

# Femtosecond Written Fiber Bragg Gratings

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**PHOTONEXT**

RESEARCHER'S DAY 2023

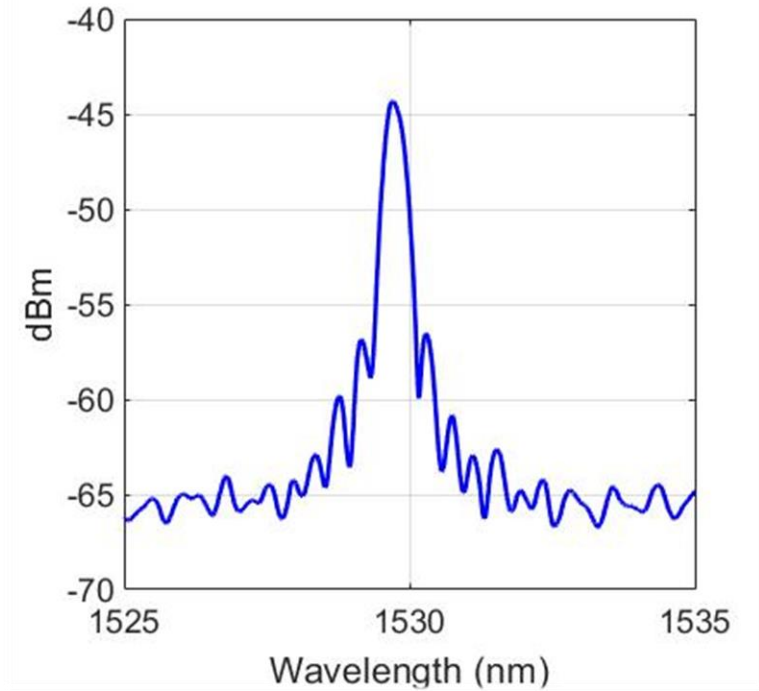
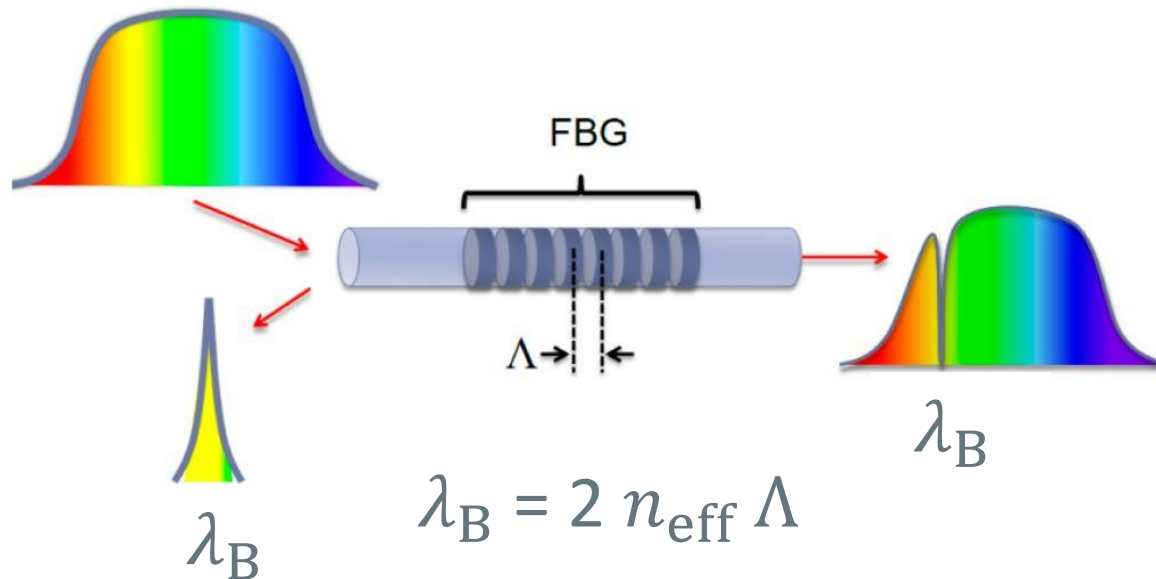


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# Fiber Bragg Gratings

Narrow band reflector made by inscribing a periodic refractive index modulation ( $\Lambda$ ) in the core of a (single-mode) fiber.

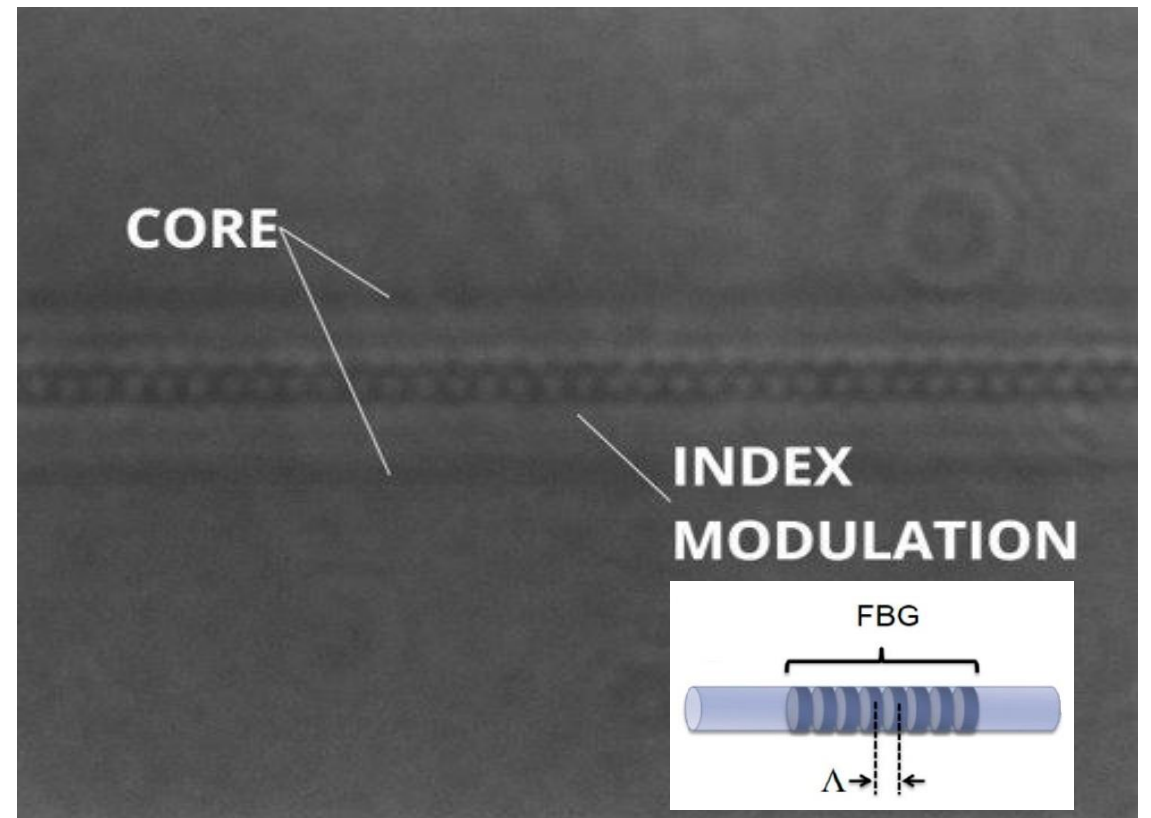
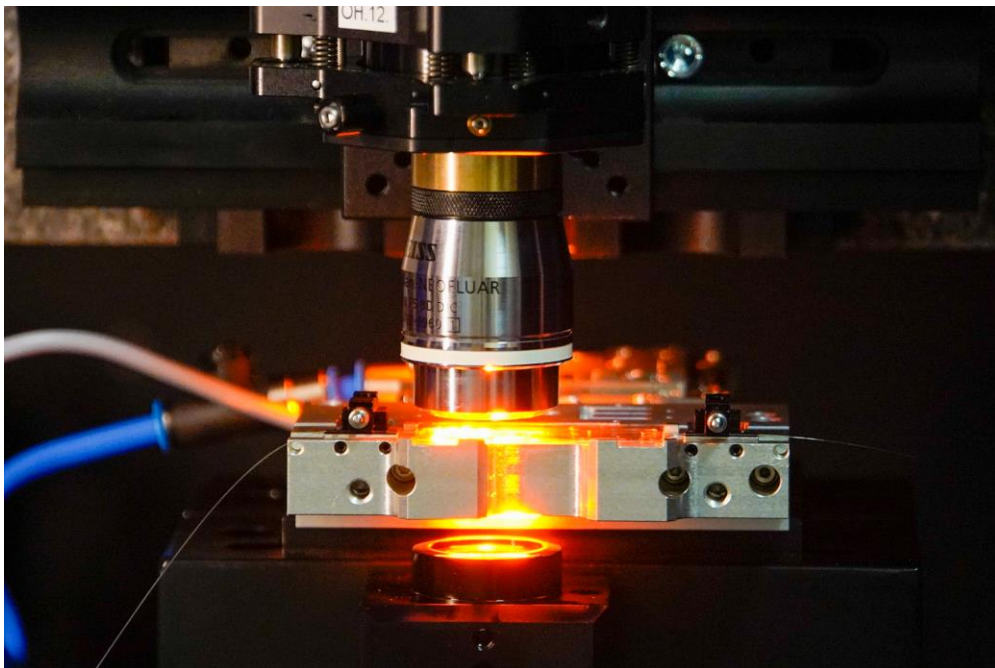


- Applications:
  - Sensing:  $\lambda_B$  (temp, strain).
  - Fiber lasers: cavity mirror.



# Grating Inscription

Local permanent modification of the refractive index using femtosecond laser pulses.



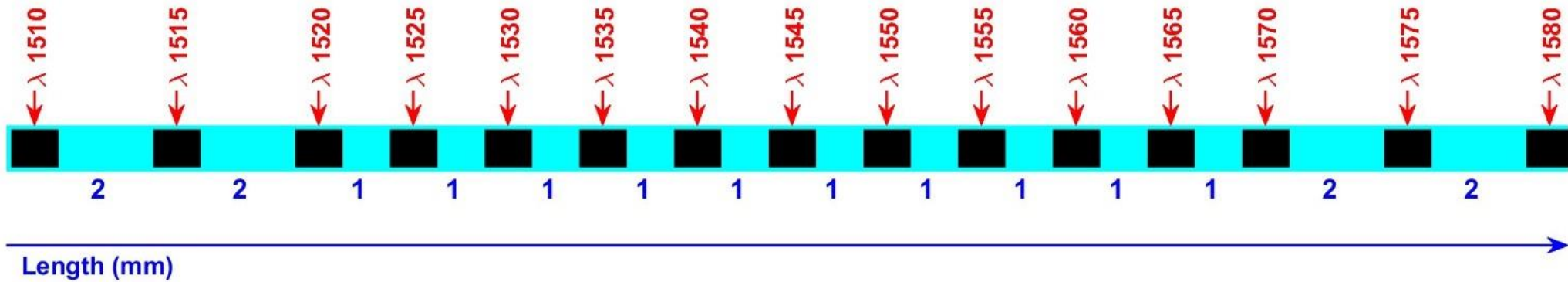
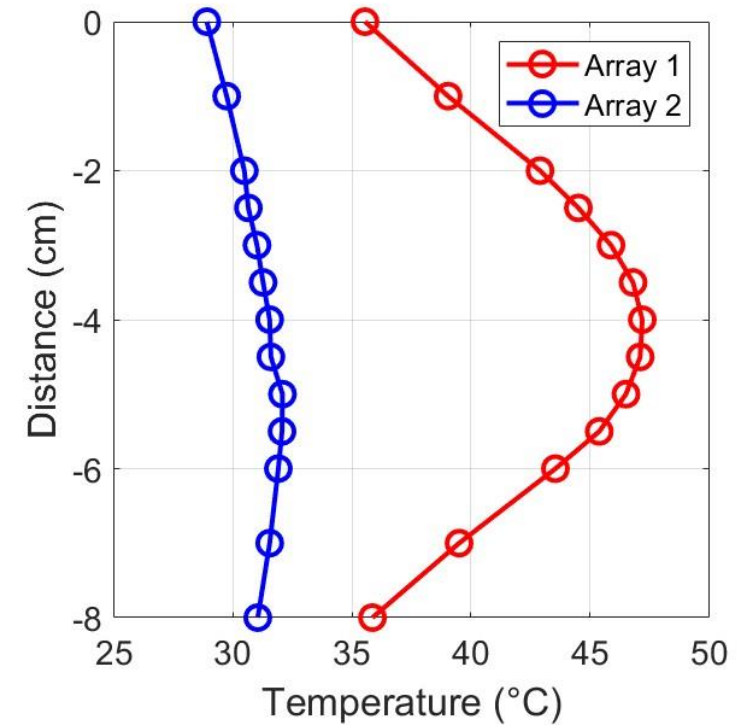
The desired sequence of modified refractive index regions is obtained by moving the fiber under the laser beam.



# Applications /1

## Fiber multi-point thermometer

- Quasi-distributed monitoring.
- FBG array with custom density.
- Up to 20 FBGs in the same fiber.

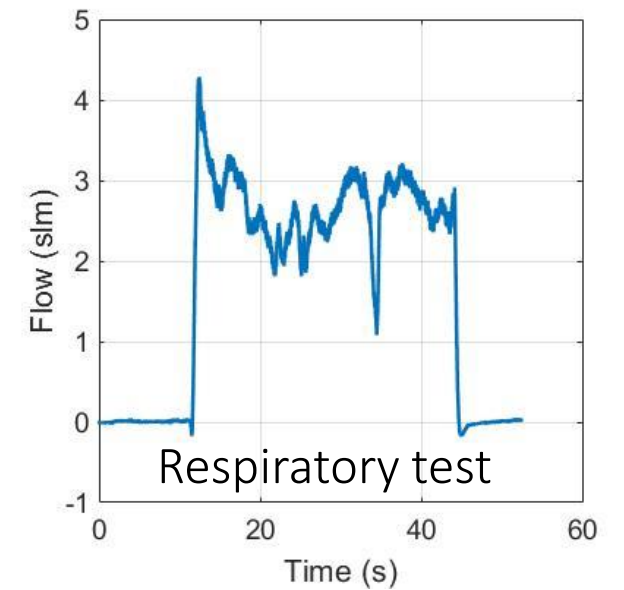
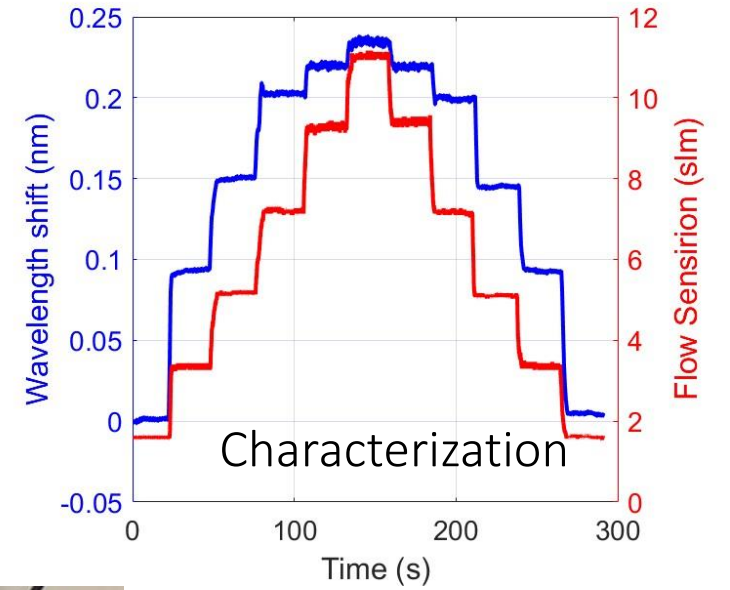






# Applications /2

## All-optical flow-meter

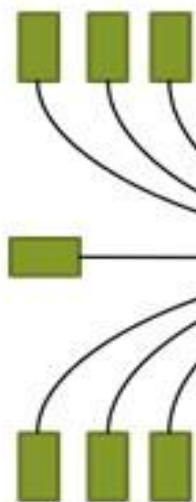




# Applications /3

## Mirrors for fiber lasers

Laser diodes

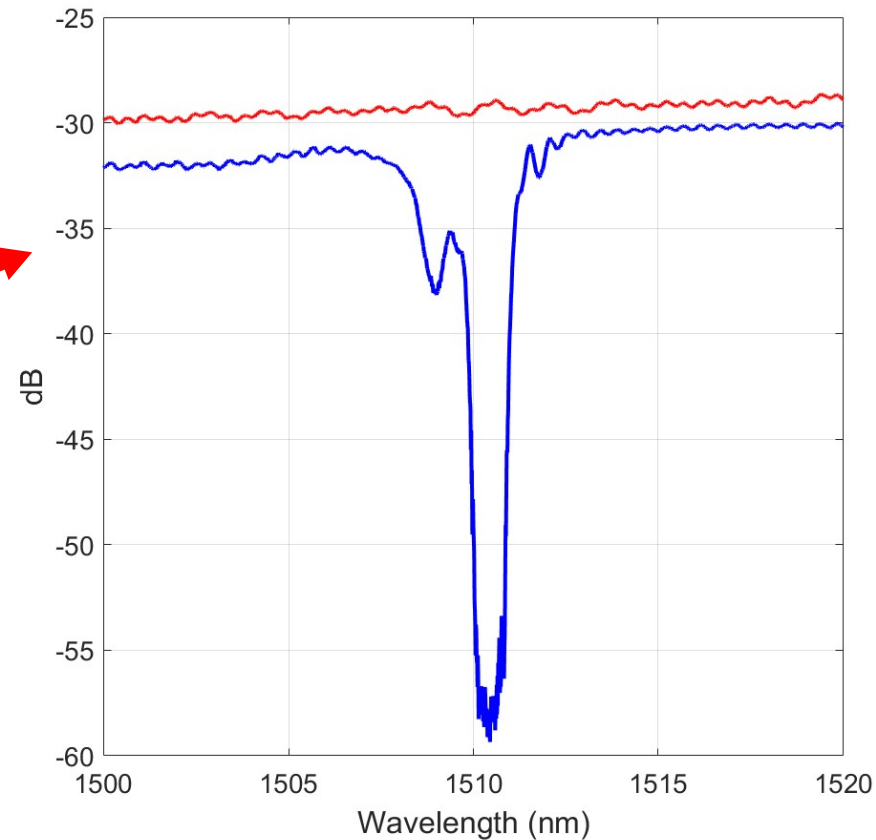


Combiner

HR FBG

LR FBG

Active fiber



High reflectivity (> 90%) gratings for high power fiber lasers.

Thanks for your attention



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