



Journal

Journal of Modern Optics >

Volume 66, 2019 - Issue 11

150 1

Views

0

CrossRef citations to date

Altmetric

Original Articles

Surface roughness and the sensitivity of D-shaped optical fibre sensors

Hummad Habib Qazi, Sanober Farheen Memon, Muhammad Mahmood Ali, Muhammad Sultan Irshad, Siddique Akhtar Ehsan, Mohd Rashidi bin Salim, Abu Bakar bin Mohammad, Mohd Zamani Zulkifli & **Muhammad Idrees**  ...show less

Pages 1244-1251 | Received 21 Feb 2019, Accepted 13 Apr 2019, Published online: 02 May 2019

 Download citation <https://doi.org/10.1080/09500340.2019.1610521>

Select Language | ▼

Translator disclaimer

 Full Article Figures & data References Citations Metrics Reprints & Permissions

Get access

ABSTRACT

In this paper, the surface roughness characteristic of D-shaped optical fibre sensors with its effects on the sensitivity has been studied. The ULTRAPOL end and edge polishing system was used with some modifications to fabricate the D-shaped sensors with planar sensing zone from the single-mode optical fibres. The mean surface roughness of 343, 96, 25 and 9 nm was estimated at the sensing zone of the D-shaped

sensors which were sequentially polished with 30, 9, 3 and 0.5 μm grit size polishing films, respectively. From the experimental results, it has been observed that surface

roughness of the sensing zone does not exhibit the significant effects on the output signal strength, whereas the sensitivity of the D-shaped sensors nonlinearly related with the surface roughness of the sensing zone. The designed D-shaped optical fibre sensors have potential applications in biomedical and chemical industries.

KEYWORDS: D-shaped fibre, surface roughness, sensitivity of fibre sensor

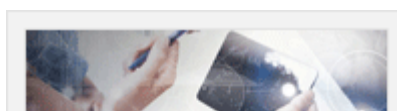
Additional information

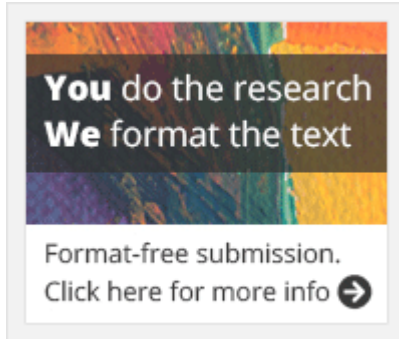
Acknowledgement

The authors are grateful to the officials at Photonic Research Center, University of Malaya (UM). They would also like to thank the editor and the reviewers for their valuable suggestions to improve the presented work.

Disclosure statement

No potential conflict of interest was reported by the authors.





Information for

[Authors](#)

[Editors](#)

[Librarians](#)

[Societies](#)

Open access

[Overview](#)

[Open journals](#)

[Open Select](#)

[Cogent OA](#)

Help and info

[Help & contact](#)

[Newsroom](#)

[Commercial services](#)

[All journals](#)

Keep up to date

Register to receive personalised research and resources by email

 [Sign me up](#)

Copyright © 2020 Informa UK Limited [Privacy policy](#) [Cookies](#) [Terms & conditions](#)
[Accessibility](#)



Registered in England & Wales No. 3099067
5 Howick Place | London | SW1P 1WG