Hollow core Bragg fiber-based gas pressure sensor using parallel Fabry-Perot interferometers

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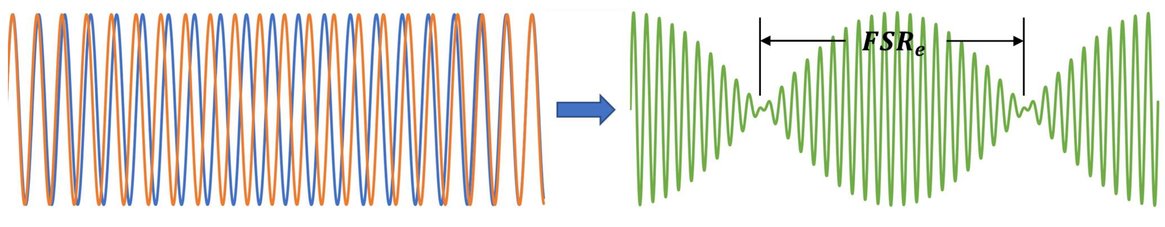

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$$FSR_1 = \frac{\lambda^2}{2n_1L_1},\ FSR_2 = \frac{\lambda^2}{2n_2L_2}$$

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$$FSR_e = \left|\frac{FSR_1 \cdot FSR_2}{FSR_1 - FSR_2}\right| = \left|\frac{\lambda^2}{2(n_1L_1 - n_2L_2)}\right|$$

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$$M = \frac{FSR_e}{FSR_1} = \left|\frac{n_1L_1}{n_1L_1 - n_2L_2}\right|$$

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$i \quad i \geq 0,\ i$

$OPL_2 = n_2L_2 + in_1L_1$ i 2

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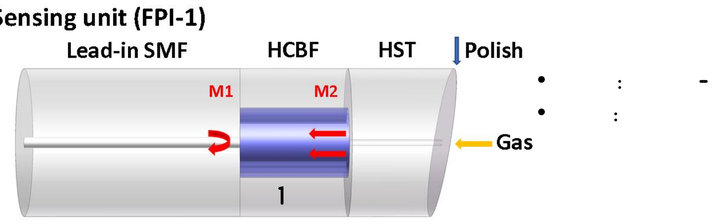
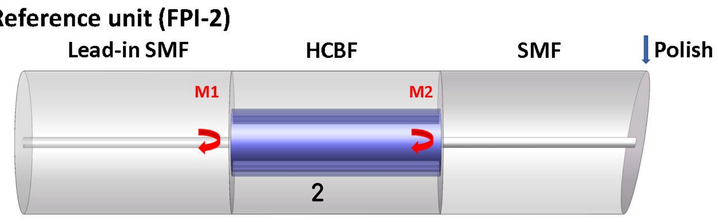
Sensing unit (FPI-1)



Reference unit (FPI-2)



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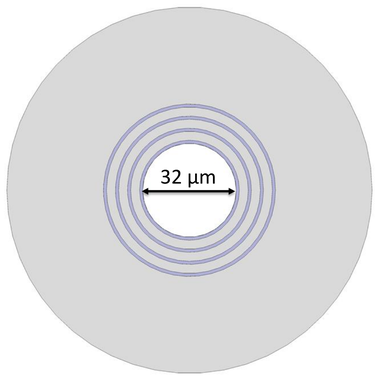

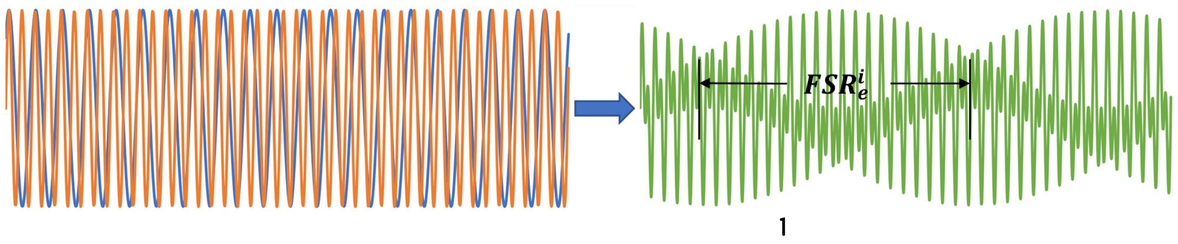

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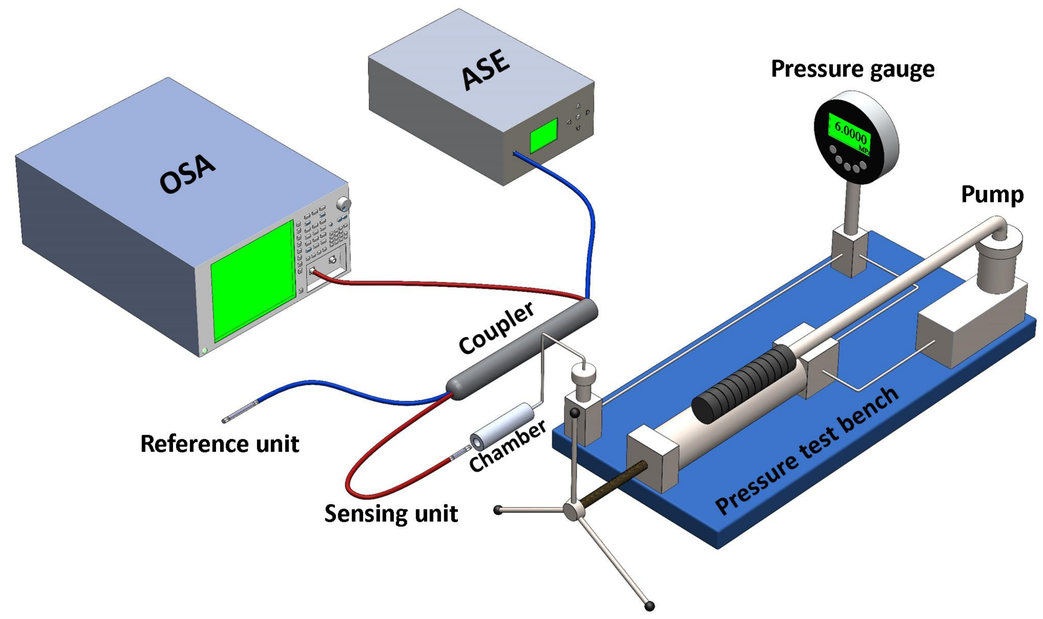
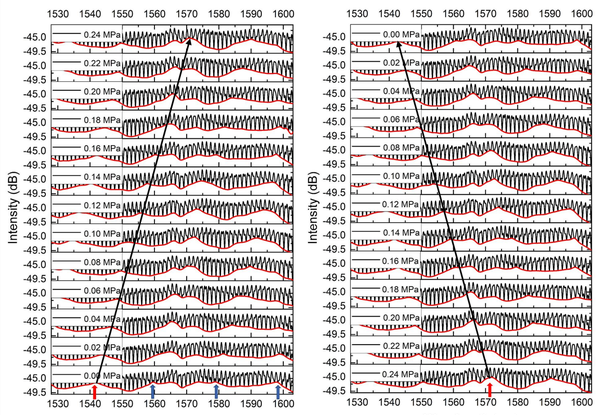
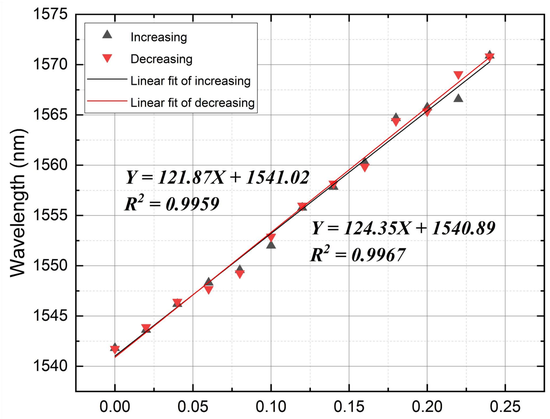
FSR of FPI-2:		:
: $FSR_2^i = \frac{\lambda^2}{2(n_2L_2 + in_1L_1)}$	$FSR_e^i = FSR_e$	$M^i = (i+1)M$

Gas pressure range	Step	Spectral range
0 MPa – 0.24 MPa	0.02 MPa	1528 nm – 1603 nm







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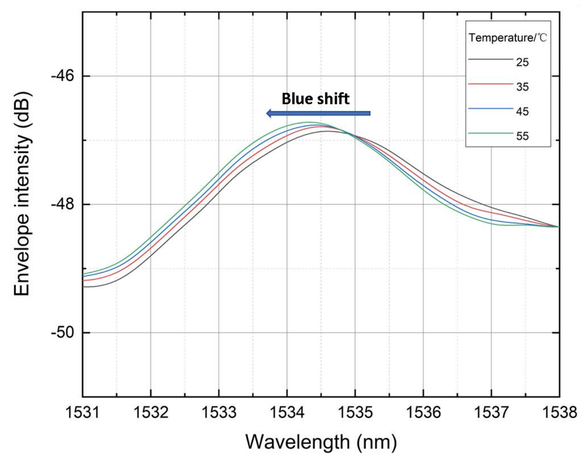
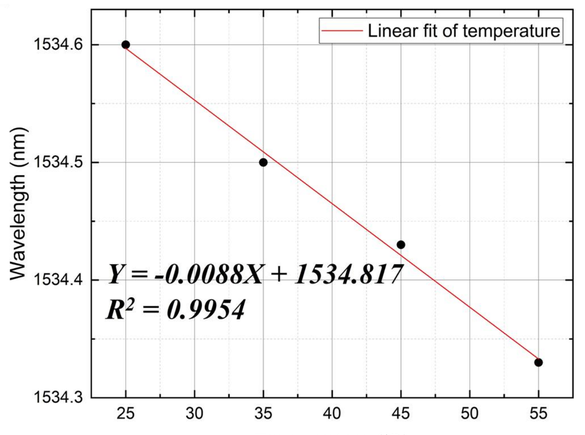
$M^1 = 30$





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