

Optical Spectrum Analyzer

Aston University researchers have invented a low-cost and robust optical spectrum analyzer for use in multi-channel optical systems. Aston's Business Partnership Unit is now actively seeking commercial partners to license this highly useful technology.

Highlights

- High ruggedness and tolerance of mechanical vibration
- High accuracy and resolution
- Low-cost and simple design
- Useful in multi-channel optical telecommunications, cable TV and sensor systems

Background

Current optical spectrum analysis devices use bulk optic diffraction gratings as an optical tuning element. Light exiting from an optical fibre is focused onto the diffraction grating, and the light reflected by the diffraction grating is focused in turn onto an optical detector.

Such devices have several disadvantages. Diffraction gratings are subject to mechanical shock and damage, so such devices have limited ruggedness and tolerance of mechanical vibration; mechanical movement of the diffraction gratings leads to limited accuracy and resolution; the position of the diffraction grating is likely to drift with time and may be affected by mechanical backlash; and the light must be extracted from the optical fibre for measurement, requiring accurate focusing of the light onto the diffraction grating and the optical detector.

Such devices therefore have limited performance, require regular calibration, are expensive, and generally unsuitable for in-the-field monitoring of optical systems.

The Technology

Researchers at Aston University have invented an optical spectrum analyzer that overcomes these difficulties. The device comprises a tuneable optical filter fabricated from optical fibre with inscribed fibre Bragg gratings, through which an optical signal is passed. The use of fibre Bragg gratings rather than bulk optics significantly increases ruggedness, eliminates intolerance of vibration, increases accuracy and resolution, and drastically lowers costs.

Intellectual Property Protection

This technology has been granted a US patent:

<i>Title</i>	<i>Patents Granted</i>	<i>Priority Claimed</i>	<i>Our Ref</i>
Optical Spectrum Analyzer	US 6,822,217	February 10, 1999	PAT-2004-050

Further Information

Further information can be made available and commercial discussions commenced on entering into a non-disclosure agreement.

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