



# TECHNICAL REPORT

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**Guidance for residual stress measurement of optical fibre**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

PRICE CODE

**P**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**GUIDANCE FOR RESIDUAL STRESS MEASUREMENT  
OF OPTICAL FIBRE**

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IEC/TR 62469, which is a technical report, has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
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Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

## **GUIDANCE FOR RESIDUAL STRESS MEASUREMENT OF OPTICAL FIBRE**

### **1 Scope**

The measurement of residual stress distribution in an uncoated glass optical fibre is considered to be important as it affects critical fibre parameters such as refractive index, intrinsic polarization mode dispersion, mode field diameter and dispersion. The optical polarimetric method is a well-established technique to measure the residual stress of an optical material. This technical report describes a transverse polarimetric method to measure the residual stress profile of any type of optical fibre.

The principle and detailed procedure for measuring the optical transverse stress profile of a fibre, which is cylindrically symmetric, is described in detail. It is based on a polariscope, which is constructed with a fixed polarizer, a quarter-wave plate and an analyzer. An optical tomographic technique is also described for measuring the stress profile of a fibre with a cylindrically non-symmetric structure.