

CORNING

Bcj Y`Cdh]WU` :]VYfg`Zcf`8]ghf]Vi hYX`GYbgcf
5 dd`]WU]c bg

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8]ghf]Vi hYX`Cdh]WU` :]VYf`GYbgc fg

Distributed Optical Fiber Sensors

Rayleigh scattering

- Elastic scattering of light by particles $\ll \lambda$
- Related to fiber propagation effects
 - Loss
 - Phase
 - Polarization

Brillouin scattering

- Inelastic scattering of photons by phonons
- Sensitive to
 - Temperature
 - Strain

Raman scattering

- Inelastic scattering of photons by molecules
- Sensitive to
 - Temperature

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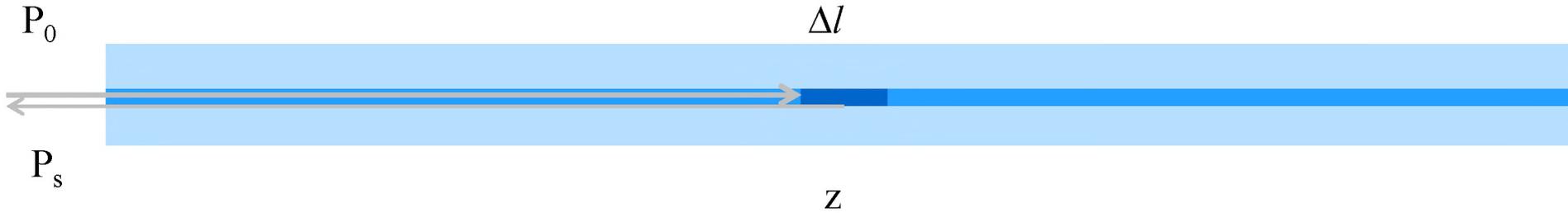
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 & RÁMÉ æÁ nRg^{4*} æÉæ^{2+}
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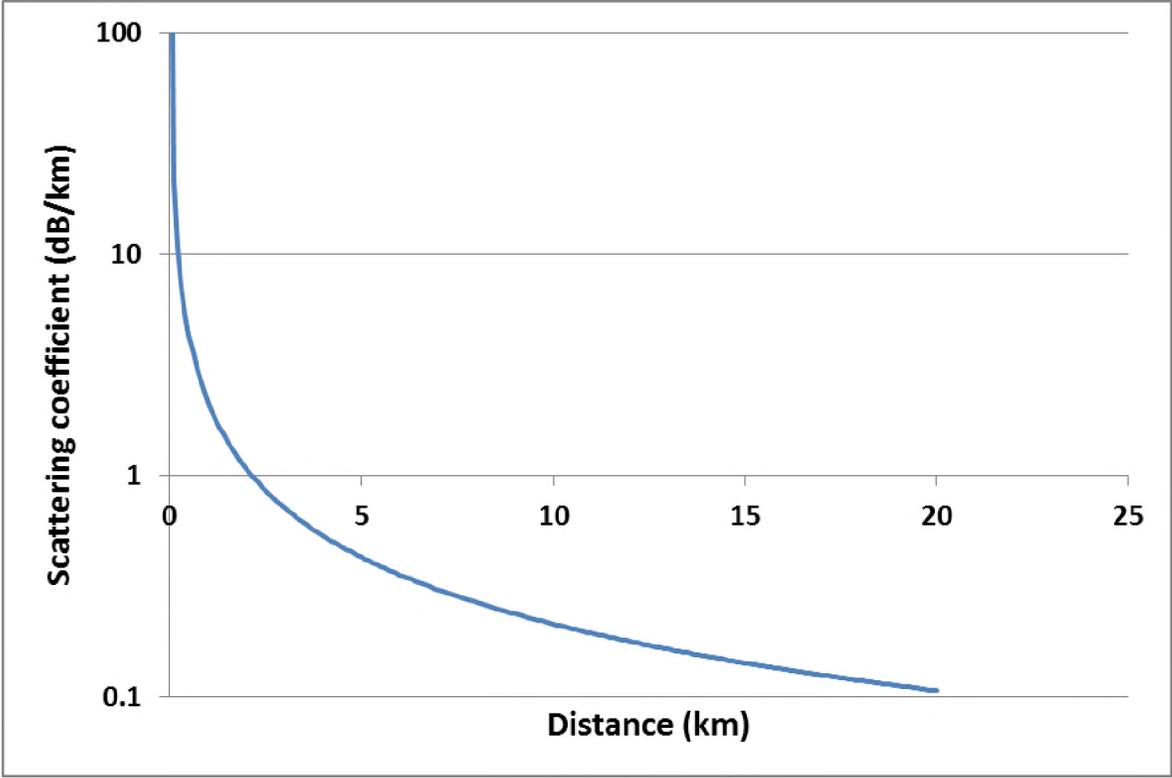
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Scattering Coefficient vs. Distance



$$\alpha = \frac{605}{2z}$$

$$\alpha = \frac{605}{2z} \left(\frac{1}{z} \right)^2$$

7 Udh fY9 ZVYbWn

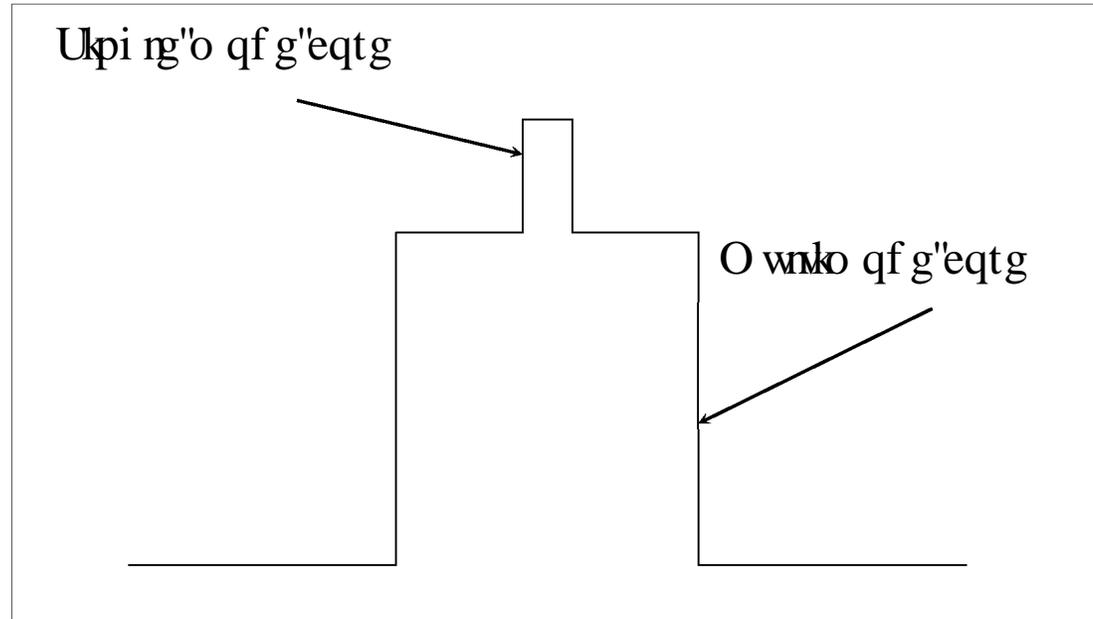
$$EM = \frac{PC^4}{P_3^2}$$

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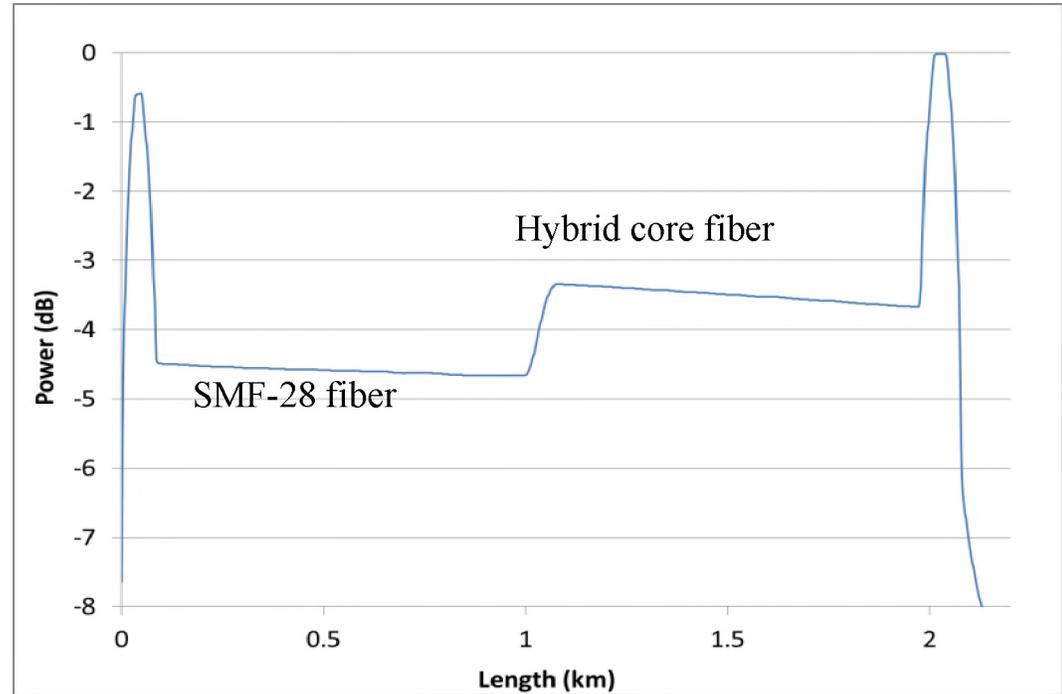
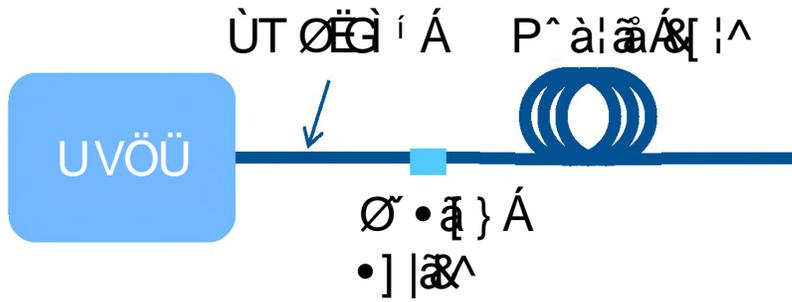
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 2047 "hqt 'r ct cdqrke 'kpf gz 'r t qh'kg }

< m/f]X'7 cf Y'8 Yg][b



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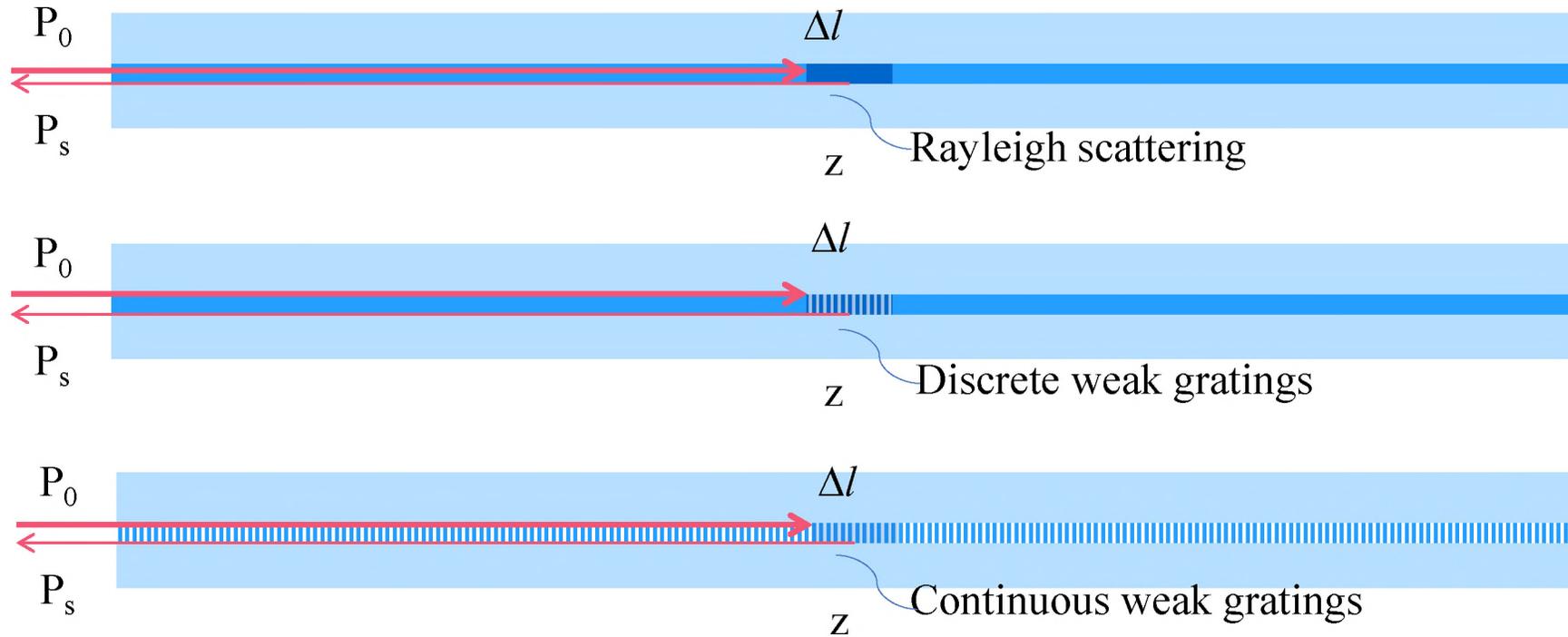
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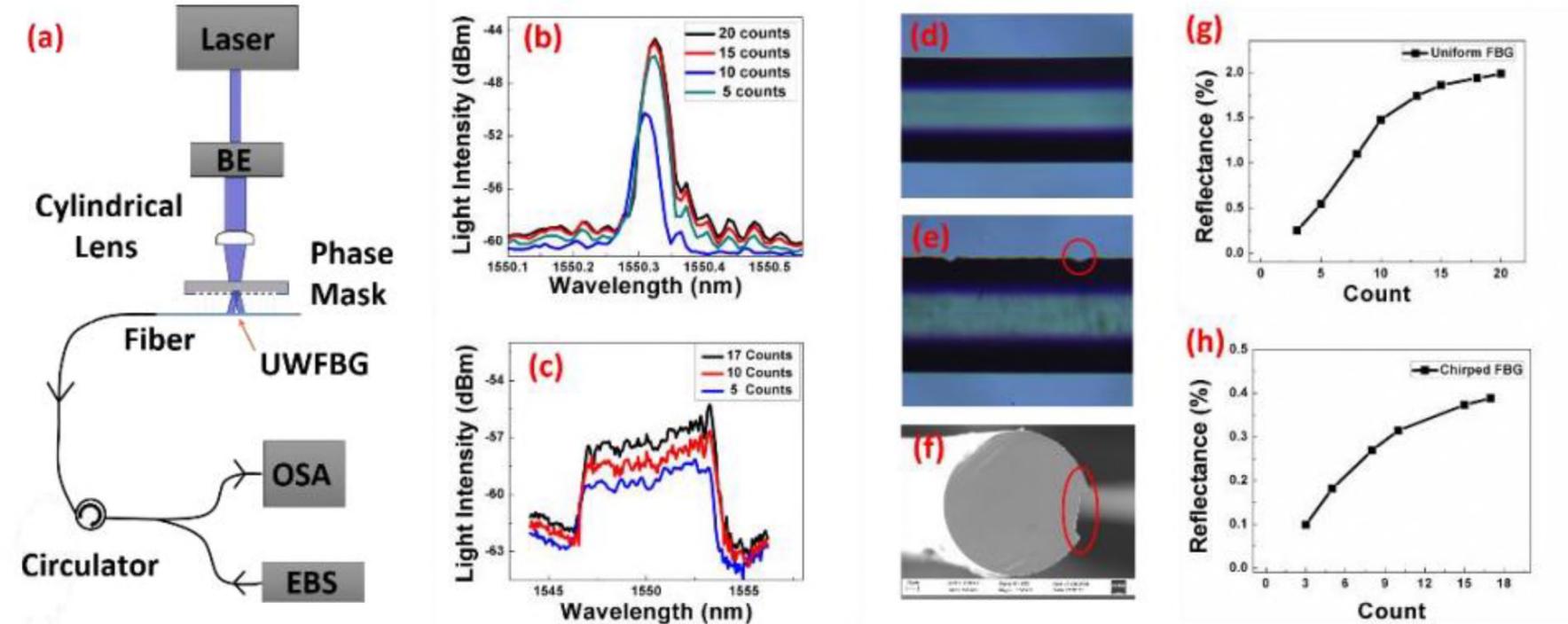


Fig. 1. (a) Fabrication setup; (b) Reflection spectra of uniform UWFBG after 5, 10, 15 and 20 counts of laser pulses; (c) Reflection spectra of chirped UWFBG after 5, 10 and 17 counts of laser pulses; Optical microscope images of fiber when intensity of incident radiation is at 180-mJ/cm² (d) and 220-mJ/cm² (e); (f) cross-sectional SEM image of the damaged fiber; FBG reflectance of (g) uniform FBG vs. pulse numbers; and (h) chirped FBG vs. pulse numbers.

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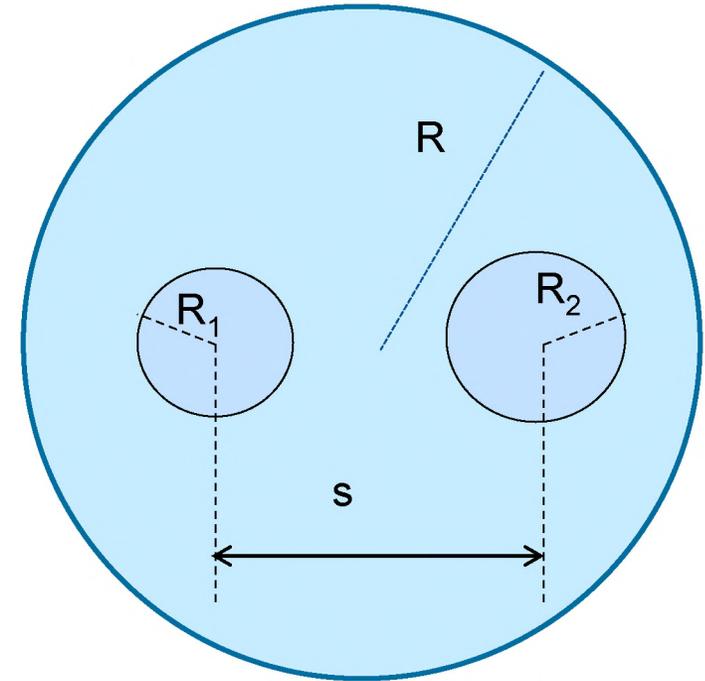
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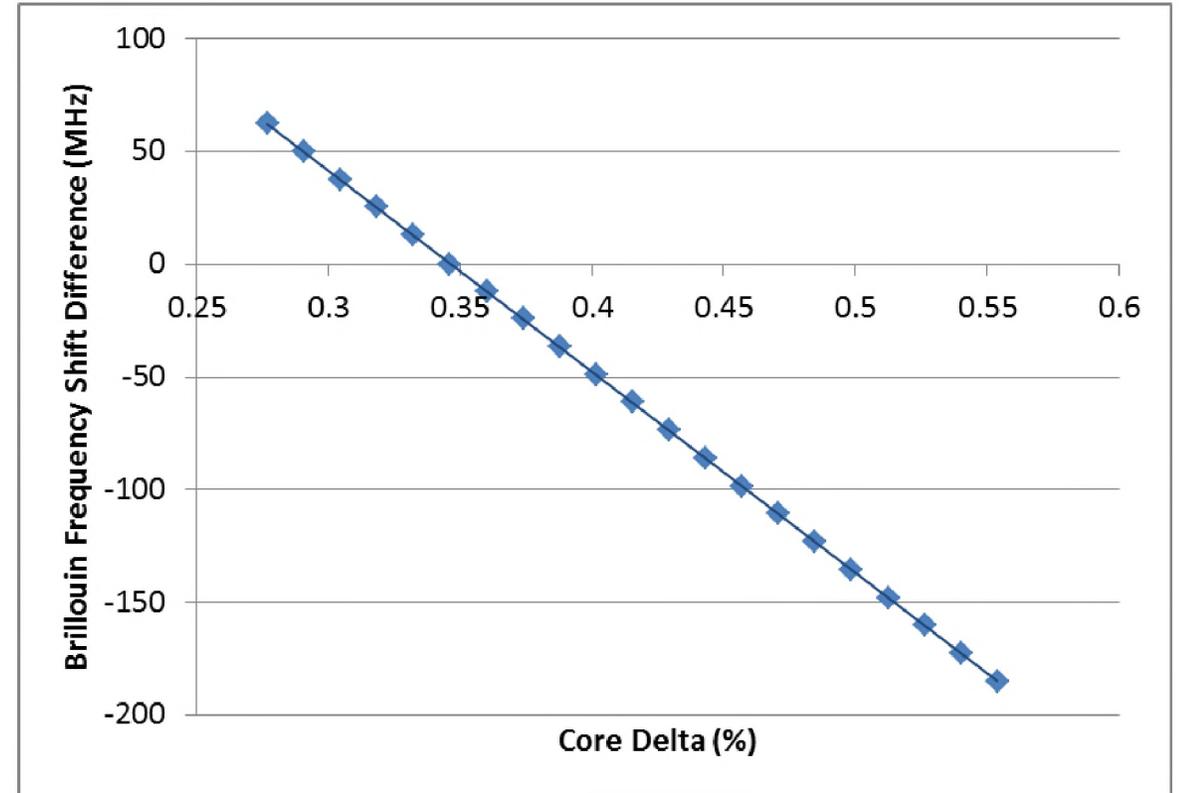
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$$D.K' = \frac{A}{M} \frac{A^2 g h k' N g h k'}{l} \quad \text{MB.4}$$



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Vgo r gtcwtg"] ^q E_" *Vj gto qeqwr ng+	Vgo r gtcwtg"] ^q E_" *F wcn'eqtg'hkdgt"+	Utckp" *HG"cpcn{ uku	Utckp"]Û _" *F wcn'eqtg'hkdgt"+
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86057	86043	749047	796038
93047	92085	855069	854067
97082	97079	922065	995069
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BYk :]VYf`8 Yg][bg`Zcf`8]ghf]Vi hYX:]VYf`GYbgcfcg

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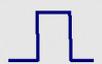
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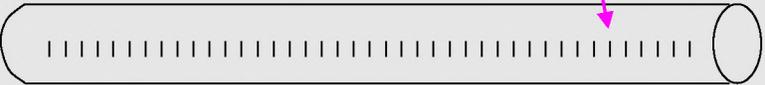
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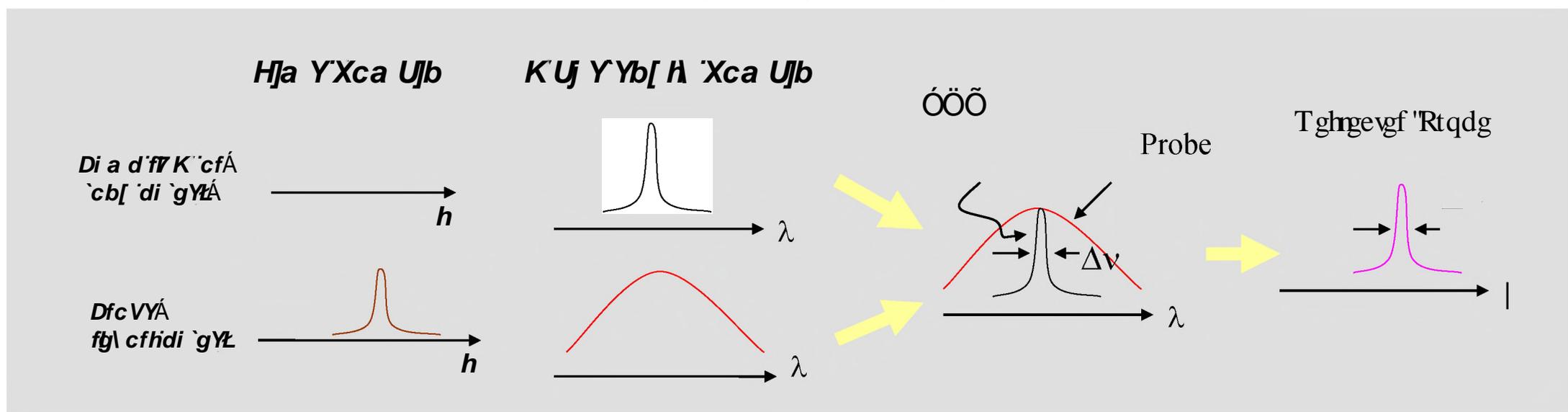
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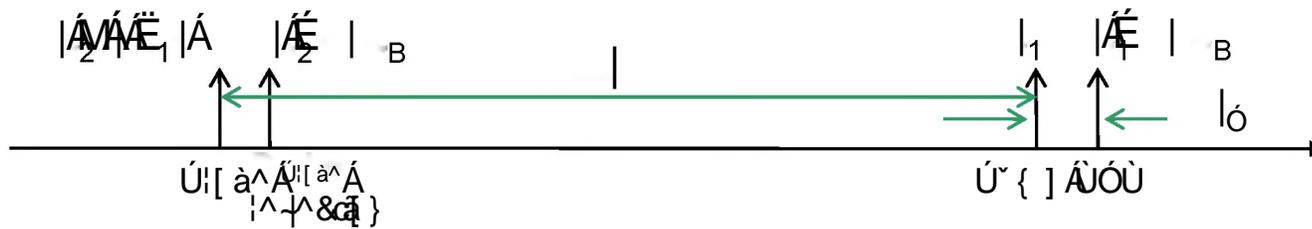
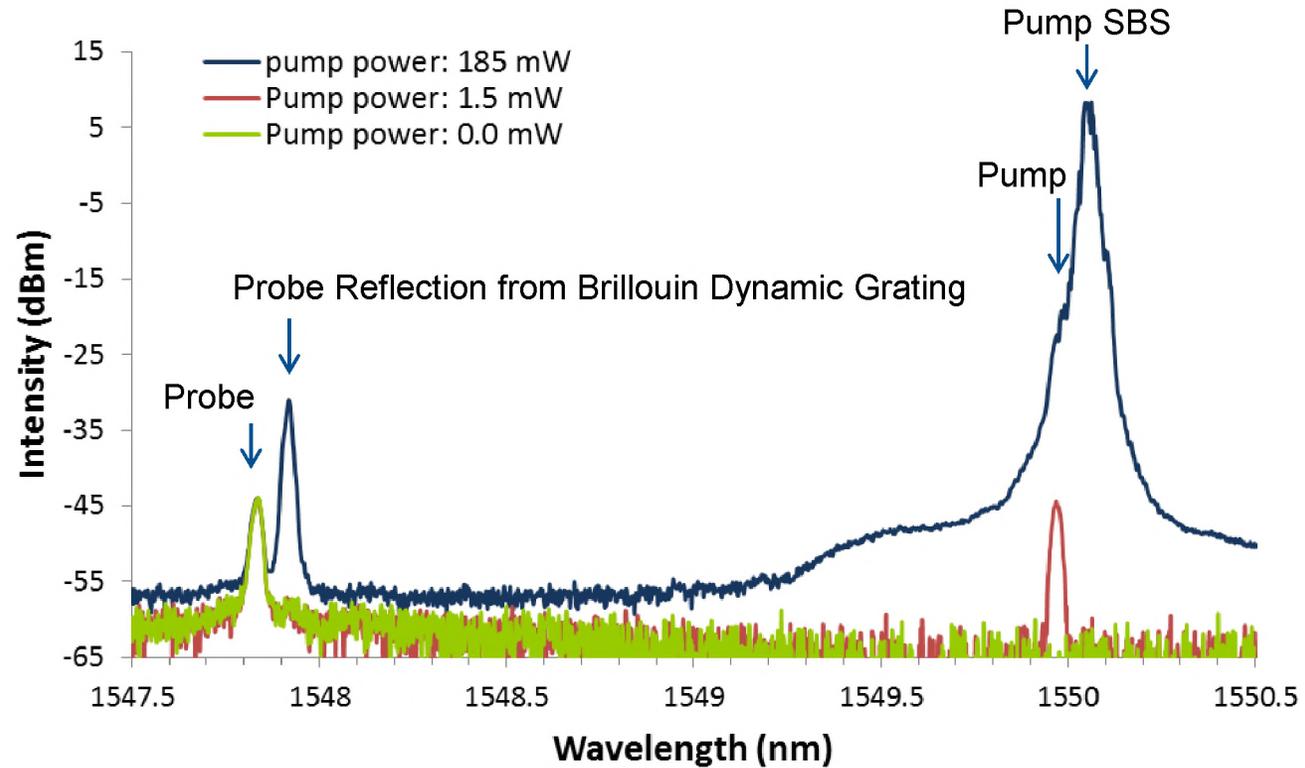
$$\left| \begin{matrix} \text{Ä} \\ \text{Ö} \end{matrix} \right|_{r_{1q}} = \frac{p_{33} \text{ } \ddot{\text{E}} \text{ } p_{23}}{p_{23}} \left| r \right.$$

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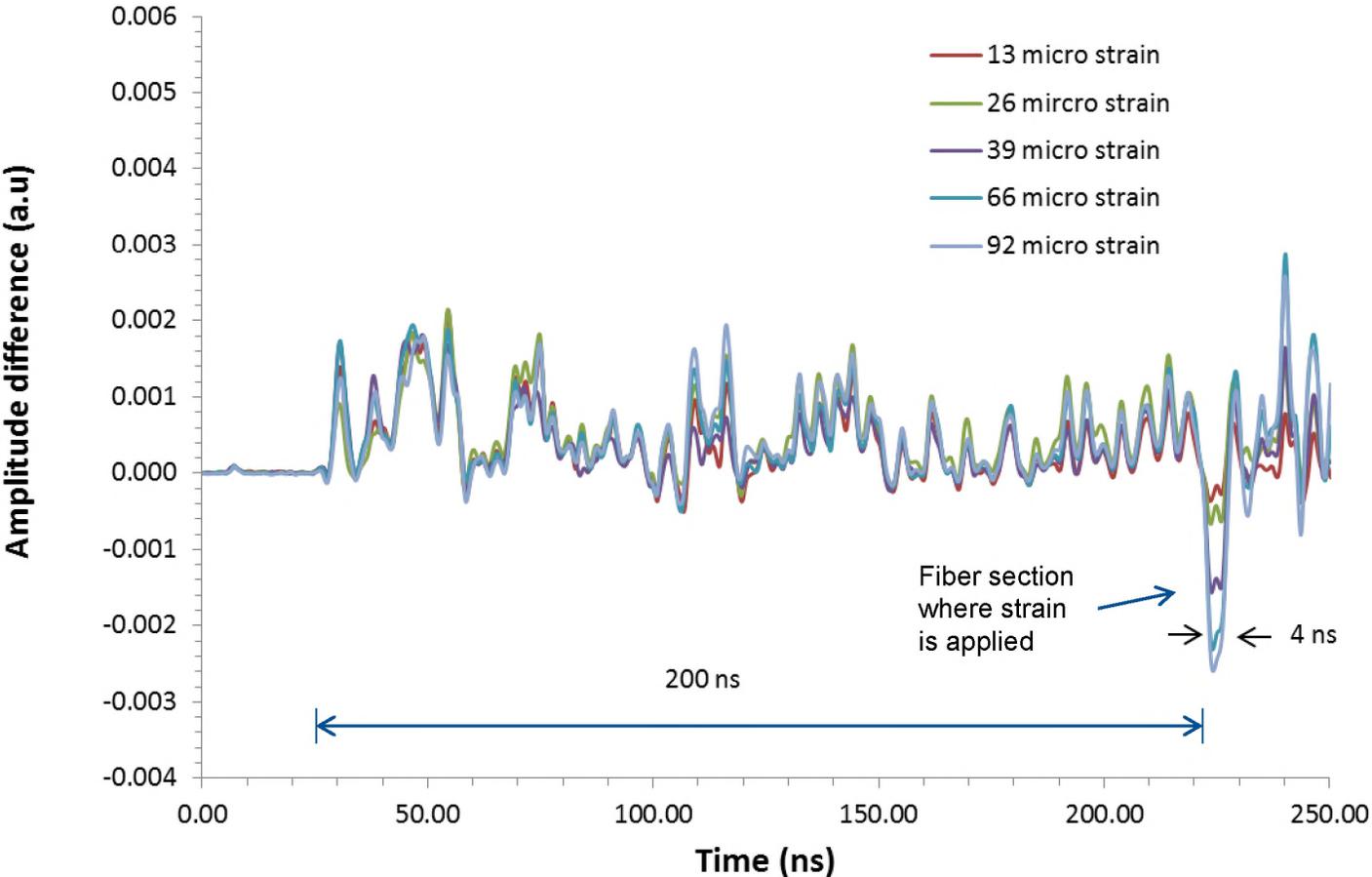
Coherent Control of Quantum States



CdHjWU'GdYWfU'cZ6 UW'GWUhyfYX'@[\ h



Graphical Abstract: Fiber Bragg Grating Strain Sensitivity



BYk :]VYf`8 Yg][bg`Zcf`8]ghf]Vi hYX:]VYf`GYbgcfcg

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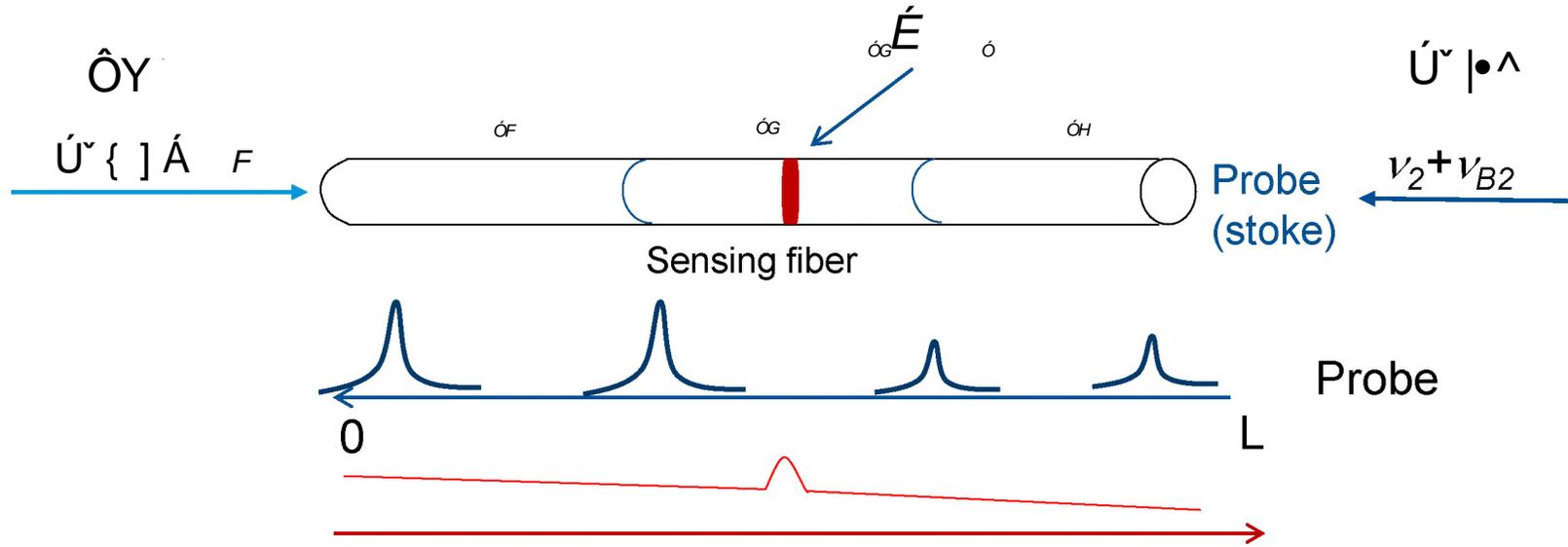
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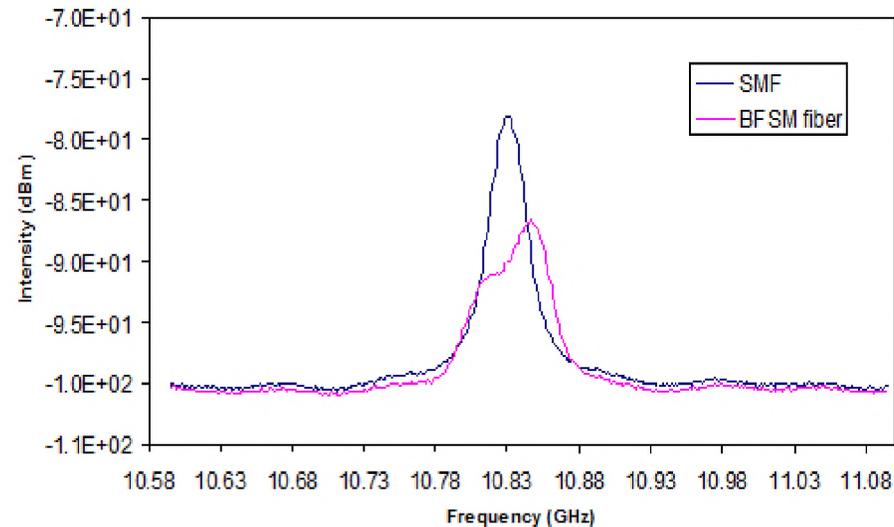
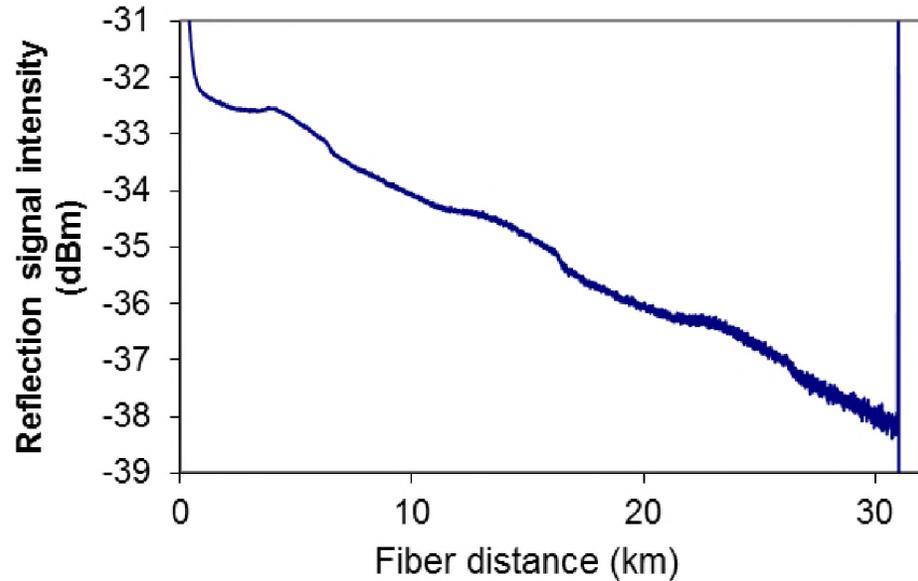
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6 f]`ci]b` : fYeI YbWnG\]ZhiA UbU[YX` :]VYf` : cf`6 CH8 5

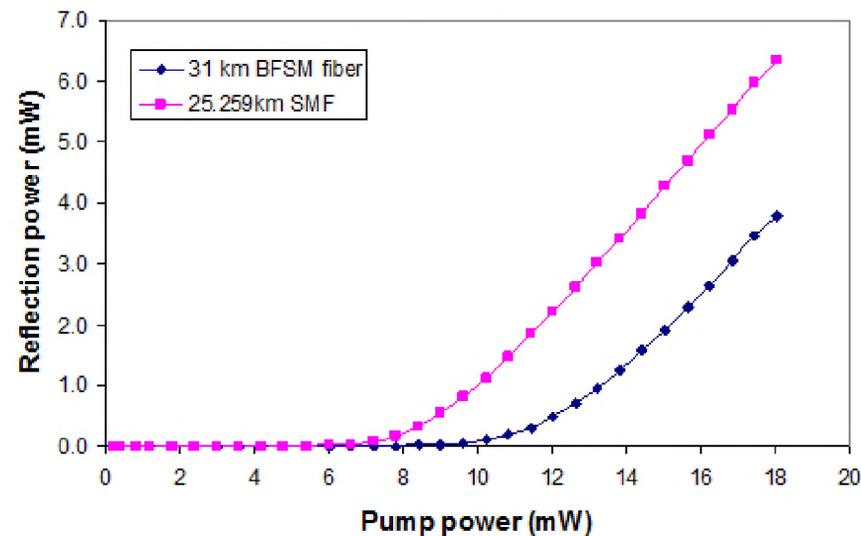


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