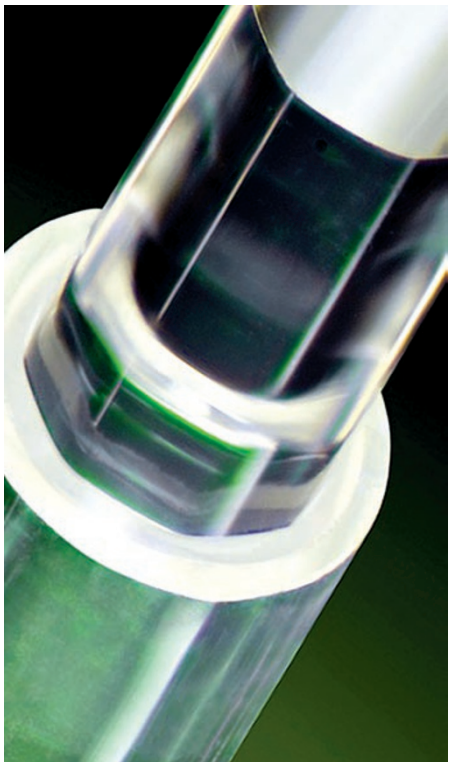

NUFERN

COVER IMAGE
Nufern has developed a family of rare-earth-doped fibres that has significant potential for high-power and industrial applications.

NPG ASIA-PACIFIC
Chiyoda Building 2-37
Ichigayatamachi, Shinjuku-ku, Tokyo
162-0843 Japan
T: +81 3 3267 8751
F: +81 3 3267 8746
naturephoton@nature.com

EDITOR
OLIVER GRAYDON

PRODUCTION EDITOR
CHRIS GILLOCH

COPY EDITOR
JAMES BAXTER

ART EDITOR
TOM WILSON

SALES ACCOUNT MANAGER
KEN MIKAMI
T: +81 3 3267 8751

ADVERTISING DIRECTOR
GEORGE LUI
T: +1 415 781 3804

ADVERTISING MANAGER
SIMON ALLARDICE
T: +1 415 403 9034

nature publishing group

Fibres get special

Optical fibre — a technology well-known to have revolutionized the telecommunications industry — is now proving to have important roles in applications such as sensing, biomedicine, defence, security and the development of novel light sources. A range of optical fibre designs and materials are now being developed to meet the needs of both established and growing industries. This month's Technology Focus covers some of the specialty optical fibres available today and gives insight into their unique applications.

Developed in the early 1990s, photonic crystal fibre is praised for its unique range of unconventional properties. NKT Photonics in Denmark, which claims to be the world's only commercial supplier of photonic crystal fibre, explains on page 464 how it has used photonic crystal fibre to develop industrially reliable supercontinuum sources and replace traditional solid-state crystals in the high-power pulsed laser market.

Chalcogenide optical fibre based on sulphur, selenium and/or tellurium offers sufficient stability and transmission for applications at infrared wavelengths. Dan Hewak from the University of Southampton in the UK explains on page 474 that although high-quality chalcogenide fibre can already be fabricated, the main challenge is not the drawing process but rather achieving high purity levels in the glass. He believes that attaining this goal will require new glass-melting technology and reproducible, reliable fabrication techniques.

Modifying a fibre's design or constituent materials is another way of diversify its applications. On page 470, Victor Kopp and Azriel Genack from Chiral Photonics in the USA describe how applying twist during the fabrication of an optical fibre can provide chiral properties such as polarization- and wavelength-selectivity, which are attractive for polarization control, harsh-environment sensing and photonic integrated circuits. On page 466, Bryce Samson, Adrian Carter and Kanishka Tankala from Nufern in the USA say that fibres doped with rare-earth materials can improve the output power of fibre lasers to beyond 1 kW. On page 468, Andy Gillooly from Fibercore in the UK explains how photosensitive fibres inscribed with gratings — a periodic variation in the core's refractive index — can aid the growth of sensor and fibre laser markets.

Today's optical fibres are far more sophisticated than those of decades past, and it is clear that their potential applications now extend well beyond telecommunications. ❐

CONTENTS