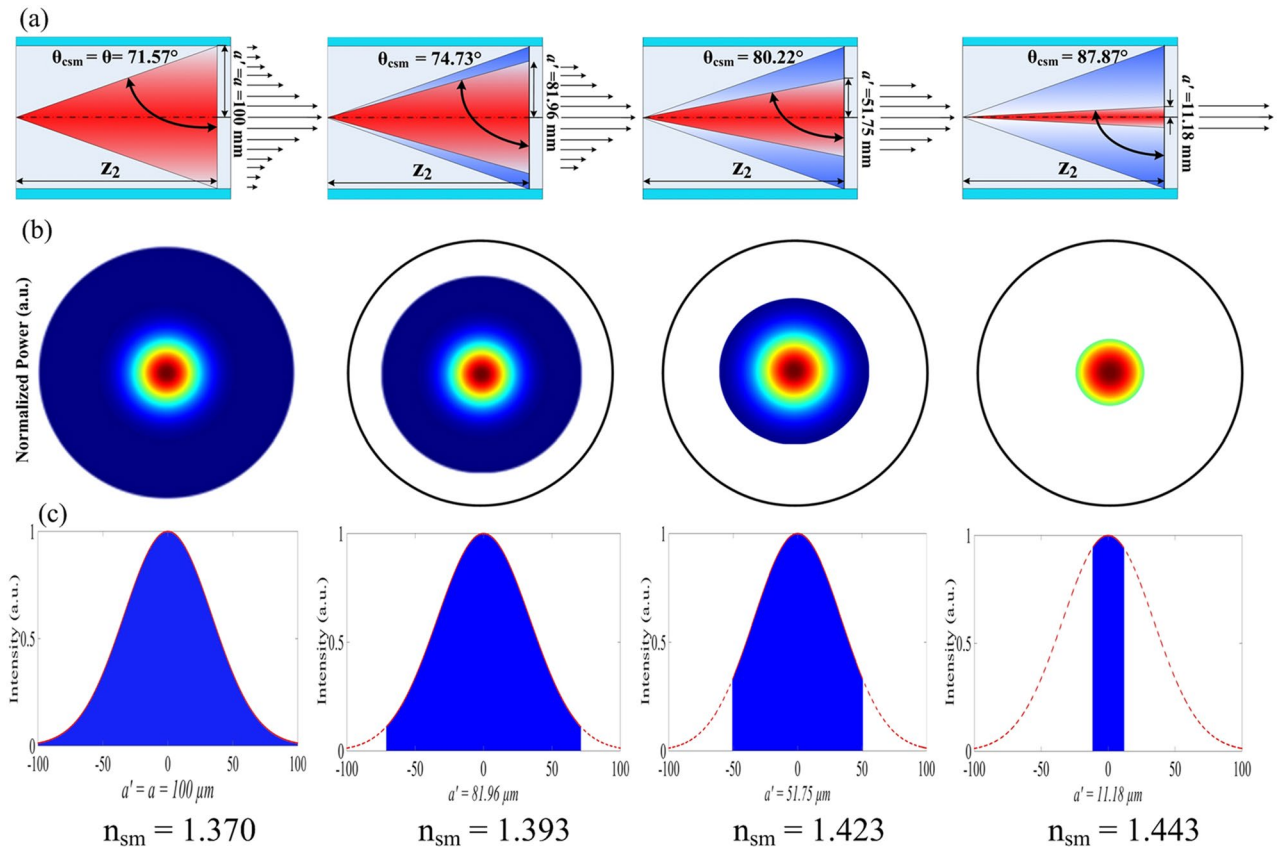


Figure 5. Evolution of optical power and intensity in the MMF RI sensor for various values of n_{sm} by modification of the critical angle, θ_{csm} , for $n_{cl} < n_{sm} < n_{co}$. (a) increasing n_{sm} will increase θ_{csm} which reduces the acceptance angle of the propagating beam, (b) power in transversal plane decreases for increasing n_{sm} , and (c) illustrates decreasing optical intensity over different a' obtained by Equation (14).

“It is also in this Zone that the 2.5-cm and 4-cm sensors have the best relative resolutions of 2.9847×10^{-5} RIU and 3.2517×10^{-5} RIU, respectively, compared to the other two Zones. For Zone I, the best resolution is achieved by the 4-cm long sensor with a minimum detection level of 1.6116×10^{-3} RIU while the 1-cm and 2.5-cm sensors are capable of resolutions of 5.5905×10^{-3} RIU and 1.7528×10^{-3} RIU, respectively.

In the second paragraph of the Conclusions,

“For Zone II, the best sensor resolution of 2.2447×10^{-5} RIU is achieved for the 1-cm sensor.”

now reads:

“For Zone II, the best sensor resolution of 2.2406×10^{-5} RIU is achieved for the 1-cm sensor.”

Lastly, as a result of the changes to Equation 7, the data in Table S1, S2, S3, S5, S6 and S7 in the Supplementary Information was incorrect.

The original Supplementary Information file is available below.

The original Article and accompanying Supplementary Information file has now been corrected.

Additional information

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1038/s41598-021-99941-2>.



Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

© The Author(s) 2021